

## **Energy and the Consumer: “What Me Worry?”**

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### **Introduction**

The reaction of consumers to the energy market was transformed thirty years ago at the time of the first OPEC oil boycott. The four issues that arose at that time still dominate the concerns of consumers: prices, availability of supplies, dependence on imported oil, and prospects for technological innovations. These concerns have short term economic consequences as well as longer term implications for a wide range of purchase decisions and public policies. Demand for energy is derived from the demand for the products or services that utilize energy. For consumers, the most important uses are for travel, home heating and cooling, and electrical power. Of the various sources of energy, consumers pay the closest attention to the price of gasoline.

Unlike any other product or service, consumers are constantly exposed to the up-to-the minute information on the price of gasoline, with the latest wiggle displayed to the tenth of a cent on large signs at countless street corners across America. Given that consumers frequently purchase gas, any variation in the price has an immediate impact on their budgets. Consumers can not fully adjust their usage to changes in gas prices, given that their current vehicles have a fixed fuel efficiency and that most travel is not discretionary. As a consequence, consumers must often cut back on other spending or reduce the level of their savings in order to accommodate higher gas prices. In the long run, people can purchase different vehicles, use mass transit, and even relocate their residence or change their jobs to lower travel costs. These adjustments are not easy or pleasant. When unexpected and substantial changes in gasoline prices occur, consumers find the required adjustments so onerous that they have appealed in the past for some type of government intervention.

Regulations are the panacea for what ails the economy, or so it is often expressed by the cliché that “there ought to be a law ...” Nonetheless, prices rather than non-price rationing schemes are now generally preferred by consumers, unless the change in prices is very large and occurs abruptly. Consumers are quite happy to do without long lines at the gas pump, restrictions on how much or when they can purchase gasoline, or restrictions on the types of vehicles they can purchase. Today’s consumers have had some direct experience with these non-price rationing schemes, and have generally found them inefficient.

The support for regulations that is expressed by consumers is mainly for laws that would regulate other people’s behavior, not their own. Thus, for example, consumers are generally supportive of regulations that would force vehicle manufacturers to offer more efficient vehicles for sale, even if they would not choose to purchase the resulting higher mileage vehicles themselves. Regulations are most effective when the vast majority of the population believes the regulation directly serves their own best interest as well as the public’s interest.

For energy policies, such regulations should not be difficult to devise, at least in theory, since all consumers favor an environment that is free of pollution and a nation that is energy independent.

The reality of the situation, however, is much more complex. Economists have long advocated aligning private and public interest through the use of prices, with market prices augmented by taxes to properly account for negative externalities. Such pricing strategies would also recognize that other factors need to be taken into account, especially to guard against inequities that arise from the regressive nature of the tax and the longer travel distances often required in rural areas.

Needless to say, everyone's preferred solution would be a technological innovation that solves the problem, and does so at a reduced overall cost to the consumer. We live in a technological age, and consumers expect technological innovations to solve their most pressing problems. Indeed, the technological fix is so compelling that some invent conspiracy theories to justify the absence of such innovations. I will not discuss the likelihood of such innovations, for much the same reasons that I will not discuss the likelihood that the price of oil will suddenly surge to \$90 a barrel: both are outside my area of expertise.

I will, however, discuss consumers' reactions to energy prices. Specifically, I will discuss how consumers have reacted to changes in prices in the distant past as well as more recently. Increases in oil prices in the mid and late 1970s as well as in the 1990s caused significant hardships for individual families, but those increases also pushed the economy into recession and thus made the adjustments even more difficult for families.

Consumers are more willing to change their behavior when they are optimistic and confident of their economic future, and are more defensive and less open to change when they are pessimistic and uncertain. An important component of sound public policy is to encourage new behaviors when consumers are optimistic and open to change, and to avoid demands for change when accompanied by the drumbeat of fear and dire consequences. The continuation of a strong economic expansion in the years ahead will hopefully provide the encouragement for positive and voluntary change.

