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2024 Taiwanese Economics Olympiad

Preliminary – Round 2: Application of Economics and Finance

Question Booklet

Time Saturday, December 16, 2023, 13:00 to 16:00 (180 minutes)

Locations Taipei GIS Taipei Tech Convention Center
Taichung Mingdao High School
Kaohsiung TCCC Kaohsiung Xinyi

Instructions

- Fill in your contestant number in the boxes at the top.
- Use only a blue or black pen or pencil.
- **Choose at least one problem from each section. Solve no more than 4 problems out of 6.**
- Do all rough work in the question booklet.

Information

- This is an individual-based round.
- If you provide solutions for 5 or 6 problems, all of them will be graded, but only 4 will add to your result. If you do not specify which to grade, only the lowest 4 grades will be included in the result.
- If not stated otherwise, consider all goods, services, and assets infinitely divisible.
- Numbers of firms and people may be only integers.
- Convey your ideas clearly. Do not skip important logical transitions in your reasoning.
- Take care of handwriting. If you strike something out, it will not be graded.
- You may leave the examination venue more than 60 minutes after this round begins.

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SECTION 1

Problem 1 Digital Health in law?

The hierarchy of medical institutions in Taiwan includes medical centers, regional hospitals, district hospitals, and clinics. Technically, medical centers are responsible for research, education, and the treatment of acute and severe patients; therefore, individuals should typically seek initial medical care at clinics. After receiving treatment from a physician at a clinic, a patient may be referred to other institutions for further care as needed. The hope is to establish collaboration among medical institutions at all levels through mutual referrals, providing patients with continuous and integrated medical care. This approach also aims to alleviate overcrowding in some hospitals and ensure efficient allocation of medical resources.

Recently, the Legislative Yuan (立法院) has been reviewing the draft of the Digital Health Development Act (數位醫療發展條例), particularly focusing on the aspect of opening up “telemedicine” (通訊診療), in which a patient can “go to a doctor” online on an electronic device. This has sparked opposition from physicians at local clinics, who argue that telemedicine should be limited to specific times, such as the COVID-19 pandemic. If telemedicine becomes a regular practice, large hospitals might gradually dominate the healthcare market. Additionally, widespread adoption of telemedicine in remote areas could reduce visits to clinics, contradicting the original goal of providing accessible community-based medical care.

Questions

- (a) (10 pts) Use game theory and explain how the medical landscape in remote areas might change before and after the implementation of the Digital Health Development Act. Also, explain why doctors believe that large hospitals might dominate the market.
- (b) (10 pts) Discuss the impact of Taiwan’s National Health Insurance (全民健康保險) system on the hierarchy of medical institutions.
- (c) (10 pts) Discuss whether the Digital Health Development Act can mitigate inequalities of medical resources.



Problem 2 First match at the Taipei Dome

The Taiwan–South Korea match of the 2023 Asian Baseball Championship (亞洲棒球錦標賽) was held on December 3, 2023, one day right after the official opening of the Taipei Dome. With the ticket sale beginning on November 25, 2023, Taipei’s Department of Sports requested the Taipei Dome operator to ensure seating readiness. In the plan, additional seating was arranged subsequently if ticket sales and venue readiness met the requirement.

As a capacity experiment, the government organized the “Home Run Taipei Dome Trial Match” (Home Run 臺北大巨蛋預備賽) on November 18 with free admissions. Free tickets were sold out within 1 minute online, and the fervor became a hotbed for scalping (黃牛行為). Amid criticisms, the operator released 13,000 seats for the first batch sale to prevent scalping for the Taiwan–South Korea match, followed by an additional 4,000 seats on a later date.

Apart from selling tickets in separate batches, there were suggestions to implement real-name ticketing. Moreover, as scalping is regulated solely under the Social Order Maintenance Act (社會秩序維護法), some Taipei City councilors proposed that the municipal government introduce a real-name system for ticket sale and collection via the municipal app of Taipei Pass (台北通) to realize a “quasi-real-name system.” The councilors believed this policy could hold scalpers accountable for fraud and discourage them from profiting through ticket resales.

Questions

- (a) (10 pts) The Taipei Dome is a well-known “BOT” example in Taiwan. Define the term BOT and provide one advantage and one disadvantage of BOT.
- (b) (10 pts) Discuss how scalpers can impact a ticket market.
- (c) (10 pts) Discuss which method—selling tickets in batches or implementing a real-name system—would be more effective in combating scalping.

SECTION 2

Problem 3 Fast fashion and waste management

Fast fashion refers to a business model that quickly translates the trends showcased during fashion weeks into clothing, represented by brands like H&M, Zara, Uniqlo, and others. The advantages of fast fashion lie in its speed, variety, affordability, and trendiness. These brands attract consumers with budget-friendly options, allowing them to acquire trendy clothing at low prices in a short time.

