
The True Price of a Hybrid

BY PAUL CWIK

Prices are amazing. They are only little numbers, but they are so very useful. An economist will tell you that prices are the relative scarcities of items measured in monetary terms. The average businessman, if he ever really thinks about them, might say that they indicate which resources to use and which to avoid. Prices help answer the entrepreneurs' questions "Should we increase or cut back on the use of an input, and to what extent?" Prices communicate to entrepreneurs incredibly valuable information about which combinations of resources they should use. They allow entrepreneurs to coordinate their actions with one another. (As FEE founder Leonard Read explained, we know that it is only through the price system that we can make a pencil.)

Prices enable the producers to satisfy not just random wants and desires of consumers, but they show the entrepreneur which wants and desires are most urgent. They help consumers ration goods; they stop people from taking too much. They allow each of us to adjust our own personal plans and integrate them into the greater whole. All this is done without a central planner. No one person, computer, or government bureau can set and then constantly adjust prices better than the market. Additionally, the price is itself economical. It is just a single number. Yes, prices are truly amazing.

Perhaps the most important aspect of the price system is that it is the mechanism by which we are able to calculate efficiency. To make an economy function efficiently, we need to be able to compare the relative scarcities of all the different goods and services in an

economy. Without such knowledge, we have economic chaos. Prices allow us a basis of comparison.

How do we measure the scarcity ratio between apples and oranges without a common denominator? In a barter economy with two goods, there is only one ratio that needs to be considered. In an economy with three goods, there are three ratios. With four goods, there are six ratios; and with five goods, there are ten ratios. In a complex economy like ours, there are too many ratios to count.

However, in an economy that uses money, all we have to do is compare prices. They quickly show us the relative scarcities. If the price increases, the item is becoming scarcer. Not only does the price tell us if the item is becoming more or less scarce, it also tells us by how much. A 1 percent change is different than a dou-

bling of the price. Since each item's relative scarcity is expressed as a price, no one has to know all the relative scarcities of the various inputs unless he wants to look. In a world of barter, I would need to keep in my head the relative scarcity ratio between my toothbrush and magnesium. In a world of prices, we don't have to know the price of magnesium unless we want to know. By simply looking at prices and comparing costs, entrepreneurs are able to calculate economic efficiency.

Suppose an entrepreneur wants steel in his production process; he would have to bid it away from an

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already profitable use—its opportunity cost. When every factor of production is devoted to its most profitable use, the economy is running efficiently and consumers are getting the goods they value most highly. Suppose that an entrepreneur has an idea for a new business. He would then look to see if the price at which he could sell the good on the open market would exceed the costs. If it would and he could make a profit, then he'd start the business. However, if it looked as though he wouldn't be able to cover the costs, then the market would be telling him that the resources were currently employed in a more efficient manner and that he shouldn't divert them to his idea. If he did, the resources would be employed in producing goods consumers would find less useful. It is this mechanism of economic calculation that is too often overlooked, especially when it comes to matters of environmental economics.

Environmentalists say we need to take account of the true cost of driving. That is absolutely true. However, that means the *full* cost, which includes the unseen alternatives forgone. Durable goods yield services through time, and when considering the costs of such goods, we need to discount future values. This is necessary to get the true value of the good, because present goods are more valuable than future goods.

To explore this concept, I came up with a problem: calculating the true cost of a hybrid car. This is basically an annuity problem. You have a large upfront cost followed by a slow and steady stream of cash into the future. So the real question is, how long will it take for the savings from the hybrid's fuel efficiency to make up for the upfront costs?

Let's look at the popular 2007 Honda Civic Sedan Hybrid and compare it to the nonhybrid version. The Civic Sedan's average price is \$17,760; the hybrid's average price is \$22,600, a \$4,840 difference. Next we need to check the miles per gallon claimed for each car. The

Civic Sedan gets 35 mpg, the hybrid 50 mpg. If the average person drives 15,000 miles per year, then the savings is 128.57 gallons a year, or \$424.28 a year (assuming gasoline at \$3.30 per gallon). Before we discount for the future, we see that it will take over 11 years to make buying the hybrid worthwhile. When we include a reasonable discount of 3 percent, the number grows to 14.5 years.

