

## Change in Students' Welfare during the COVID-19 Pandemic and the Shift to Remote Learning: The Case of BA in Business Economics Students at a State University Unit in Pampanga

Patrick C. De Leon

Associate Professor, University of the Philippines Diliman Extension Programs in Pampanga and Olongapo, Philippines, pcdeleon1@up.edu.ph

### Abstract

The COVID-19 pandemic has forced schools in the Philippines and abroad to shift to remote learning even without ample preparation. This unwanted scenario begged two questions. Firstly, has the welfare of students changed for the worse due to the COVID-19 pandemic and the shift to remote learning? And secondly, is the shift to remote or flexible learning as ordered by the state university and the CHED sound? To address these questions, the study determined whether the consumer surplus as a welfare indicator of 25 Business Economics students at a state university unit in Pampanga has significantly changed during the COVID-19 pandemic and the shift to remote learning. The students were chosen through purposive sampling. They belong to a block that has experienced a semester each of face-to-face and remote classes under the same professor in academic years 2019-2020 and 2020-2021. The quantitative and qualitative data needed for the study were obtained through an online survey. The result of the paired samples t-test showed that the mean difference of Php 8,380.00 between the students' consumer surplus during the pre-COVID-19 pandemic face-to-face modality and their consumer surplus during the COVID-19 pandemic and the shift to remote learning was not significant, with a standard deviation of 20,964.39442, confidence interval of 95%,  $t(24) = 1.999$ , and  $p = 0.057$ . This result suggests that: (1) the welfare of the 25 BA in Business Economics students, as indicated by their consumer surplus, has not significantly changed when the learning modality has shifted from face-to-face to remote during the COVID-19 pandemic; and (2) the shift to remote or flexible learning as ordered by the state university's Memorandum No. OVPAA 2020-31 dated 09 March 2020 and the CHED Memorandum Order No. 4 Series of 2020 was sound.

**Keywords:** students' welfare, consumer surplus, COVID-19 pandemic, remote learning

### Introduction

On 30 January 2020, the Department of Health (DOH) reported the first Coronavirus Disease 2019 (COVID-19) case in the Philippines. COVID-19 is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS CoV2), a new strain of virus first detected in Wuhan, China, in 2019. On 07 March 2020, the DOH confirmed the first local transmission of COVID-19 in the Philippines. On the following day (08 March 2020), Proclamation No. 922 placed the entire country under a state of public health emergency. Subsequently, a memorandum from the Office of the Executive Secretary initially put the whole of Luzon under enhanced community quarantine for the period 17 March-13 April 2020 (National Economic and Development Authority Regional Office 3).

The COVID-19 outbreak has prompted all constituent units of the state university system to shift to the remote learning modality. Memorandum No. OVPAA 2020-31, dated 09 March 2020, mandated all faculty members and lecturers to adjust their pedagogy and assessment of existing classes even if they were designed in the traditional lecture or face-to-face mode. Memorandum No. OVPAA 2020-68, meanwhile, required all faculty members and lecturers at the state university to upload course packs in their chosen learning management system (LMS) before the start of classes in the First Semester of Academic Year 2020-2021.

COVID-19 necessitated a shift in pedagogical approach not only among the constituent units of the state university system but also in all public and private learning institutions. Commission on Higher Education (CHED) Memorandum Order No. 04 Series of 2020, for instance, ordered the adoption of flexible learning beginning in the Academic Year 2020-2021. This CHED memorandum defines flexible learning as a learner-centered approach anchored in the needs of the students. Its primary objective is “to provide learners with the most flexibility on the learning content, schedules, access, and innovative assessment, making use of digital and non-digital tools” (CHED, 2020, p. 3).

The shift to remote, distance, or flexible learning was not well received by stakeholders in the education sector. Although educators provided support, the COVID-19 pandemic exacerbated existing inequalities (Hamilton et al., 2020). One indicator of inequality is access to the internet. Many students do not have internet access at home, and household wealth is the most significant determinant of home internet access (Hereward et al., 2020).

Other indicators of inequality or challenges that hindered the ability of students to learn successfully during the COVID-19 pandemic and the shift to remote learning include: (1) unstable internet connection; (2) poor state of mental health; (3) inadequate personal ability; (4) poor time management; (5) being easily distracted; (6) family members making studying difficult; and (7) lack of interaction between students and teachers (Jopillo, 2020; Ojo et al., 2021).

Aside from giving rise to inequalities and challenges, the COVID-19 pandemic and the shift to remote learning have also resulted in students’ intellectual dishonesty. A year of remote learning has led to cheating among students from grade school to college. Students have opportunities to cheat because they are mostly isolated at home and have various online services at their disposal (Kamalov et al., 2021; The Wall Street Journal, 2021). Cheating in online examinations, however, was discovered more than a decade earlier than the COVID-19-induced shift to remote learning (Wayne et al., 2009).

The literature cited in the preceding paragraphs begs two research questions. Firstly, has the welfare of students changed for the worse due to the COVID-19 pandemic and the shift to remote learning? And secondly, is the shift to remote or flexible learning as ordered by the state university and the CHED sound? To answer these questions, this study determined whether the consumer surplus as a welfare indicator of 25 BA in Business Economics students at a state university unit in Pampanga has changed significantly during the COVID-19 pandemic and the shift to remote learning.

In the context of this paper, welfare means well-being. Consumer welfare, on the other hand, means the well-being of consumers. Pindyck and Rubinfeld (2005) alternatively define it as the benefit or gain of consumers. To analyze whether there was indeed a change in the welfare of Business Economics students at the state university unit in Pampanga during the COVID-19 pandemic and the shift to remote learning, the microeconomic theory or concept of consumer surplus was used as the study’s framework.

Consumer surplus is the difference between what a consumer is willing to pay for a good and how much they actually pay. It measures how much better off individuals are, in the aggregate, because they can buy goods in the market. It is measured graphically by the area under the demand curve and above the price line. Consumer surplus has important applications in economics. “When

added over many individuals, it measures the aggregate benefit that consumers obtain from buying goods in the market” (Pindyck & Rubinfeld, 2005, pp. 128–130).

In economics, consumer surplus is an indicator of consumer welfare and is alternatively defined as the excess social valuation of a product over the price actually paid (Khemani & Shapiro, 1993). It should be emphasized that consumer surplus measures the accumulated gain that consumers receive for buying a good at a price lower than their maximum willingness to pay and not the individual gain (Consumer surplus, n.d.).

Consumer surplus is a monetary measure of the difference between what an individual pays for consuming a good or service and the amount he is willing to pay, given his income and the prices he faces. It is basically the net monetary benefit he receives from consuming the good or service. Hence, policies that change his income or the price he faces can change the amount of net benefit he receives from consumption and his monetary valuation of that benefit (Camm, 1983).

It can be deduced from the definition mentioned above that the determinants of consumer surplus are willingness to pay, prices, and income. However, in the case where only a single commodity price is stabilized, the consumer's preference for price instability depends upon four parameters: the income elasticity of demand for the commodity, the price elasticity of demand, the share of the budget spent on the commodity, and the coefficient of relative risk aversion (Shalit et al., 1980).

Time and again, changes in producer and consumer surplus have been used in evaluating the welfare effects of government intervention in the market, such as the implementation of price controls (Pindyck & Rubinfeld, 2005). At the World Bank, measuring consumer surplus is an increasingly popular approach to quantifying the monetary benefits of energy projects (Peskin, 2006).

Consumer surplus has also been used as a framework in analyzing welfare changes brought about by digital goods. One study found that a median user needed a compensation of about \$48 to forgo Facebook for one month, and that digital goods have created large gains in well-being that are not reflected in conventional measures of GDP and productivity (Brynjolfsson et al., 2019).

Consumer surplus was also found helpful in the field of education, such as in the investigation of the educational choice anomaly. According to the educational choice anomaly, providing education for free can result in less of it being chosen (e.g., an increase in the number of dropouts) and a lower level of educational quality purchased (Graves et al., 2011). This emphasizes that education, especially higher education, is partly consumption – done for its own sake – and partly investment. At least for postsecondary education, the opportunity cost of a person's education is also forgone wages while acquiring the education. Education spending should consider the direct and opportunity costs of education (Blanchard, 2003).

