



Ziliang(Lewis) Tian

Aspiring data scientist with passion in its application in the world of business

Ziliang(Lewis) Tian is a Junior majoring in Data Science and passionate about its application in the world of business. As for academics, he is a detail-oriented person who enjoys taking on challenges and solving them collaboratively with other team members. His domain knowledge equips him with a data-driven way of thinking and the ability to do quantitative research. And he thinks it exciting to have an interdisciplinary study of data science and economics.

Watching a good movie with a couple friends or enjoying a good read has always been a great way for him to relax. In fact, one of his favorite reads is The Economist where he often finds those articles related economics intriguing, and that is one of the motivations for him to take this fundamental course on economics. He is also a football fanatic and a football player in the university football team, so feel free to join them or watch their games!

Email: ziliang.tian@dukekunshan.edu.cn
LinkedIn: www.linkedin.com/in/ziliangtian/

Incentive In Real Life



Ziliang Tian

An **incentive** is something that induces a person to act. Considering the concept of incentives can help alter people's behaviors for the common benefit of society. On the individual level, for example, before considering the concept of incentive, most of my decisions are purely driven by my desires, which led to procrastination and lack of motivation. Then the idea of incentive provides instrumental motivation for me to better accomplish a goal, so I would eat some snacks or watch 10 minutes of YouTube as a reward after studying for some time. Therefore, I'm incentivized to keep on studying toward the break. From a long-term perspective, my incentive for working hard is to make my family proud and achieve high socioeconomic status. These incentives are like the lighthouse for me to strive toward a promising future.



How Market Works

Round Table Conversations



Author: Ziliang Tian

Contributor 1: Weiran Li

Contributor 2: Zhiye Ding

Contributor 3: Ruohan Wang

Contributor 4: Yuqi Wang



Summary

Ziliang: The airline market faces a major crisis caused by the COVID-19 pandemic which led to travel restrictions that resulted in a significant drop in passenger numbers. Such outside shock has influenced passengers' demand and airline companies' supply, and analysis over such an evolving and fluid market requires considerations from more perspectives. To apply economic principles in real market analysis, our research question is: In such turbulent times under the COVID-19 situation, with a focus on demand/supply change, equilibrium change, and the corresponding quantity change, what impact does this shock bring to the airline market?; what measures can be taken to help revive the airline market in the future?

Zhiye: After conducting thorough research, we have come to the following conclusions:

1. The airline market change can be roughly described in three stages, namely “the panic surge”, “the forced drop” and “the new normal”, each of which has changed the equilibrium and quantity.
2. It is rather important for people to be visionary to make decisions ahead of time so that further troubles can be avoided.
3. The uncertainty underlying the airline market will not be eliminated unless global cooperation is made to keep the pandemic under control. Thus, collective effort proves to be crucial to maintain a good economic environment.
4. It's critical for governments to support the market's revival by, for instance, providing grant and loans, since the aftermath of disruption at such scale is difficult for any company alone to go through.

Yuqi: The airline market we are analyzing here and afterwards does not include manufacturers like Airbus and Boeing, though they are also affected by this pandemic. In other words, the airline companies are the supplier, and the passengers are the demander.



Conversations: Outside Shock

Ruohan: The airline market was steadily growing due to factors including increasing disposable income across the globe, the introduction of low-fare airlines, increasing global economic activities and new travel trends, etc. until the pandemic hit. Starting from as early as January of 2020, the COVID-19 pandemic has caused significant disruption in various markets, and the airline market is one of its worst-affected victims.

Weiran: In recent months, passenger air travel has come to a near standstill as a result of the need for social distancing and international travel restrictions to contain its rapid spread.

Zhiye: Interestingly, at the early stage of the pandemic, before the travel restrictions took effect, people were panicked to see the pandemic case suddenly skyrocket while there is nothing much to do to stop it, leading to a surge of ticket demand. For example, many Chinese studying in the U.S. was willing to pay tripled prices to get one ticket back home.

Yuqi: Airline companies around the world are facing extreme financial pressures and are cutting capacity at unparalleled rates in the absence of meaningful passenger demand. Some airlines have shut down completely, a portion of these may never return. Though the effort has been made attempting to boost the market, high volatility and risk underneath the global pandemic situation as well as its political implications are still major concerns for investors and passengers. The airline market may not recover until 2024, according to the International Air Transport Association, a trade group. A huge outside shock indeed.



