

Market Perspectives

Why is there a flu vaccine shortage?

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Introduction

This autumn we've seen several news stories about a shortage of flu vaccines. The more depressing versions proclaim a "failure of markets" and a call for more government intervention to solve the problem.

We can only hope that these positions come from a failure to comprehend the nature of markets and the role of government in a free society. This lack of understanding can sometimes bring tragic results: several weeks ago in California, a 79-year-old artist named Marie Franklin stood in line outside a Lafayette Safeway with her husband waiting to get a flu shot. It was such a long wait that she grew faint, fell, hit her head and died. If the free market had been allowed to work, this tragic accident might have been avoided.

The flu vaccine market

According to the Washington Post, the number of companies producing vaccines for the flu has steadily decreased: from about a dozen thirty years ago, to four producers five years ago, down to two presently: Aventis Pasteur and Chiron. Wyeth exited the market last year after losing \$50 million. Why are companies dropping out of this \$6 billion market?

Producing flu virus vaccine is complicated and expensive:

- The virus mutates rapidly and any vaccine created this year will be worthless next year. That makes for a big penalty in producing too much. In the last five years, over 37 million doses were not used and had to be thrown away.
- Vaccine is created by injecting the flu virus into fertilized chicken eggs. Each egg must be hand inspected and hand injected. Given that the demand for shots is forecasted in the tens of millions, that is a very expensive process.

Producers must charge a price that both covers their cost and provides for a margin of profit. The government keeps the price of flu vaccines artificially low because, through Medicare and other agencies, it is by far the largest buyer and commands forced discounts (a result of the 1993 "Vaccines for Children" legislation). It also issues threats of prosecution through press releases and other means to those who attempt charging higher prices.

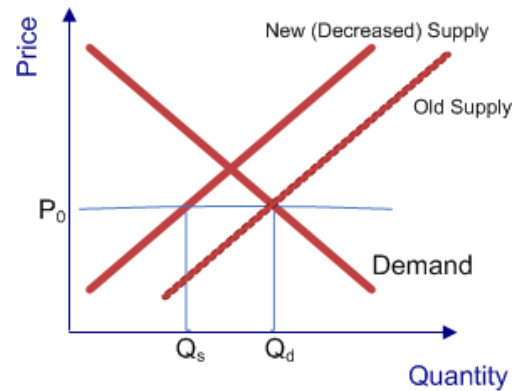
One of the two remaining firms in the market, Chiron was forced to shut down its UK-based plant due to contamination and quality control concerns by regulators, effectively taking half the supply of vaccines out of the US market. This caused the shortage.

What is a shortage?

While scarcity is a given, a shortage is not. Scarcity simply means there is not enough of something available to satisfy everyone when it's free – that is a fact of life. A shortage exists when there are people who are willing to pay the price for something but can't find it.

Buyers want more of something at a low price and less at a high price. Sellers want to supply more at high prices and less at low prices.

If half of the supply for vaccines is removed from the market (in the accompanying chart, shifting the supply schedule from “old supply” to “new (decreased) supply”) but the price (P_0) is not allowed to reflect this new reality of increased scarcity, demand will stay the same and consumers will experience a shortage – because the quantity of flu shots demanded (Q_d) will be greater than the quantity of flu shots supplied (Q_s) at that price (P_0).



I apologize for the Economics 101 flashback I just induced... at the risk of digging a deeper hole, here's another less technical pass:

When something is “scarce” it means that adding up how much everybody wants of it amounts to more than there actually is – and scarcity is pretty much the name of the game for any resource that we care about. Our desires exceed our ability to fulfill them. Reality constrains us.

Prices play a crucial role in managing scarcity by allowing each of us independently to determine how much we want of something *given how much others want to have it as well*. A market pricing system is a messenger. Absent fraud or government manipulation, it is like a telepathic broadcasting system – summing up all the dispersed knowledge and infinitely diverse desires of each and every interested person into one simple message: “I am cheap” or “I am expensive” relative to your other alternatives right at this moment.

Knowledge is the scarcest resource of all – and none of us has any way of knowing how much others desire a resource or whether their use of it is more valuable than ours. Except, that is, for prices. Prices super-economize on knowledge by forcing each of us to independently assess our private circumstances – unknowable to anyone else (sometimes not even to ourselves) – and “put our money where our mouth is.”

Imagine the chaos created when the pricing system's message is distorted to give the impression that something is cheaper than it really is. People who would otherwise have passed on it now actively seek that resource at the new (incorrect) price. Producers who would otherwise have supplied the resource now (incorrectly) assume they can't make money by selling it and withhold supply making less available.

When more are demanding than supplying due to a distorted price signal broadcasting that something is cheaper than it really is – that is a shortage.

So what's the problem?