In this study, consumer surplus was used as an indicator of the welfare of 25 Business Economics students at a state university unit in Pampanga, Philippines. If the mean difference between the consumer surplus of the students during the pre-COVID-19 face-to-face modality and their consumer surplus during the COVID-19 pandemic and the shift to remote learning was significant, then, it would imply that there was indeed a change in their welfare because of the said pandemic and shift in the learning modality.

## Methodology

This study used a quantitative research approach and a survey research design. The unit of analysis was the individual BA in Business Economics student at the state university unit in Pampanga who belongs to a block of 25 students who had experienced a semester each of both the face-to-face and remote classes under the same faculty member in Academic Years 2019-2020 and 2020-2021. These students were chosen by the Student Credit Evaluator through purposive sampling. They were all beneficiaries of free tuition under Republic Act No. 10931 or the Universal Access to Quality Tertiary Education Act of 2017, and as indicated in the student profile of the Computerized Registration System (CRS), they have access to computers and/or mobile phones and the internet. Hence, they have closely similar socio-economic profiles. Their identities have been kept anonymous by the academic unit's Student Credit Evaluator, who was also requested to conduct the online survey.

The Business Economics students were asked whether they would agree to be respondents to an online survey on consumer surplus as an indicator of both their welfare during the pre-COVID-19 pandemic face-to-face modality and their welfare during the COVID-19 pandemic and the shift to remote learning. All of them agreed and gave their consent by answering the first item in the online survey form. As an additional ethical consideration, the actual or specific name of the state university unit in Pampanga was also kept anonymous throughout the paper.

In the online survey form, the students were asked to indicate the amount (in Philippine pesos) in a semester that they: (1) were willing to pay for face-to-face classes; (2) actually paid for face-to-face classes; (3) were willing to pay for remote classes; and (4) actually paid for remote classes. It should be noted that aside from tuition and other school fees, their responses included the amounts they were willing to pay and actually paid for food, transportation, housing, and internet. The difference between (1) and (2) was the consumer surplus of students during the pre-COVID-19 face-to-face classes, while the difference between (3) and (4) was the consumers surplus of students during the COVID-19 pandemic and the shift to remote learning. A paired samples t-test was subsequently performed to determine whether the mean difference between the consumer surplus during the face-to-face modality and the consumer surplus during the COVID-19 pandemic and the shift to remote learning was significant.

Using the same online survey form, the students were also asked to rate their satisfaction with the face-to-face and remote classes using the following Likert scale: 5 = very satisfied; 4 = satisfied; 3 = indifferent; 2 = dissatisfied; and 1 = very dissatisfied. A paired samples t-test was also performed to determine whether the mean difference in the students' satisfaction ratings for the face-to-face and remote classes was significant. The students were also asked to give their reasons for such ratings.

## Ethical Considerations

As ethical considerations, the author has: (1) gotten the consent of the students/respondents through the academic unit's Student Credit Evaluator and by answering the first item in the online survey form/questionnaire; (2) kept the identities of the students/respondents anonymous; (3) kept the actual or specific name of the state university unit in Pampanga anonymous; and (4) changed the paper's title to "Change in students' welfare during the COVID-19 pandemic and the shift to remote learning: the case of BA in Business Economics students at a state university unit in Pampanga."

## Results and Discussion

The students were willing to pay as much as Php 49,040.00 in a semester for face-to-face classes but actually paid only Php 27,840.00. The mean difference of Php 22,040.00 was significant at 95% confidence interval, with a standard deviation of 18,318.31961,  $t(24) = 6.016$ , and  $p = 0.000$ .

The students, meanwhile, were willing to pay as much as Php 44,020.00 in a semester for remote classes but actually paid only Php 30,360.00. The mean difference of Php 13,660.00 was significant at 95% confidence interval, with a standard deviation of 15,922.15438,  $t(24) = 4.290$ , and  $p = 0.000$ .

The mean differences between what the students were willing to pay and actually paid for face-to-face and remote classes were significant because they were all a part of the 1,600,000 students who are beneficiaries of free tuition and other school fees under the Universal Access to Quality Tertiary Education Act of 2017, otherwise known as Republic Act No. 10931 (Rocamora, 2021). The amount they actually paid both for face-to-face and remote classes would have been much higher if not for the implementation of the said law.