In recent years, fast fashion brands have recognized the effectiveness of influencers on social media as a more powerful way to market clothing. Research suggests a correlation between following social media influencers and increased shopping frequency. When influencers showcase outfits from brands like Shein, their audience might be encouraged to purchase those products. Even though some fast fashion brands retain their own “ambassadors,” they also collaborate with social media influencers to promote their clothing. Following the outbreak of COVID-19, marketing activities on social media surged. In March 2022, “Shein hauls” became one of the most popular trends on TikTok, with the hashtag [#sheinhaul](#) reaching 4.7 billion views, generating approximately \$10 billion in revenue for Shein.

However, statistics reveal that nearly 4.3 million tons of textiles are discarded in EU countries annually, with an average of 12 kilograms of clothing and shoes per person each year. Additionally, between 2000 and 2015, global textile production almost doubled, and by 2030, consumption of apparel (衣物) and footwear is projected to increase by around two-thirds. To promote sustainable use of textiles, in July 2023, the EU proposed a draft requiring producers to pay upfront (預付的) waste management fees, approximately 0.12 euros per T-shirt. It also aims to increase recycling and reuse, impose regulations prohibiting the destruction of unsold stock, and mandate fast fashion manufacturers to establish textile waste recycling systems, taking stricter measures to control the previously less-regulated textile problem.

Questions

- (a) (10 pts) Discuss how the rise of fast fashion and social media influencers affects the production cost structure.
- (b) (10 pts) Discuss the impact of the EU’s upfront waste management fees on the clothing market?
- (c) (10 pts) Discuss why some companies would rather resort to destroying unsold goods.

Problem 4 Gender disparities in labor participation

Professor Claudia Goldin from Harvard University, renowned for her research on gender disparities in the labor participation, was awarded the 2023 Nobel Memorial Prize in Economic Sciences. Gender disparities in the labor market are evident, with women, rather than men, often leaving their jobs for family reasons, highlighting “marriage and childbirth” as significant turning points for a specific gender.

With labor force participation rates, income differences in her research taken into account, Goldin’s research also indicates that gender pay inequality is less about discrimination against women and more about reflecting the cost of balancing work flexibility and the high demands of managing both career and family.

In India, the disparity is more noticeable. Although nearly half of India’s population is female, the number of women in workforce has dropped to historic lows over the past 20 years. According to World Bank data, India’s female participation in labor peaked at 31% in 2000. Since then, female labor force participation has dwindled, reaching only 19% in 2021. Moreover, Indian economist Rosa Abraham points out that the government sets very low criteria for counting women in the labor force, even including those who work just one hour per week.

The Centre for Monitoring Indian Economy (CMIE)—a think tank in India—found that only 10% of Indian women of working age met the criteria for employment or actively seeking jobs in 2022. This signifies that the number of employed women in India stands at around only 40 million, while men total 360 million.

Questions

- (a) (10 pts) Discuss economic and non-economic factors that contribute to low female participation in India’s labor market.
- (b) (10 pts) Discuss the impact of the absence of a specific cohort of population (not necessarily females in India) on the economic development of an emerging economy.
- (c) (10 pts) Propose possible policies for better inclusion of labor participation for your case study in question (b).



SECTION 3

Problem 5 Manual versus mechanized production

Omega and Nu are the only two domestic sweater manufacturers in a country. Omega adopts manual production, with a cost of \$70 per sweater and a fixed cost of \$1,500. Nu, on the other hand, adopts mechanized production, with a cost of \$10 per sweater and a fixed cost of \$300. The sweaters produced by both companies do not have any quality differences, and the total demand for sweaters in the market is $Q_d = 155 - \frac{1}{2}P$.

Questions

- (a) (10pts) In the long run, what quantities do Omega and Nu produce when they reach an equilibrium?
- (b) (10pts) If Nu considers acquiring Omega, and after the acquisition, the average cost per sweater is \$30, while Nu takes up all of Omega's fixed cost and the additional fixed cost of \$1,200 incurred by the acquisition, what will be the production quantity and net profit of Nu after the acquisition?
- (c) (10pts) Why are some old technologies not eliminated despite technological innovation?



Problem 6 Real fans or fleeting followers

The globally renowned band Coldplay recently held a concert at the National Stadium in Kaohsiung. It attracted not only many **diehard fans** (死忠樂迷) but also prompting a large number of non-fans (hereinafter **imitative followers** (跟風樂迷)) to join the fervor.

Assuming that the concert tickets are priced the same, the demand for tickets among diehard fans (d) is $Q_d = 45000 - P$, while the demand among imitative followers (i) is $Q_i = 15000 - 3P + 50\sqrt{N}$, where $N = Q_d + Q_i$.

Questions

- (a) (10 pts) The National Stadium can accommodate 40,000 people. To fill the venue to capacity, what should be the highest price for a concert ticket?
- (b) (10 pts) Suppose Coldplay is considering an alternative venue to ensure all visitors are diehard fans rather than imitative followers. What should be the best maximum audience capacity and ticket price for this venue?
- (c) (10 pts) Why is the experience at a large concert *not* necessarily better?

END OF QUESTIONS