How can this be? Is it a simple rigging of the numbers, or is this the case with all hybrids? I have compared these 2007 models: Honda Accord Sedan, Ford Escape, Toyota Camry, Toyota Highlander, Nissan Altima, Saturn Aura, Saturn Vue, Lexus GS Sedan, and Lexus RX 400h with their respective hybrids. Under the best assumptions of 15,000 miles a year, a discount rate of 3 percent, and gasoline prices of \$3.30 per gallon, the best hybrid was the Saturn Aura, with five years till payoff, and the worst was the Lexus GS Sedan, with over 100 years. (See table.)

“Dust to Dust”

When comparing the environmental footprint of a hybrid with a nonhybrid vehicle, we need to look at the total picture, the footprint from “dust to dust.” The costs

Model	Price Differential	\$ Saved per Year	Number of Years
Saturn Aura	\$1700	\$408.57	5
Lexus RX	\$3780	\$736.69	5.5
Toyota Highlander	\$4375	\$572.06	9
Ford Escape	\$5821	\$674.55	10
Toyota Camry	\$5225	\$467.61	14
Honda Civic	\$4840	\$424.28	14.5
Saturn Vue	\$5395	\$342.44	22
Honda Accord	\$7740	\$448.97	24.5
Nissan Altima	\$7440	\$380.75	Over 25
Lexus GS Sedan	\$10750	\$112.07	Over 100

of the resources and the costs of disposal need to be compared to the benefit from the use of the vehicle. A hybrid car uses gasoline and an alternative power source, such as a battery.

There are some nasty chemicals that go into making these fuel-efficient cars that also create some nasty waste byproducts. So the disposal of the batteries also needs to be taken into account; this phase is also a part of the total “ecological footprint.” While hybrids may be more fuel efficient in terms of gasoline consumption, there may be offsetting effects in the creation and disposal of the battery. And if we are considering a completely electric car, then we also need to consider the generation of the power to the outlet when we plug it in the wall.

When the full picture is examined, hybrids do not look quite as good as the environmental lobbyists would have us believe. According to the “Dust-to-Dust Automotive Energy Report” by CNW Research (<http://tinyurl.com/2h976h>), the average energy cost per mile for the top ten hybrids (2006 models) is \$3.65. The average for the industry is \$2.95. (I happily report that my Chevy Monte Carlo is \$1.61 and my wife’s Saab 9-3 is at \$1.64 per mile.) The Prius, Civic, Accord, and Escape hybrids are \$2.87, \$3.40, \$3.42, and \$3.54, respectively.

To efficiently use resources, we want the best combination of least-cost technology. Suppose a family is growing and badly needs a bigger vehicle. Surely a hybrid would be better than a minivan or SUV, right? Don’t run out to the hybrid dealer just yet. The average energy cost for upper-midrange SUVs like the Hummer H3, the Saab 9-7X, and the Range Rover Sport is \$2.43 per mile, well below the hybrids, and the average for minivans is even better: \$2.23 per mile. If we want to be good to the environment, we

need to use resources wisely. The price system shows us how to act so we don’t waste resources. When people naturally minimize costs, they are conserving resources. No governmental interference is necessary.

Some of my students point out that a tax credit helps offset the price differential of a hybrid, thus lowering

the cost to the owner. While true, the credit doesn’t negate the evasion of the economic-allocation problem. It merely masks it. Just because the consumer does not bear the burden of bidding resources away from more profitable uses doesn’t mean those resources aren’t being misdirected.

Environmental economics is a fascinating field. It attempts to assure that people confront the full costs of their decisions about what to produce and what to buy. Better than any govern-

ment bureau, the price system communicates which methods of production are least costly. If we want to be environmentally friendly, all we need do is follow the market and compare total costs. The market abhors waste.



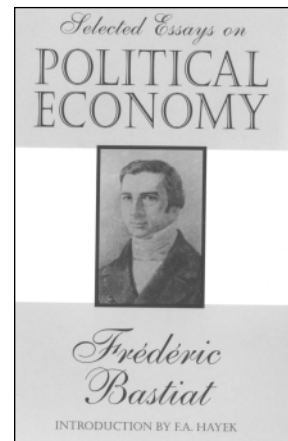
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