Conversations: Supply and Demand Change

Ziliang: From my perspective, though the pandemic affected other industries such as the oil industries, which then affected the airline market supply, but here for the sake of simplicity, we consider such indirect effects negligible and thus the supply curve remained unchanged. There are three major stages of shifts of demand:

Weiran: 1. **The panic surge:** First, before the restrictions took effect, there was a sudden surge in ticket demand since people didn't expect the pandemic to be contained anytime soon. As a result, the demand curve shifts to the right. Also, it's worth mentioning that people's demand became rather inelastic at this stage due to their panic and concerns regarding health, so the slope of the demand curve increased.

Ruohan: 2. **The forced drop:** At the second stage, the restrictions and travel bans took effect, forcing the demand curve to shift to the left of the initial one, and the elasticity returns to its normal level.

Zhiye: 3. **The new normal:** At the third stage, the supply and demand gradually stabilized again. Though the demand had picked up slightly due to the loosened restriction, shifting the demand curve to the right, it is the uncertainty and volatility the pandemic brings that makes it so hard for the market to get back to normality (before the pandemic). For example, in June, after reopening some airlines for a short period, they are closed once again due to a surge of cases in the U.S. But this may as well be the new normal which the industry has to adapt to in this current situation.

Conversations: Equilibrium Price and Quantity Change

Ziliang: At the first stage shown in Figure 1, as a consequence of the change in demand, the quantity supplied (Q_0) didn't change at the very beginning, leaving the price skyrocket to P_1 ; but since there is a shortage, the airline companies quickly offered more seats, leading to the equilibrium E_1 . At E_1 , the quantity supplied increased from Q_0 and the corresponding price fell from P_1 to P_2 , which is still higher than P_0 . At the second stage shown in Figure 2, the demand was forced down by the travel restrictions, so the demand curve shifts to the left of the initial one, leading to the second equilibrium E_2 , which has lower quantity demanded, lower quantity supplied, and a lower price (P_3). At the third stage shown in Figure 3, the demand curve is kind of fluctuating, but still at the left of the initial curve. The quantity supplied and demanded as well as the equilibrium price are still well under the pre-pandemic level.

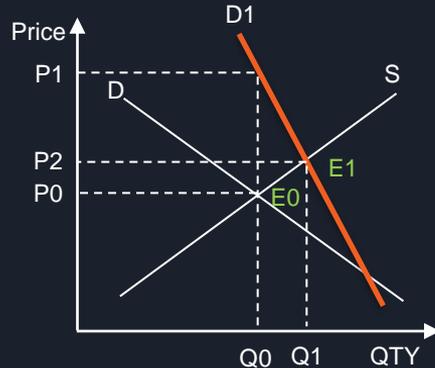


Figure 1



Figure 2

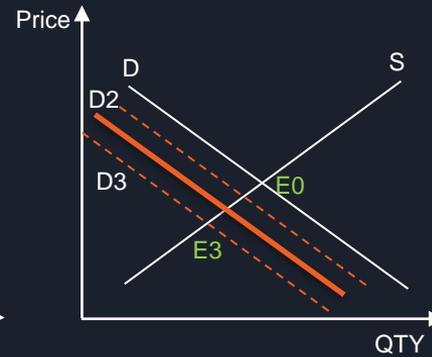


Figure 3

Conversations: Surplus

Ruohan: At the first stage, the producer surplus increases because the supply curve remains the same while the equilibrium moves to E1. Since the demand curve gets steeper but the equilibrium moves up, the consumer surplus is undetermined. It depends on the magnitudes of both changes. The total surplus is bigger because both the base and height of the triangle (total surplus) increase.

Ziliang: Then at the second stage, the producer surplus decreases compared to the initial stage. (E0 to E2) However, I think the consumer surplus is still undetermined because the shift of the demand curve moves the equilibrium. In other words, the triangles of consumer surplus are only similar but not possible to compare their areas. The total surplus drops because the large triangle is smaller compared to it at E0.

Zhiye: The third stage is similar to the second stage, where produce surplus decreases but consumer surplus is undetermined. The difference is that, in this case, both surpluses are fluctuating. But it is certain that the total surplus shrinks because the demand curve D3 is still left to the original one, D.

