

Midterm  
Microeconomics for Public Policy I  
Fall 2019  
October 15, 2019

GWID: \_\_\_\_\_

### Instructions

1. **Write your name on page 17.**
2. Write your GWID on each page. If you don't know your GWID, write your birthdate on each page.
3. Answer all questions.
4. The exam is graded out of 100 points; points are indicated on sections and questions.
5. Write legibly. Illegible exams cannot be graded.
6. The final page is intentionally left blank for extra work. If you do extra work on this page (or any other non-standard location) that you would like to be counted, note it clearly near the question you are answering.
7. Label all figures as needed.
8. We give liberal partial credit. If a question has multiple parts and you can't answer one, it is in your best interest to answer all the remaining parts to the best of your ability.
9. Make sure you **explain** your answers as needed. When appropriate, you should also explain any assumptions that you make to arrive at your answer. Explanations may yield partial credit.
10. