Departamento de Economia
Universidade de São Paulo
EAE-1234 - Midterm exam
Prof.: Pedro Forquesato
October 3rd, 2024

Student's name: ______________________________ Nº USP: ____________

Instructions: The exam is **individual and closed book**. The exam is worth 10 points. The time allotted to completing the exam is **1 hour and 40 minutes**. All answers to be valid need to be well explained (and calculations explicitly stated), but answers that do not respond the *exact* statement of the exam question will be ignored. **Answers should be based on the course content.** The maximum *suggested* answer size for each conceptual question is *half a page*. The exam should be answered **entirely in pen**. The exam can be answered both in English or in Portuguese.

1. (1 point) In 2011, a prominent American news outlet, the *USA Today*, published an article with tips on increasing workers' net income after paying income taxes. One of the tips was as presented in the figure below, taken from a later news article from the newspaper *Baltimore Sun*, that mentions a hypothetical raise in the salary of the worker, and its consequences for the worker's after-tax income.

   > In USA Today's original item, one tip said: "That raise actually might not be as good as it looks. The extra money is nice, but it could very well bump you into the next tax bracket, possibly leaving you with less money than you had before the raise."

   Discuss the tip above, touching on the difference between *kinks* and *notches* in the tax schedule.

2. (1 point) In August 2024, American presidential candidate Kamala Harris proposed to, when in office, implement the "first-ever federal ban on price gouging on food and groceries — setting clear rules of the road to make clear that big corporations can't unfairly exploit consumers to run up excessive corporate profits on food and groceries [in moments of shortage]." In other words, to institute **price controls** (price ceilings).

   The response was quick. The magazine *Fortune* ran a piece on this proposal with the headline "Kamala Harris is wrong". In an opinion piece for the *Washington Post*, Catharine Rampbell replied to the proposal: "*It's hard to exaggerate how bad this policy is...* Supply and demand would no longer determine prices or profit levels. Far-off Washington bureaucrats would."

Do you agree with *Fortune* and Rampbell? Explain stating *precisely* the consequences of a price ceiling in a perfectly competitive market, and establish if and when it is ever desirable from a social perspective to institute a price ceiling. Is it surprising that media outlets aligned to business interests like *Fortune* would be against this proposal?

3. (1 point) In the Public Economics Lab policy brief 1/2024, FEA students Dimitri, Emilly and Rayne (MA) implemented under my supervision a **cost-benefit analysis** of the "Programa Estratégia Saúde da Família"(ESF), a public policy that establishes basic health teams in basic health units (UBS) that follow families' health, including eventually home check-ups for those with chronic diseases or the elderly.

   A study from Profs. Rudi Rocha and Rodrigo Soares in 2010 found that municipalities treated with this policy for 8 years had 8.5% lower mortality rate (15 to 59 years old) than those untreated. On the other hand, Ferreira-Batista et al (2023) estimate that each ESF team costs to public funds on average R$ 58,411. Discuss *in detail* how Dimitri, Emilly and Rayne should go about (or rather did go about) comparing these two statistics in order to analyze the cost-benefit of ESF.

4. (1 point) In early 2013, I wrote with FEA doctoral student Ana Bottega and Prof. Luiza Nassif (Unicamp) a policy brief for the FEA research group Macroeconomics of inequality (Made) discussing equity impacts of adjusting the personal income tax brackets for inflation, a topic that comes back to public debate every year. Discuss the equity impacts of raising the threshold of of income tax exemption from R$ 2,640.00 to R$ 2,824.00, as president Lula did earlier this year, based on our course discussion of the **features of the Brazilian tax system**.

5. (1 point) The following is an excerpt of a Wilson Center blog post on the production of diamonds in Africa, written in October 2022.

   > Diamonds represent an industry worth over $81.4 billion per year, with 65 percent of global production sourced from Africa. While they are a high-end, luxury resource, the process of obtaining diamonds from the earth is not nearly as glamorous. Human rights violations plague the diamond mining industry and commonly include child labor. Conditions are often atrocious with labor-intensive and hazardous work, scandalously low pay, violent management or threat of violence, and harrowing impacts on nearby communities.

   Considering the above, discuss *precisely* why governments in Africa should or should not heavily tax this market, focusing on **tax incidence and inequality**.

6. (1 point) A policy brief by the Brazilian Central Bank last week stated that beneficiaries of the Brazilian social assistance program "Programa Bolsa Família"spent in August of 2024 a

scary 20% of the entire assistance program in betting websites. Discuss under what conditions a **sin tax** on online bets is appropriate.

7. (1 point) As already mentioned in question 4, a topic in taxation that comes back to public debate year after year is the adjustment of the income tax brackets by inflation. Consider again how President Lula raised the exemption threshold to (a monthly wage of) R$ 2,824.00 in May 2024. Describe *precisely* the effect of this change in the labor supply of workers earning less than 2,800, but more than the previous exemption threshold, pointing out the direction of the **income and substitution effects** and specifying the specific impacts of the *average and marginal tax rates*.

8. (3 points) Consider an economy with domestic demand for cellphones given by $Q^D = D(P) = 20,000 - 20P$, where the price P is measured in reais and the quantity Q is measured in thousands of units per year. Domestic supply is given by $Q^S = S(P) = 30P$.
   (a) Now consider that the government implements a fixed tax of 25 reais. What is the new equilibrium prices and quantity? What is the government revenue?
   (b) What is the incidence and the excess burden of this tax?
   (c) Assume (unrealistically) that this demand was generated by preferences represented by an indirect utility function $V(p, Y) = \ln(Y/2p) + \ln(Y/2)$ and a expenditure function $e(p, \bar{u}) = 2\sqrt{pe^{\bar{u}}}$. Calculate the equivalent variation generated by the tax above when $Y = 850$. (Use the price and tax as in itens (a) and (b), and assume here that the incidence is entirely on the consumer for simplicity.)