

Ask: NUS Economists

Dynamic pricing in the new economy: Data up for grabs

Chua Yeow Hwee

For The Straits Times

Q Does dynamic pricing increase efficiency?

A Dynamic pricing has caught the attention of many Singaporeans as digital technology continues to disrupt traditional industries.

Consider the taxi industry. With the recent announcement by ride-hailing app provider Grab to offer taxi fares that vary throughout the day, it is timely to consider whether dynamic pricing is able to increase efficiency.

By charging different prices in real time, dynamic pricing seeks to address the mismatch between demand for and supply of goods and services continuously. It is made possible by technological developments. The proliferation of smartphones and big data means that consumers and producers now know more about each other.

Consumers have instant access to prices across different markets and producers have access to the unique tastes and preferences of individual customers.

Looking forward, as producers are able to implement price changes and gather data effortlessly, we would expect more industries to experiment with dynamic pricing.

However, it is uncertain whether this would lead to an optimal outcome in the long run.

Proponents of dynamic pricing argue that by charging different prices throughout the day, there would be an increase in efficiency. This allows producers to distribute scarce resources to a socially optimal level, keeping wastage to a minimal.

Indeed, dynamic pricing has the potential to reduce wastage in the economy. Consider a bakery that has some leftover bread at the end of the day. By setting prices at a discount, the bakery can sell the remaining bread that would otherwise not be sold. This would lead to an efficient outcome as both consumers and producers would be better off than before.

Furthermore, dynamic pricing acts as a signalling mechanism to allocate resources. In a free-market system, resource allocation is guided by the interaction of producer and consumer self-interest.

Self-interested consumers seek to maximise their utility while producers seek to maximise their profits.

In guiding producers on what and how much to produce, rational consumers will offer a high price for goods that are deemed to bring them high satisfaction. Rational producers will allocate resources to producing such goods, since higher prices will lead to higher profits.

Without frequent price adjustments, there would be a shortage at the prevailing price whenever demand outstrips supply. This would lead to queues and long waiting times, which would be frustrating for the consumer and costly for the economy.

Nonetheless, the above discussion is based on the assumption that there is perfect information. This is not always true.

The idea of charging different prices to different consumers at different times is not new. Firms with market power have always been able to charge higher prices whenever consumers are less sensitive to price changes. A cinema operator charging higher prices on weekends is a case in point.

In today's world of dynamic pricing, there is the issue of asymmetric information. Consider Uber, the world's largest transportation network company that connects users with drivers.

By collecting data from the devices of its users, it is able to identify the language, phone model and even the battery life of the mobile phones. Coupled with past records of users' willingness to accept higher prices, Uber has the capability to practise discriminatory pricing based on users' presumed ability to pay.

While Uber did not attribute using battery life as one of the factors to set prices, it is not divulging how prices are being set. Only insiders are aware of the algorithm used in dynamic pricing.

Consequently, we are unable to ascertain whether Uber has in fact made use of price discrimination based on data from users' devices or their past records in accepting higher prices. It is unclear whether they have benefited from asymmetric information.

Arguably, dynamic pricing also empowers users as they are able to accept or reject prices offered to them. However, the lack of transparency implies that they are unable to access prices that others are getting, and are unaware if they are being taken for a ride. With imperfect information, they are unable to make an informed choice.

Looking forward, one way to increase efficiency is to increase data transparency in the new economy. With the decentralised digital revolution, we could leverage on blockchain technology to match passengers with drivers without a centralised intermediary.

As a digital ledger that is accessible to everyone on the Internet, blockchain has the capacity to keep information secure and put the power back into the user. Without an intermediary owning the data, we can equalise the relationship between consumers and producers.

This would lead to disruptors being disrupted. In conclusion, it remains to be seen whether dynamic pricing would lead to higher efficiency. What is clear is that ownership of data would grow to become one of the most valuable resources in the new economy.

With more disruptions and shakeouts expected in the new economy, data is up for grabs.

• The writer is an instructor in the Department of Economics, National University of Singapore.

• This is a monthly series by the NUS Department of Economics. Each month, a panel will address a topical issue. If you have a burning question on economics, write to stopinion@sph.com.sg with "Ask NUS" in the subject field.