Government, being the dominant buyer (through the “Vaccines for Children” Act, the CDC and Medicaid) and having the ability to use alternative means to coerce producers to keep prices unprofitably low, interferes with the free market price mechanism. Because of this, many companies have simply given up and left the game (most people don't like to lose money). This created a situation where there were only two remaining suppliers – which in turn allowed for the possibility of a sudden and unexpected supply shock.

A free market could have quickly resolved the shortage to avoid the lines which led to the death of Marie Franklin: its evolutionary trial and error process would have exerted tremendous creative powers on producers and consumers to insure that scarce resources were allocated efficiently to those who valued them most.

As prices are bid up, consumers are encouraged to conserve: healthier, not-at-risk individuals who were perfectly happy to pay \$6 for a flu shot will consider different alternative uses for their money at a price \$25 or \$50 (i.e. their opportunity cost went up). At the same time, entrepreneurial firms are encouraged to get into the game because they see an opportunity to

make profits. This will tend to stabilize supply and eventually create downward pressure on prices.

Allocating to those that value it highest? How is that fair? Sounds like the rich get it and the poor don't!

Who gets to decide what "fair" means? And fair compared to what? Flu shots are scarce right now – and scarcity implies competition – and *any* competition requires discrimination. There are many possible forms of competition and government plays an important role in selecting the rules of the game which shape our incentives and determine how discrimination will occur.

Violence is one obvious and unappealing option: this discriminates on the basis of strength and willingness to do harm. Another way to compete for resources is to hold contests like pageants, races or spelling bees and discriminate based on looks, speed, wits, etc. Free markets discriminate using prices and willingness to pay.

There is always a small minority that is marginalized in a society that utilizes a free market system. There would be many more in a system that competed on the basis of physical beauty, strength or intelligence. Designing social programs to aid those at the margin is *much* easier, effective and efficient than doing it for everyone!

Regulating low prices sounds good, but it's trickery...

Keeping prices low always seems nice from the consumer's perspective – lower cost means more savings, more money left in our pockets to buy other things. When prices are kept low by law or by other coercive means, consumers pay in other indirect ways: waiting in long lines, or being discriminated against – by their age (elderly are preferred), group affiliation (healthcare workers are preferred), and so on.

This seems to make sense. Reasonable people can see that the intent of making sure certain groups get the vaccine before others by "fiat" (a decree or law) rather than market preference is a noble idea. The problem is always in the implementation – how do you move supply from where it is produced to where it is most needed? There aren't enough experts to figure that out in a reasonable amount of time – there are too many details, too many subjective preferences among individuals, too many nuances of need to make good decisions from afar.

And it also ignores the other half of the equation. If prices are managed, what incentive is there for producers to make more vaccine? What will attract talented entrepreneurs and creative people who would find innovative ways to improve on the current manual methods and find more effective vaccine?

Questions for consideration and further information.

There are no solutions in this world, only tradeoffs. The free market remains the most effective way we know to efficiently allocate scarce resources to their highest valued use. Everywhere that free markets are allowed to work we see boundless creative energy. Governments are crucial to that process by defining and enforcing the rules of the game. When they go beyond that by trying to pick winners among buyers and sellers, more often than not it generates unintended consequences that achieve the opposite of their well-intentioned goals.

- Ronald Reagan once said: "Government's view of the economy could be summed up in a few short phrases: if it moves tax it, if it keeps moving regulate it, if it stops moving subsidize it." Why would Aventis and Chiron stay in this market next year?
- Thanksgiving is a national holiday in the U.S., popularly celebrated at the end of November with a turkey dinner. If the supply of turkeys in a particular November turned out to be unusually small, do you think a turkey shortage would result? Why or why not?

[This question was used last time – but the principle applies here as well. Remember that scarcity and shortage are two very different things.]

- It's been said that the surest way to destroy a city, short of dropping a nuclear bomb on it, is to pass a rent-control law. Rent control is motivated by an honest concern for the well-being of low-income people. Can you anticipate the unintended consequences? If you read Sowell or Heyne below you will find interesting first-hand anecdotes.
- A young person getting ready to go off for college approaches you for advice: which professions should she consider and what fields of study? What would you recommend? What are your reasons? Does it have anything to do with the expected vibrancy / creativity of that field – is it affected by the potential upside for financial reward? Would your answer be different if it were your child as opposed to an acquaintance?

Some of the key mental models we use at Koch that were part of this paper:

- The role of prices, profits and losses.
- Subjective value
- Opportunity cost
- Role of government

Suggestions for further reading:

[The Economic Way of Thinking](#) - Tenth Edition; Paul Heyne, Prentice Hall 2003.

[Basic Economics – A Citizen's Guide to the Economy](#); Thomas Sowell, Basic Books 2004.

[MBM Models Collection](#); Charles Koch and Tony Woodlief (Available through the MBM Website).