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Teaching economics behind the global COVID-19 pandemic

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The global COVID-19 pandemic has upended our daily lives in unprecedented ways. Several extraordinary economic events have occurred and have brought some intriguing and important questions to everyone's mind, creating an immersive teaching and learning environment. This paper shows how economic instructors may take advantage of this opportunity to educate their students with some key economic principles/theories using these COVID-19 related events. Integrating current events into economics instruction can stimulate students' interests and inspire them to think about the economics behind each event. The relevance and relatedness of these events can also boost students' motivation and engagement. This paper will foster reflection and discussion among economic instructors on how they may proactively connect what happens in the real world with what students learn in the classroom.

1. Introduction

The coronavirus pandemic has caused unprecedented disruption to everyone's life. The virus has spread to almost every country, infecting more than 10 million people in the United States and 50 million around the world[1] and it is still spreading at the time of this writing. Countries have taken significant measures to fight the spread of coronavirus. In the U.S., we have witnessed a series of extraordinary economic events. There were toilet paper shortages because of hoarding and profiteering. Schools, restaurants, and other businesses have been closed for an extended period of time. The U.S. government signed a massive $2 trillion stimulus package, the biggest economic stimulus in American history. The U.S. unemployment rate reached an all-time high since the great depression of 14.70 % in April 2020. Some industries (such as airlines, oil, and sports) have taken the hardest hits while some others have thrived (online retailer, collaboration technology, and remote learning, for example) during the pandemic. And most astoundingly, the benchmark price for crude oil in the United States settled at negative $37.63 on April 20, 2020.

Why were there shortages of toilet paper? How can the price of crude oil be negative? What is the implication of the historically high unemployment rate? Where did the $2 trillion for the stimulus come from? Will this massive stimulus to the economy lead to inflation? Why does the U.S. government want to reopen businesses when there are still tens of thousands of confirmed cases each day? These are very intriguing economic questions that may linger in everyone's mind. But the answers to these questions may not be readily available from the standard text or the Internet.

Economic events that occurred during the pandemic provide great teaching and learning opportunities for several reasons. First, these events are "tangible" and relevant. Everyone can "feel" the events and relate them to their daily lives. Relevance is important in the teaching and learning process because it is directly related to student engagement and motivation (Frymier and Schulman, 1995;

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Martin and Dowson, 2009). Second, these events are immersive[2] in the sense that everyone hears and talks about them during the global COVID-19 pandemic. Everyone is directly or indirectly impacted by these events. Learning through immersion can enhance education by allowing multiple perspectives, situated learning, and transfer (Dede, 2009). Third, these events are rare and extreme. March et al. (1991) document that rare events attract more attention, are scrutinized more closely, and are more likely to be "richly" perceived in terms of their significance. Therefore, teaching economics out of these rare and extreme events will have a long-lasting effect on learning.

In this paper, we provide concise explanations to some important economic events that may have been haunting everyone during the pandemic: toilet paper shortage, negative crude oil price, $2 trillion stimulus package, unemployment hike, and economy reopening. Our explanations are by no means the only ways to connect these events with economic principles. Instead, we intend them to represent a starting point from which parents and economics instructors can address these types of questions to their children or students. Additionally, we hope this paper will foster reflection and discussion among economic instructors on how they may proactively connect what happens in the real world with what students learn in the classroom.

2. Toilet paper shortage

We will take two approaches to analyze the shortage of toilet paper that corresponded to the beginning of the pandemic. First, following the standard free-market approach, shortages are said to be caused by government intervention in the market through price controls. Second, using a more holistic approach, we examine herd behavior and particular supply chain conditions that lead to the shortage. It should be noted that these are not necessarily mutually exclusive explanations. We simply desire to provide two ways to connect these events to unique areas of economic theory.

We begin by examining the economic theory behind a shortage using a supply and demand (S&D) model. Fig. 1a and b illustrate the toilet paper market dynamics and tendencies. We will describe the changes in the toilet paper market through a step-by-step explanation: the initial pre-pandemic equilibrium price, the significant increase in demand, the decrease in supply, and finally we introduce the concept of a price ceiling.

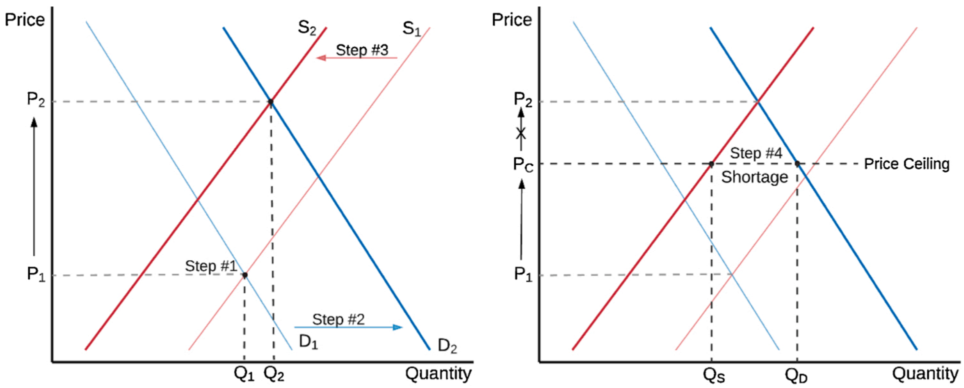
Step 1: We begin the S&D analysis by establishing the initial equilibrium point which is represented by the intersection point between the pre-pandemic supply curve (S_1) and demand curve (D_1), denoted by price P_1 and quantity Q_1.

Step 2: After the pandemic hit, market demand for toilet paper increased drastically, shifting the demand curve from D_1 to D_2. While the increased demand for household toilet paper is well documented, less known is the decrease in demand for commercial toilet paper – that is, the toilet paper found in large rolls used by schools, airports, and numerous other businesses. While consumers were busy storing household toilet paper, businesses were busy canceling orders due to the wide-spread closures of public spaces.

Step 3: At the same time as the increase in demand, supply challenges in the toilet paper industry caused the supply curve to shift from S_1 to S_2 as illustrated in Fig. 1a. The decrease in supply can be linked to a negative shock due to producers facing challenges of maintaining their pre-pandemic levels of production, as well as the unbalanced demand for different types of toilet paper – much higher demand for household toilet paper, and lower demand for business use.

Step 4: Within this S&D approach, a shortage[3] of a particular good occurs when the price of that good is below its market equilibrium level and quantity demanded (Q_D) is greater than quantity supplied (Q_S). This is because consumers are assumed to desire more of a good or service at lower prices (that is why the demand curve is downward sloping) and producers are assumed to supply a lower quantity to markets when the price is lower (this is why the supply curve is upward sloping). The question thus becomes: why isn't the price of toilet paper at its higher equilibrium level (P_2) The answer: a price ceiling policy prevents the price from increases past an established upper limit.

Regulations that restrict prices from moving upward are called price ceilings. A price ceiling in Fig. 1b exists at P_c; however, a price ceiling anywhere below P_2 would also cause shortages because those prices correspond to situations in which quantity demand (Q_D)



a. S/D for toilet paper during the pandemic. b. Toilet paper shortage due to the price ceiling.

Fig. 1. Supply and demand for toilet paper.