ECONOMICS OF AMERICA'S OPIOID EPIDEMIC: Lower price of opium increases prescriptions, death rates and drug-related crime

The United States is experiencing its most devastating health crisis since the height of the HIV/AIDS pandemic in 1995. In 2016 alone, the Centers for Disease Control and Prevention (CDC) recorded more than 63,600 drug overdose deaths nationwide, up five-fold since 1999. Two-thirds of these fatalities involved commonly prescribed opioids.

New research by **Claudio Deiana**, **Ludovica Giua** and **Roberto Nisticò**, to be presented at the annual congress of the European Economic Association in Manchester in August 2019, shows the extent to which the per capita dispensation of prescription opioids (PO) in the United States is affected by supply-side economic incentives stemming from variations in the world price of opium (that is, the raw material for producing opioid drugs).

Using quarterly data at county level for 2003-2016, the study documents that a 20 percentage point reduction in the price of opium in Afghanistan, the world's leading opium producer, increases per capita PO dispensation in the United States by 5 to 6 doses per quarter depending on the *ex ante* demand for analgesics in the county.

Moreover, the study shows that declines in the price of opium significantly increase per capita:

- Opioid-related death rates, hence suggesting that the increase in PO distribution may be due to over-prescription and, in turn, abuse of the pharmaceuticals.

- Drug-related crimes, thus highlighting spillover effects on the illegal drug market.

Taken together, the results of the study suggest that the rapid expansion in the use of PO in the United States in recent decades has been to a significant extent supply-driven. This implies that policy-makers should seriously reconsider the impact of the regulations on the marketing, promotion and dispensation of these substances.

Since the 1990s, pharmaceutical companies have promoted opioids heavily as a safe and effective treatment option, investing in major marketing campaigns, which mainly target health care professionals.

For many years now, physicians have been prescribing these drugs to more and more patients, including people not suffering from a terminal illness; and this notwithstanding the absence of any increase in patients' reported pain and the strong evidence of the risk of addiction and abuse associated with their prolonged use.

The new study provides evidence of an economic rationale driving the distribution of PO in the United States by showing that:

- Opium price shocks have an asymmetric effect on the quantity of opioids prescribed, depending on the importance of raw opium in the manufacturing process. Remarkably, most of the effect involves natural and semi-synthetic drugs, which are produced either by natural processes or by chemical modifications to opium, while for fully synthetic opioids, in which raw opium is not an input, no correlation with price changes is found.

- The stock market prices of opioid manufacturers, that is, pharmaceutical companies that have obtained FDA approval for opioid painkillers, benefit from negative opium price shocks. This indicates that a decline in the price of opium is associated with higher expected future profits for PO manufacturers. Moreover, negative changes in opium price significantly increase advertising expenses of opioid manufacturers, therefore suggesting that they do factor such changes into their business strategies.

- Increases in the market price of PO significantly increase per capita dispensation, which indicates an inverse relationship between the price of raw opium and the market price of opioid drugs. This suggests that the rapid increase in PO use is unlikely to be driven by changes in patient demand.

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