The above finding gives an initial impression that the mean difference between the students' consumer surplus during the pre-COVID-19 face-to-face classes and their consumer surplus during the COVID-19 pandemic and the shift to remote classes was also significant. The result of the paired samples t-test, however, showed the contrary. The students' consumer surplus during their face-to-face classes was Php 58,600.00 but their consumer surplus during the COVID-19 pandemic and their remote classes was negative Php 2,520.00. However, the mean difference of Php 8,380.00 between these consumer surpluses was not significant at a 95% confidence interval, with a standard deviation of 20,964.39442,  $t(24) = 1.999$ , and  $p = 0.057$ . This implies that the change in the students' welfare between the two periods and teaching modalities was also insignificant.

The insignificance of the mean difference mentioned above may be attributed partly to the high confidence interval of 95%. If the confidence interval had been a bit lower, say 90%, the mean difference between the two consumer surpluses could have been significant with  $p = 0.050$  instead of  $p = 0.057$ . The insignificance may also be attributed to the higher inflation rate during the COVID-19 pandemic. In April 2020, or a month after the first imposition of the Enhanced Community Quarantine (ECQ) in Luzon, the country's inflation rate was 2.2%. In Central Luzon, the inflation rate for the same period was higher at 2.6% (Philippine Statistics Authority, 2020). If the inflation rate had been lower than the said figures, the mean difference of Php 8,380.00 between the two consumer surpluses could have been significant. In other words, the mean difference of Php 8,380.00 could have been more valuable in the eyes of the students if not for the higher inflation rate during the ECQ period.

Meanwhile, the mean difference of 1.52 between the students' satisfaction rating in face-to-face classes and their satisfaction rating on remote classes was significant at a 95% confidence interval, with a standard deviation of 1.00499,  $t(24) = 7.562$ ,  $p = 0.000$ . It can be noted that the mean rating of students for remote classes was only 3.000 or indifferent at worst, while for face-to-face classes it was 4.520 or almost very satisfied at best.

The BA in Business Economics students at the state university unit in Pampanga who served as this study's survey respondents were indifferent to the remote modality of classes primarily because of the unfavorable learning environment. Most of them did not have a quiet place to

study in. Very often, they would be interrupted by their parents for some errands. One of the students explained: *“On the one hand, remote classes enabled me to stay at home and escape the long commute from Bulacan to Pampanga. But on the other hand, I felt disadvantaged due to our poor internet connection. I also could not concentrate on my classes because my mother would always ask me to do the house chores and take care of my baby brother.”*

Another reason for their indifference to remote classes was the lack of interaction between them, their teachers, and their fellow students. Due to the limited time of remote classes, they could not ask their teachers the questions they would typically ask during face-to-face classes. They could not clarify concepts that were not very clear to them. They were also demotivated to attend remote classes because they could not physically interact with their friends and fellow students. These are understood clearly from this student’s complaint: *“It is very difficult to study subjects like accounting or economics in a remote setup. I could not ask my professors for more example computations or additional graphical illustrations. It is also sad because my block mates are not there to compare notes with.”*

A third reason given by the students for their indifference to remote classes was their unstable internet connection. They could not attend remote classes whenever their internet connection was down. Due to poor internet connection and limited data, they were forced to turn off their camera. This, in turn, resulted in further loss of interaction with their teachers and classmates. Those who could afford it were able to shift to a more reliable internet provider, but most of them had to stick to their old internet provider due to lack of funds.

With the shift to remote classes, some students felt that their course requirements had become more voluminous. Some of their teachers had given them more homework such as exercises or readings to compensate for the shortened classes under remote mode.

Finally, the students were indifferent to remote classes because they felt their lessons were not being discussed thoroughly by their teachers. Some topics that used to be discussed when classes were face-to-face had been skipped. One of the students said: *“When our classes were still face-to-face, Professor GD would always have several cases of market failure such as those brought about by negative externalities or monopoly power. But when our classes became remote, he stopped giving us those cases.”*

In summary, the reasons given by the students for their indifference to remote classes were the following: (1) unfavorable learning environment; (2) lack of interaction between students and teachers, and among students; (3) unstable internet connection; (4) voluminous course requirements; and (5) lessons not being discussed thoroughly. This finding confirms the observations of Hereward et al. (2020), Jopillo (2020), and Ojo et al. (2021).