My presentation is based on the premise that consumers must change their basic perceptions of the world energy market. Consumers have misjudged the root cause of rising oil prices, placing too much emphasis on the simultaneous occurrences of turmoil in the Middle East and too little weight on the growth in worldwide demand. As a result, consumers have misjudged the adjustments they need to make in their spending decisions, basing their decisions on the view that oil prices are temporarily high and will revert to prior lows when the turmoil subsides. Consumers have simply ignored for too long that rising worldwide demand will keep oil prices at a permanently higher level. To be sure, record low interest rates and deep discounts on new vehicles have also played a critical role in encouraging this divergence. Fortunately, there is still time to reverse this underlying misperception without an accompanying national crisis. Consumers need to be encouraged to adopt more realistic views of the energy market so they can gradually bring their purchases in line with higher future energy prices.

The adjustments by consumers need to be gradual and need to begin as soon as possible. If consumers should suddenly change their views and expect permanently higher oil prices, the more rapid adjustment in their spending could have a substantial negative impact on the overall economy. Moreover, the basic misperception has made consumers more vulnerable to another round of sharp increases in the price of oil. It is thus important for consumers to develop a more accurate understanding of the global energy market and begin to adjust their behavior without any more delay.

## **Gas Prices**

To gain some perspective it is useful to review the history of energy prices. This analysis is based on the price index for energy from the Consumer Price Index (CPI-u). The first thing to note is

that from the 1950s through the 1960s the cost of energy remained unchanged. Indeed, the first substantial increase occurred when OPEC imposed an oil embargo on the U.S. on October 17, 1973 (see Chart 1). To say the least, the embargo and subsequent sharp rise in prices were a shock to policy makers and consumers alike. President Nixon immediately initiated a series of emergency measures, including extending daylight saving time, a ban on Sunday sales of gasoline with gas purchases limited to ten gallons on other days, private companies were asked to trim work hours, and consumers were asked to turn down their thermostats at home and engage in other voluntary conservation measures. The negative impact on the economy was huge. Car sales, for example, fell by 23% in 1974.

The embargo and price hikes were shocking because the U.S. economy had become accustomed to an uninterrupted source of cheap imported oil. Moreover, the 1973 experience was widely interpreted by consumers to mean that gas prices would be permanently higher—even as economists proclaimed cartels were inherently unstable.

An even larger increase in oil prices was recorded in 1979; gas prices tripled compared with the doubling of prices in the earlier instance. Most consumers thought that the second round of price increases also represented a permanent rise in prices. Importantly, in both instances consumers adjusted their spending habits and increased their savings. Although the large price increase caused a proportionately larger economic disruption, the second increase did not produce the same shock among consumers. Indeed, the focus of the public debates shifted from shock toward blame, as many thought the country could have done more to prepare for such an outcome.

Given that the 1973 embargo occurred in the aftermath of the war of Israel with Egypt and Syria, and the 1979 hike followed the Iranian revolution, as soon as Iraq invaded Kuwait in August of 1990, consumers immediately concluded that gas prices would quickly rise as a result. This situation acted to reaffirm the association between turmoil in the Middle East and changes in oil prices. Consumers, however, came to a uniquely different conclusion about the permanence of the price increase: rather than a permanent increase, the runup in gas prices was expected to be quickly reversed at the conclusion of the war. This new view was confirmed shortly after the end of the war in early 1991. Moreover, consumers began to view OPEC as a diminished power, especially after its virtual collapse in 1986. Prices were then expected to simply reflect the relative stability or turmoil in the Middle East. The oil trader's risk premium was the price driver, not the strength of worldwide demand.

Subsequent changes in energy prices over the 1990s acted to confirm consumers' views about the greater variability of oil prices. The month-to-month percentage change in energy prices has shown much greater variance in the late 1990s up to the present time (see Chart 2). Rather than anticipating permanent increases, consumers were more likely to expect temporary spikes. As long as consumers viewed the price hikes as transitory and likely to be reversed, only temporary adjustments to higher prices were needed. Such adjustments were more likely to come from lower saving than changes in spending habits. Moreover, even in the face of rising energy prices, consumer preferences for SUVs or McMansions, for example, could remain high, or even increase, given that energy prices were and still are expected to fall back to their prior lows in the future.

