

## Practice Set 1 - KEY

### Basics & Prerequisites

This set contains problems for your own practice. It is highly recommended to work on the problems on your own. Do not just read the provided solutions. Instead, try to solve the problems and use the solutions only when you cannot continue on your own. Reading problems that someone else has solved has the same value for your preparation like watching someone else running a marathon on TV and then expecting to be able to run it, too. If you have questions on this set, please ask your section's teaching assistant.

1. The following table contains information for the qualifications, sex and annual wage of 4 particular employees.

	Degree	Languages	Sex	Annual Wage
Kate	Bachelor	English, Mandarin	F	\$90K
Emma	Master's	English	F	\$110K
Olivia	Master's	English, Mandarin	F	\$140K
David	Ph.D.	English	M	\$170K

- (a) Can you tell what is the effect of obtaining a Master's on *annual wage*?

*In this dataset, we can only compare Olivia and Kate for who all variables are equal except for their degrees. Olivia holds a Master's and makes annually \$50K more than Kate. Since both are women and speak English and Mandarin, we can infer that the difference in wage is due to Olivia's degree.*

- (b) Can you tell what is the effect of *speaking Mandarin* on *annual wage*?

*In our dataset, we can only compare Emma and Olivia for who all variables are equal except for their competence in Mandarin. Olivia earns annually \$30K more than Emma, who speaks only English, while everything else is equal for the two women. Therefore, we can infer that speaking Mandarin leads to a higher wage, ceteris paribus.*

- (c) Can you tell what is the effect of each individual's *sex* on *annual wage*?

*The only male in our dataset is David but he cannot be compared to any female from the dataset because he has a Ph.D. degree, while the women in the dataset do not. If we compare David with Emma, for instance, we will not know if the difference in salary is because of the different degree or because David is male. The ceteris paribus principle cannot be applied here.*

2. Ivan owns a VW Jetta. This car can be typically leased for \$300 per month but Ivan preferred to buy his own with cash. Ivan is a trained welder by profession. Even though a welder can easily make \$5,000 per month in his area, Ivan preferred to drive for Grab full-time. Every month, his revenue from Grab is around \$6,400 while the cost of fuel and maintenance for the car is around \$600.

- (a) Calculate Ivan's *accounting profit* and *economic profit* and explain why they are not necessarily the same thing.

*From an accounting perspective, Ivan receives \$6,400 from Grab, pays \$600 per month for fuel and maintenance for the car, and ends up with an accounting profit  $6,400 - 600 = \$5,800$  per month. He is not paying the \$300 dollar lease for the car because he is owning his, thus this amount is irrelevant to the accounting profit.*

*From an economics perspective, the task hints two sources of opportunity cost. First, the use of Ivan's car (which is capital) is valued at \$300 per month. Ivan does not pay for it because he already owns it, but this does not mean that the asset is for free. If Ivan was not using the car for his Grab work, he could lease it out for \$300 per month. So now he forgoes this \$300. The second source of opportunity cost is the use of Ivan's time (or labor) which is valued by the market at \$5,000 per month (as far as we can know from the task this is his only, thus best, alternative). Of course, Ivan is not paying himself for his labor but this does not mean that he is not dedicating to his Grab job labor valued at \$5,000 per month. If he did not commit his labor to Grab he could work as a welder and indeed receive those \$5,000 per month, which is now forgone.*

*This brings the total opportunity cost for Ivan to  $5,000 + 300 = \$5,300$  per month. Since the revenue from Grab is \$6,400 per month, Ivan's economic profit is  $6,400 - 5,000 - 300 - 600 = \$500$  per month. Thus, Ivan earns \$5,800 per month but from those only \$500 is pure profit because they are above and beyond all costs of operation for his Grab enterprise including the opportunity costs.*

- (b) Explain how Ivan's accounting and economic profit will be affected if due to a steep increase in construction activity in his area, the salary for a welder increases to 6,000 dollars per month.

*Ivan's accounting profit will not be affected since he is not currently working as a welder. His economic profit, however, will be affected because the opportunity cost of his labor has now increased to \$6,000 per month. Thus, the economic profit for his enterprise becomes  $6,400 - 6,000 - 300 - 600 = -\$500$  per month. So, Ivan still earns \$5,800 per month but now runs economic losses of 500 dollars.*

- (c) Should the increase in the salary of welders affect Ivan's employment decision?

*The increase in the salaries of welders has not affected Ivan's actual earnings. Both before and after the boom in construction, Ivan was taking home \$5,800 per month. However, it seems that the welding is now a better alternative to Grab. Ivan could shut down his Grab enterprise, lease out his car to someone else (who has a lower opportunity cost and still makes sense for them to drive for Grab) and work as a welder making: \$300 from the car and \$6,000 from his labor, summing up to \$6,300 per month, instead of the \$5,800 he makes now. This shows that, even though opportunity costs are not paid to anyone, when you do not take them into account, you may end up with the wrong decision.*

3. Consider the equations for the lines  $y = 10 + 3x$  and  $y = 100 - 2x$ . Find  $x$  and  $y$  at the intersection of the two lines.

*Both left-hand-sides of the equations are equal to  $y$ , thus we can write:  $10 + 3x = 100 - 2x$  or  $3x + 2x = 100 - 10$  or  $5x = 90$  or  $x = 90/5$  or  $x = 18$ . Then, we can plug  $x = 18$  to either line:  $y = 10 + 3x$  or  $y = 10 + 3 \cdot 18$  or  $y = 64$ .*

4. In class we discussed why all top educational institutions include Economics as a core course for all students to take independently of their major. What is the basic reason for this?

*Contrary to other sciences, Economics has its own way of thinking. A proper 'introduction to economics' course is less about giving you knowledge, and more about training your brain to think economically. In today's world, all societal, business, political, scientific issues have a prominent economic side. Hence, economic education is not an optional skill, it is basic literacy.*

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You are kindly requested to report any typos, mistakes or proposals for the improvement of this practice set key at [kmarinakis@smu.edu.sg](mailto:kmarinakis@smu.edu.sg).