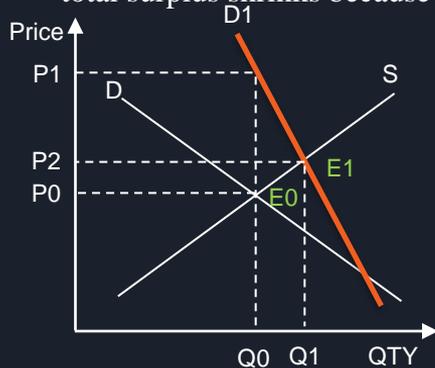


Figure 1

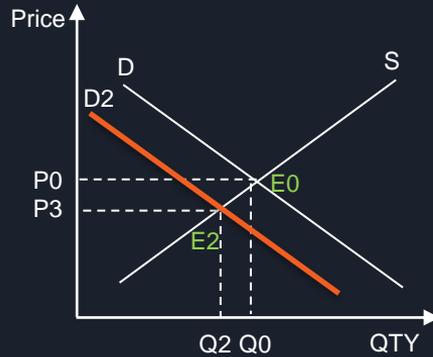


Figure 2

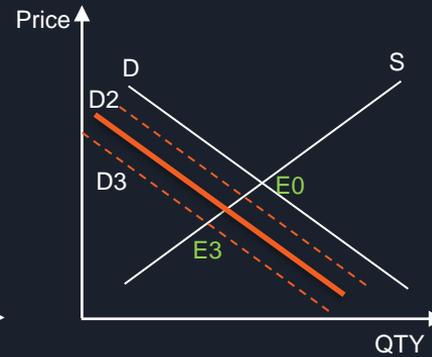


Figure 3

Bitcoin Electricity Consumption Visualization



[Figure Here](#)
[Post Here](#)

Beyond the volatility of the [#cryptocurrency](#) market as we recently saw, the underlying energy consumption and its impacts incurred by [#cryptomining](#) are growing ever more significant.

As a bit of background, cryptomining consumes lots of electricity because the miners are continually working to solve puzzles to verify transactions and get [#Bitcoin](#) as a reward.

Bitcoin Electricity Consumption (BEC) in TWh is an important measure to provide an insight into how much electricity is consumed by such an energy-intensive process. Thanks to the assistance from [Luyao Zhang, Ph.D.](#), we visualized the BEC data (annualized) to look at the trend of energy consumption for Bitcoin. Based on my observation, BEC has an overall increasing trend. There is a significant increase from late 2015 to June 2016, followed by a plummet. From mid-2016 to 2020, BEC smoothly increases with occasional fluctuations. This general increase in BEC contributes a great portion to countries' GDP. More importantly, it indicates a concerningly large amount of carbon emission from generating that electricity, which should raise awareness on the [#sustainability](#) of the field. And it requires collective efforts to deal with this issue. Governmental measures like imposing a tax on electricity price may be considered as well.



Reflection

Through this course, I learned how the economy work on both micro and macro level. I am able to examine countries' economic situation by looking at their measures like GDP and CPI. Also, I can see the underlying drives of the rising price of certain products by examining the market and consequences of outside shocks. Thinking as an economist to me means evaluating circumstances (like economy under COVID-19) in a logical and comprehensive way.

Although learning economics gives me clarity of how economies work and interact, it mostly helps my individual decision-making. Here are some of my essential takeaways:

- **Opportunity Cost:** Since resources are limited, I ask myself before I do something: what did you sacrifice to acquire it? Now I can expand my thinking beyond what's right in front of me. That helps me determine my choice's full "costs" and make better decisions.
- **Sunk Cost:** I used to feel regretful for past things like money I spent on unworthy things. Now I realize that I can't recover a sunk cost, and continuing to allocate time, money or effort toward something going nowhere fast is not worth it. But what's crucial is to be brave to get over it and strive for the next chance.
- **Marginal Thinking:** I should always compare the marginal cost and marginal benefit of doing something, whether it's studying one more hour or watching one more YouTube video. Then I'll be better off by maximizing my additional benefit.



Future Economist Perspective

Drives to Become an Economist

Economists harness the power of economics from two levels. If I were to be an economist, on the macro level, I could use scientific methods to gain insights on economic trends, then devise strategies to address ongoing issues in our world, such as poverty and outside shocks like COVID-19, and advise policies to develop the healthy global economy. From a micro level, I'll be able to make smarter decisions for myself, but more importantly, I can use my knowledge to help the underprivileged make decisions that could impact their wellbeing. In summary, it is the practicality and broad range of influence that economics has that intrigues and motivates me to become an economist.

My Nobel Prize Award Remarks

Nowadays, we are exploiting the limited resources for short-term benefits, leading to climate change that has long-term negative consequences. In other words, we are "robbing" resources from future generations. Thus, we are facing the **intergenerational inequality of resource distribution**. Since economics is about properly allocating scarce resources, I would like to address such issue mainly from a scope of long-term macroeconomics and sustainable economics. And I'll also examine the problem by combining ethics and philosophy on intergenerational justice to make the study profound and comprehensive.