It is worth again emphasizing that the other aspect of energy price expectations did not change even to this day: consumers still view turmoil in the Middle East as the primary reason for sharp swings in oil prices. Moreover, it is because of this presumed link that consumers anticipate that higher gas prices will be a temporary rather than permanent. Quite simply, consumers think that as turmoil ebbs in the Middle East, oil prices will revert to their former lower levels.

Unfortunately, there is another more compelling hypothesis: the increases in gas prices reflect greater international demand for oil, notably by China and other Asian countries. This mistaken

association of Middle East turmoil and changes in oil prices may be as old as the first oil embargo in 1973. My colleague Bob Barsky has long argued that instead of turmoil in the Middle East, higher worldwide demand has been the root cause of rising oil prices in the 1970s as well as more recently. Rather than exogenous shocks to the economic system, it was simply higher demand driven by endogenous economic factors. OPEC's power to raise prices is highest when worldwide demand is strong, and lowest when worldwide demand is weakest. Thus, while turmoil may have strengthened the will of OPEC members, it was not willpower but the peaks in worldwide demand that enabled the increases in oil prices.

If the recent hike in oil prices reflects a permanently higher demand, the longer consumers base their decisions on the expectation of temporarily higher gas prices, the greater corrective actions will ultimately be required. The disruption to the overall economy will be greater if there is a sudden change in this expectation rather than a gradual adjustment. In some respects, the situation is like the irrational exuberance surrounding the stock market boom in the late 1990s. It continued and gained momentum despite the fact that it was well known that it could not last. Simply identifying the risks may not be enough to change the perception of consumers.

## **Real Gas Prices**

This overall line of reasoning, which I believe to be essentially correct, prompts conclusions by some that are a bit too extreme. Consumers react to the real price of energy, its price relative to the prices of other goods and services. To estimate the real relative price of energy, the CPI energy component was divided by the total CPI less energy. From 1960 to the mid 1970s, energy prices were falling in comparison to other prices, and following the second OPEC hike in 1979, relative energy prices have fallen to a considerable extent (see Chart 3). Indeed, by the start of 1999 real energy prices were relatively cheaper than anytime in the prior forty years. It is these relatively cheap energy prices that paved the way for the larger and lower mileage vehicles.

The swings in real prices since the 1999 low primarily reflect worldwide demand, although some of the variations also reflects the recent turmoil in the Middle East. Following the steep rise in prices from early 1999 to mid 2001, prices again fell back toward the record lows by early 2002, in part due to falling demand following 9/11. The small spike in early 2003 was largely due to the risk premiums added by traders just prior to the start of the war with Iraq. Unfortunately, consumers' interpretations of these variations have heavily favored terrorism and turmoil rather than higher demand.

The very common observation that gas prices would need to be above \$3 per gallon to be comparable to the relative cost of gas after the 1979 increases can be demonstrated by these data. Thus, gas prices are not at peak levels—at least not yet. It is useful to remind ourselves that \$3 gas would return us to the worst of the past, and we have now entered a zone of greater vulnerability as gas goes above \$2 a gallon.

## **Consumer Interpretations**

I must admit that I do not have conclusive proof of my overall thesis that consumers have misjudged the root causes of the recent rise in energy prices and have therefore misjudged the needed adjustments to their spending and saving plans. Unfortunately, I did not directly ask consumers about this issue. Nonetheless, how consumers understand and react to changes in energy prices can be indirectly assessed by their references to energy prices in three key areas: their views of vehicle buying conditions, their evaluations of future prospects for their personal financial situation, and the impact of

gas prices on their overall inflation expectations. The data on consumer attitudes and expectations come from the University of Michigan's Surveys of Consumers.

My thesis does not imply that consumers are unaware or unconcerned about oil price increases, only that consumers think the recent price increases will be temporary. One of the best indications of concerns about oil price hikes is the frequency that those price increases are spontaneously mentioned by consumers. All respondents to the surveys are asked for their assessment of overall buying conditions for vehicles, and then asked to describe in their own words why they held their views. Chart 4 shows the proportion of consumers that spontaneously mentioned the price or availability of gasoline. The first two oil price increases in the 1970s had a nearly equal number of references. I do not find this unreasonable since the first instance also included an embargo even if the second price increase was much larger. The instances in the early 1990's and early 2000's were also nearly equal, and so was the real relative price of oil. That the frequency of references was much lower despite much higher nominal prices indicates that consumers sensibly pay attention only to the real relative price of gasoline.

