Interview with Prisma Magazine (Spain), October 2019.

CAREER
Ariel Pakes has played a key role in developing methods of calculating economic variables that are used by government agencies and private companies to improve their decision-making processes. Notable among his achievements are the Berry Levinsohn Pakes (BLP) approach to demand estimation and the Olley and Pakes approach to the estimation of production functions. He and his co-authors have applied these tools to the analysis of the auto, electricity, healthcare and telecommunications equipment industries.

BIO
Born (Edmonton, Alberta, Canada) in 1949, Ariel Stanley Pakes studied at the Hebrew University of Jerusalem before going on to attain a Ph.D in Economics from Harvard University in 1979. He received the Frisch Medal of the Econometric Society in 1986, and was elected as a fellow of the American Academy of Arts and Sciences in 2002, and of the National Academy of Sciences in 2017. Also in 2017 he received the Jean-Jacques Laffont Prize and in 2018 the BBVA Frontiers of Knowledge Award. In 2019 Ariel was appointed a distinguished fellow of the American Economic Association, and is the current Thomas Professor of Economics at Harvard.

Much of your research has focused on developing methods for empirically analysing market responses to environmental and policy changes. How does demand estimation work in practical terms?

The first question one might ask is how will the change affect prices. John Nash taught us that a reasonable approximation to what prices are likely to be is a set of prices at which each firm is earning the most profit it can given the prices of its competitors. The demand system tells us the response of purchasers to different prices and is needed to obtain the likely price response that this condition requires, and when tested it does pretty well. Similarly if we want to induce a change in a characteristic of a product, say by a tax on gasoline, the demand system would tell us how much consumers would be willing to pay for a higher mpg car, and that will be the inducement for the auto companies to produce them.

Demand systems have been used in many other way. For example I showed how to use them to correct biases in the consumer price index. The data for these indices are obtained from agents who are sent out to stores to sample items and then return to the same store to obtain a second price for the same item at a later date. For example if it is the TV component of the index, on the first visit the agent set will chose a TV and note its characteristics and price, and then look for that good at the later date. The TV component of the index will be an average of the price ratios from the two visits. Sometimes when the agent returns to the store, some of the goods that were chosen will not be on shelves anymore; usually because they had become obsolete and were replaced by better goods. These goods would be dropped from the index, but we know their prices were falling due to obsolescence. So if we were just going to average the goods that were on the shelves in both periods our average would omit the price falls of the goods not on the shelves and be biased upwards. We can use the pricing function and the demand system (or an approximation to them) to predict what the prices of the

goods that were not on the shelves in the second period and include the predicted price ratio in the index to mitigate the bias.

What do you make of calls for increased regulation or even the break-up of giant tech companies Amazon, Apple, Facebook and Google?

There has been a debate in the US around the causes and effects of the rise in mark-ups – that is the rise in the fraction of a firm's revenue that doesn't go to labour. The debate has also associated the rise in mark-ups with the fact that there is increasing inequality in the United States. Whether the increase in mark-ups is good or bad depends on why they are increasing. If they are increasing due to an increase in innovative effort and its success, without doing anything wrong, the mark-ups are a sign of a productive economy. Regardless of whether or not you want to regulate Google, Amazon or any of the other success stories, you certainly don't want them not to exist. What we do not want to do is stifle innovation. So perhaps the most important question to answer is whether regulation is needed to insure robust innovative activities; a question that is seldom addressed.

Are there other sectors where similar arguments can be made?

The pharmaceutical industry has been accused of charging outlandish mark-ups for many years. The marginal costs of most drugs is very small. The cost of the drug is primarily the cost of research required to develop it. Traditionally only a tiny fraction of the attempts to develop a drug resulted in a marketable product (the research process has been changing since the decode of the human genome but it is still exceptionally risky). The mark-up on successful drugs has to cover the research on the failed as well as the successful projects. There are drugs that earn a billion-dollars in mark-ups but to consider whether they are excessively profitable one has to consider the costs of the failed attempts as well as of the successful ones. At least if you use the "value of life" or of "morbidity" measures my health care colleagues use, there is likely no industry that generates more consumer welfare per dollar of expenditure than the pharmaceutical industry. Maybe there is some need to regulate the pharmaceutical sector, but killing the incentives for new drugs would be a bad idea. The problem at present is that the US, which doesn't regulate drug prices, is effectively paying for the healthcare in places such as Canada and Europe, where they have price-fixing mechanisms. If the costs and returns from drug development were spread more equitably between all markets in the developed world, we might see lower drug prices in the U.S.

Inequality has become a key concept in the political discourse in recent times. Why is it so difficult to solve in the 21st century?

I don't think anybody knows the real answer, but people can guess and I can guess too. What I think is that the development of human capital has become more important to industry. In every generations there is a technology and a set of companies that dominate. For a while it was autos, with General Motors, Ford and Chrysler. Then semiconductors came in. They now seem to be losing ground to Silicon Valley and to biotech. From the old manufacturing to today's high-tech industries, a lot more of the crucial inputs are human capital. So people with PhDs or those with a talent for chemistry or electrical engineering are getting paid very well. However they are also

generating very high returns to society. Maybe what we should be doing to obtain a more equal distribution is insuring every child has equal access to quality education.

How pessimistic are you about the impact that US protectionist policies could have on the economy?

Despite increased incentives because of tax changes under President Trump, there is a hesitancy among firms to invest. This because the future is uncertain. Uncertainty is bad for investment because the firm knows that if it wait for things to become clearer, it is less likely to make a mistake. The other impact of protectionism we are seeing is that it is changing supply chains. So it is going to take a certain amount of investment just to obtain needed inputs. If there is a change in the US administration, many things might be reversed quite quickly. What is really scary about what Trump is doing are the implications for climate change. Scientists tell us that it is very difficult if not impossible to reverse climate change, and so some of Trump's climate policies will be difficult to rectify.

Crédito y Caución (Altradius), the publisher of Prisma magazine, offers clients insurance for their commercial operations. How important is this kind of safety net for companies in today's world?

That's got to be a positive, in the sense that it decreases uncertainty – in particular the uncertainty over payment, which could be very important in countries where property rights are not as well defined and monitored. It makes it more likely that trade with these countries, which are typically poorer countries, will occur.

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