The results of the paired samples t-test for the students’ willingness to pay, actual cost, consumer surplus, and satisfaction rating for face-to-face and remote classes are summarized in Table 1.

**Table 1**

*Results of Paired Samples T-Test of Students' Willingness to Pay, Actual Cost, Consumer Surplus, and Satisfaction Rating for Face-to-Face and Remote Classes*

Pair	Mean Difference	Standard Deviation	t (24)	p	Mean Difference Significant at 95% CI?
W2P F2F – W2P Remote	22,040.00	18,318.31961	6.016	0.000	Yes
Cost F2F – Cost Remote	13,660.00	15,922.15438	4.290	0.000	Yes
CS F2F – CS Remote	8,380.00	20,964.39442	1.999	0.057	No
Satisfaction Rating F2F – Satisfaction Rating Remote	1.52	1.00499	7.562	0.000	Yes

### Conclusion and Recommendations

This study concludes that the welfare of 25 BA in Business Economics students of the state university unit in Pampanga, as indicated by their consumer surplus, has not significantly changed when the modality of learning had shifted from face-to-face to remote during the COVID-19 pandemic. At a 95% confidence interval, the mean difference between the students' consumer surplus during the pre-COVID-19 face-to-face classes and their consumer surplus during the COVID-19 pandemic and the shift to remote learning was found to be insignificant.

The result of the study lends support to Memorandum No. OVPA 2020-31 dated 09 March 2020 that mandated all constituent units of the state university system to shift to remote learning following the global outbreak of COVID-19. It also supports the CHED Memorandum Order No. 04 Series of 2020, ordering the adoption of flexible learning by all public and private higher learning institutions in the country. In short, the government does not have to fear that the shift to remote or flexible learning modalities would lead to the students' welfare loss. The mandated shift to remote or flexible learning was indeed sound.

To address the indifference of students to remote classes, the study recommends the following: (1) parents, teachers, school officials, alumni, and the government should work hand in hand to provide students with a favorable learning environment, such as a quiet room with stable internet connection and dependable laptop computer; (2) teachers should conduct their remote classes in such a way that there will be more interactions between them and their students, and among their students, such as encouraging class participation during synchronous classes and having more recitations and group presentations; (3) parents should strive to upgrade their children's internet connection—preferably with higher megabits per second; (4) teachers should trim down their syllabi and course requirements so that only the essentials are required; and (5) teachers should thoroughly discuss the topics included in their syllabi and ensure that the concepts being discussed have enough examples, illustrations, or applications.

In addition, since cheating has become rampant since the COVID-19 pandemic and the shift to remote learning (as reported by Kamalov et al., 2021; The Wall Street Journal, 2021), teachers and school officials should consider online proctored examinations and invest in a software that checks for plagiarism and similar acts of intellectual dishonesty. The COVID-19 pandemic and

the shift to remote learning should not become an excuse for producing dishonest or mediocre graduates. After all, honor and excellence are the virtues that the state university tries to instill to its students.