Changes in the price of gasoline have affected vehicle sales in the past. A comparison between the annual change in gas prices and consumers' evaluations of vehicle buying conditions is shown in Chart 5. An index was formed for the vehicle buying conditions questions by taking the difference between the percent giving unfavorable replies minus favorable replies plus 100, which is the inverse of the usual procedure to make the comparison with gas prices easier to discern. In the 1960s, the cycles in this question were unrelated to gas prices, but from the 1970s to the 1990s the correspondence is clear. It is of course not exact, since the price of gas is but one element that shapes the timing of vehicle sales. More recently, however, there was a complete disconnect between vehicle buying attitudes and gas prices. Indeed, in these years vehicle sales recorded all-time peaks, along with surging sales of larger and less fuel efficient vehicles. This is consistent with the view that consumers did not anticipate the gas price increases to be permanent.

Additional evidence includes the fact that temporary price hikes can be anticipated to have a diminished impact on overall inflation expectations. A comparison between consumers' year-ahead inflation expectations and the annual change in the energy price index indicates a rather close correspondence in the earlier years and a more or less complete disconnect recently (see Chart 6). To be sure, the correlation is hardly exact, even in the 1970s, given that energy is just one component of overall inflation. Nonetheless, the large spikes in energy costs are closely reflected in inflation expectations. The decline in energy prices in 1986 is not fully reflected in inflation expectations, although for most of the period up to the end of the 1990s the average levels of energy and overall inflation roughly correspond. It is only more recently that the data indicates a rather complete disconnect between the two series.

To be sure, there are other hypotheses about why energy price increases should not be expected to have an impact on the future rate of inflation, such as the small weight in determining the overall rate of inflation. It is unreasonable to expect, however, that the proportion changed so much during the past few decades in the view of consumers so as to cause such a major shift in their perceptions.

The same general pattern is true for the correspondence between energy prices and consumers' personal financial expectations (see Chart 7). Each household is asked for an assessment of their financial situation, whether they expected their personal finances to improve or to worsen during the year ahead. An index was formed by taking the difference between the negative and positive replies plus 100, the inverse of what is usually done so that it would correspond with gas prices. There was broad agreement between the two series over most of the time period except during the past few years. In particular, the same disconnect between personal finances and energy prices occurred since about

the year 2000.

Some might be tempted to interpret this data as indicating that energy prices are simply not viewed as an important determinant of household finances. This interpretation stands in sharp contrast to the complaints recorded in the survey about the burden caused by higher energy prices. It is more likely that consumers simply expected high energy prices to be temporary.

Overall, what each of these examples clearly indicate is that the persistence of high oil prices has not convinced many consumers to change their views. People naturally resist change, and these views appear to be deeply held despite the ultimately high cost of poor decisions. I should add that consumers are not alone as many other elements in our society hold the same biased views and have made inappropriate economic decisions as a result.