### References

- Blanchard, O. (2003). *Macroeconomics* (3rd ed.). Pearson Education International.
- Brynjolfsson, E., Collis, A., & Eggers, F. (2019). Using massive online choice experiments to measure changes in well-being. *Proceedings of the National Academy of Sciences of the United States of America*, 116(15), 7250–7255. <https://doi.org/10.1073/pnas.1815663116>
- Camm, F. (1983). *Consumer surplus, demand functions, and policy analysis*. The Rand Corporation.
- Commission on Higher Education. (2020). *CHED Memorandum Order No. 4 Series of 2020. Guidelines on the Implementation of Flexible Learning*. Commission on Higher Education, Office of the President, Republic of the Philippines.
- Consumer surplus. (n.d.). *EZY Education*. <https://www.ezyeducation.co.uk/ezyeconomicsdetails/ezylexicon-economic-glossary/522-consumer-surplus.html>
- Graves, P. E., Sexton, R. L., & Calimeris, L. M. (2011). The educational choice anomaly for principles students: using ordinary supply and demand rather than indifference curves. *The Journal of Economic Education*, 42(3), 310–314. <https://doi.org/10.1080/00220485.2011.581959>
- Hamilton, L. S., Kaufman, J. H., & Diliberti, M. K. (2020). *Teaching and leading through a pandemic*. Rand Corporation. [https://www.rand.org/pubs/research\\_reports/RR168-2.html](https://www.rand.org/pubs/research_reports/RR168-2.html)
- Hereward, M., Jenkins, R., & Idele, P. (2020). *Remote learning amid a global pandemic: Insights from MICS6*. UNICEF. <https://blogs.unicef.org/evidence-for-action/remote-learning-global-pandemic-insights-mics6/>
- Jopillo, G. (2020, September 4). College students share remote learning woes as classes shift online. *Rappler*. <https://www.rappler.com/nation/students-share-remote-learning-woes-classes-shift-online-pandemic>
- Kamalov, F., Sulieman, H., & Santandreu Calonge, D. (2021). Machine learning based approach to exam cheating detection. *Plos one*, 16(8), e0254340. <https://doi.org/10.1371/journal.pone.0254340>
- Khemani, R. S., & Shapiro, D. M. (1993). *Glossary of industrial organisation economics and competition law*. Organisation For Economic Co-Operation and Development (OECD). <https://www.oecd.org/regreform/sectors/2376087.pdf>
- National Economic and Development Authority Regional Office 3. (2020). *Central Luzon Regional Recovery Program 2020-2022*. National Economic and Development Authority Regional Office 3.
- Office of the Vice President for Academic Affairs. (2020, March 09). *Memorandum No. OVPAA*



---

2020-31. *Academic Contingency Plan in the Light of COVID-19*. Office of the Vice President for Academic Affairs, University of the Philippines.

Office of the Vice President for Academic Affairs. (2020, June 19). *Academic Plans for AY 2020-2021 and Timetable for Dialogues with Faculty, Students, Staff and Concerned Parents*. Office of the Vice President for Academic Affairs, University of the Philippines.

Peskin, H. M. (2006). *A primer on consumer surplus and demand: common questions and answers*. World Bank. <https://openknowledge.worldbank.org/handle/10986/17960>

Philippine Statistics Authority. (2020, May 5). *Summary Inflation Report Consumer Price Index (2012 = 100): April 2020*. <https://psa.gov.ph/statistics/survey/price/summary-inflation-report-consumer-price-index-2012100-april-2020>

Pindyck, R. S. & Rubinfeld, D. L. (2005). *Microeconomics* (6th ed.). Pearson Education, Inc.

Portus, L. M., Barrios, E. B., Conaco, M. C. G., & Go, S. P. (2020). *Doing Social Science Research: A Guidebook* (2<sup>nd</sup> Printing). Philippine Social Science Council.

Rocamora, J. A. L. (2021, May 18). 1.6M Pinoy students benefit from free higher educ program. *Philippine News Agency, Republic of the Philippines*. <https://www.pna.gov.ph/articles/1140715>

Shalit, H., Turnovsky, S. J., & Schmitz, A. (1980). Consumer surplus, price instability, and consumer welfare. *Econometrica*, 48(1), 135–152. <https://doi.org/10.2307/1912022>

Ojo, E., Burger, A., Onwuegbuzie, A.J., Bergsteedt, B.J., Adams, S., & Crowley, T. (2021). How the pandemic is hurting university students' mental health. *The Conversation*. <https://theconversation.com/how-the-pandemic-is-hurting-university-students-mental-health-159643>

The Wall Street Journal. (2021). *Students are cheating more during the pandemic*. <https://www.wsj.com/articles/students-are-cheating-more-during-the-pandemic-11620840447>

Wayne, B., Gregg, J., & Clinton, S. (2009). Implementing technology to prevent online cheating: a case study at a small southern regional university. *MERLOT Journal of Online Learning and Teaching*, 5(2), 230–238. [https://jolt.merlot.org/vol5no2/gregg\\_0609.pdf](https://jolt.merlot.org/vol5no2/gregg_0609.pdf)