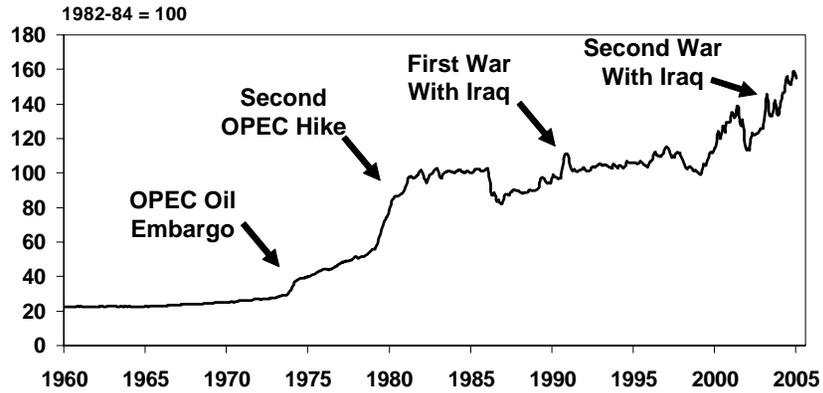
## **Conclusion**

With the price of gas now heading toward new all-time peaks, you may think that we have finally reached the time of reckoning for consumers. Higher gas prices are likely to cause what consumers will claim are unexpected hardships in the months ahead, and these added costs are likely to be even more difficult to overcome than in the past year since consumers now have less financial latitude. When gas prices first went above \$2 last year, consumers still purchased record numbers of vehicles and homes. Their adjustment to higher gas prices was concentrated in reducing smaller purchases and by cutting the rate of their saving to a seventy year low. These purchase decisions were made despite the rather large burden of rising gas prices, estimated at \$38 million dollars a day for every one-cent increase in the price of a gallon of gasoline.

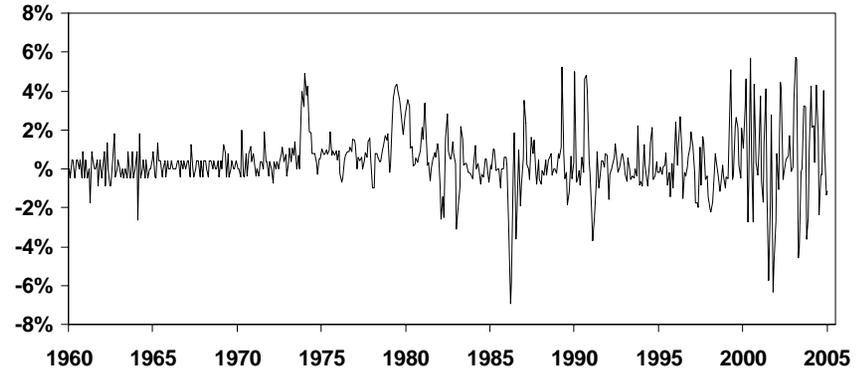
The challenge is for consumers to gradually realign their spending with the recognition that energy prices will be higher due to rising worldwide demand. Consumers need to change fast enough to limit their financial vulnerability but slow enough so as to not disrupt the entire economy. It is unlikely, however, that consumers will suddenly decide to follow such an optimal path. It is more likely that consumers will grudgingly learn about the primacy of supply and demand in setting oil prices through a repeated series of price shocks. This will not be an easy task since oil prices will continue to show a good deal of variation, making it difficult for consumers to separate cyclical from secular price trends.

All economists want to end their discussion with a proposed solution to the problem that was identified. Unfortunately, there is no regulation that can immediately fix the basic perceptual problem. The dull facts of our global economy are no match for the vivid and salient images of war and terrorism. In the absence of some dramatic and transforming event, it will take a considerable amount of time to change beliefs and influence behavior. Fortunately, since real oil prices are still well below the crushing levels recorded a quarter century ago, consumers have the needed flexibility to manage the transition to potentially higher gas prices as well as maintain their spending to insure a robust and expanding economy.

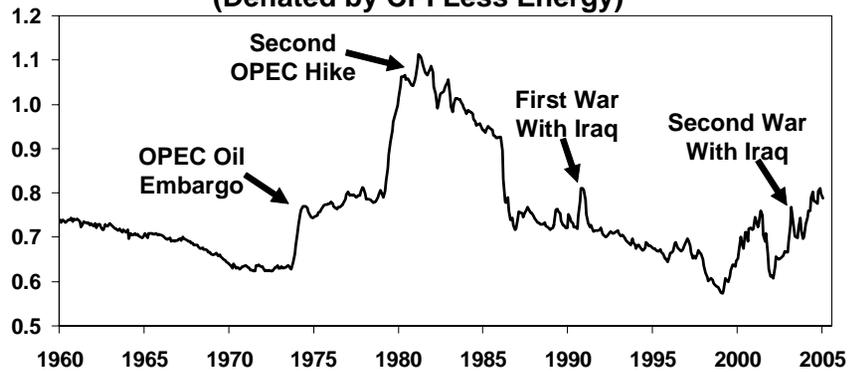
**Chart 1**  
**Energy Component of Consumer Price Index**



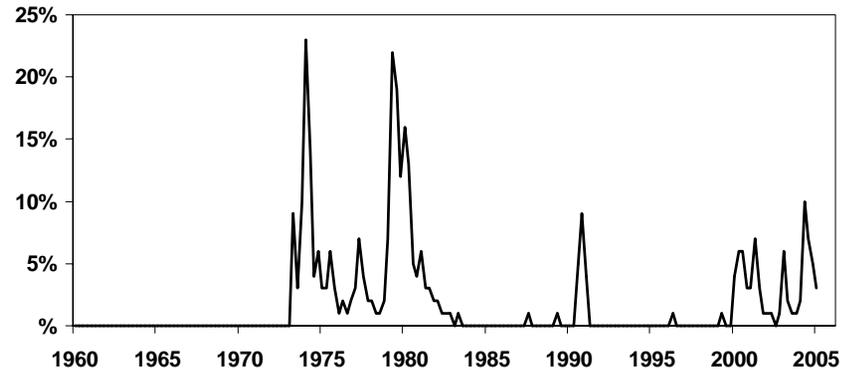
**Chart 2**  
**CPI Energy Component**  
**(Monthly percentage change)**



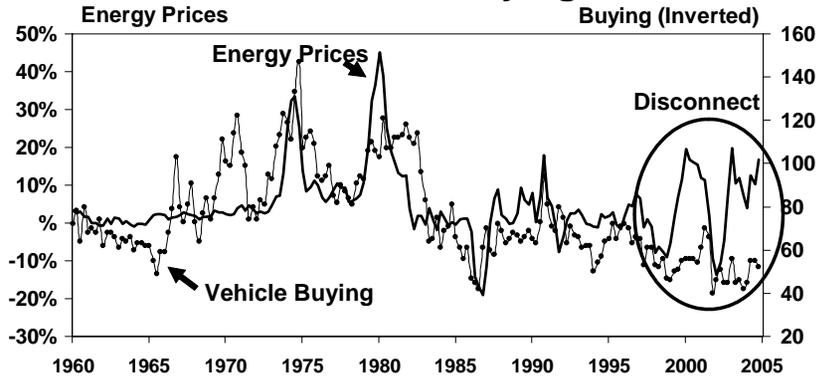
**Chart 3**  
**“Real” Energy CPI Component**  
**(Deflated by CPI Less Energy)**



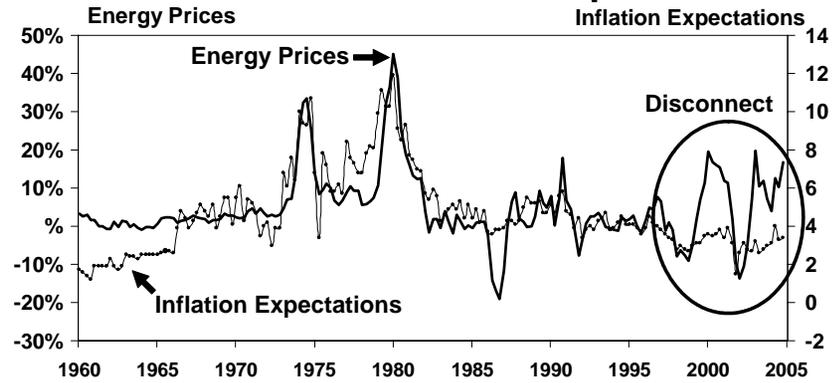
**Chart 4**  
**Consumers’ References to High Gas Prices**  
**In Evaluations of Vehicle Buying Conditions**



**Chart 5**  
**Annual Change in Energy Prices and**  
**Evaluations of Vehicle Buying Conditions**



**Chart 6**  
**Annual Change in Energy Prices**  
**And Consumers' Inflation Expectations**



**Chart 7**  
**Annual Change in Energy Prices and**  
**Consumers' Personal Financial Expectations**

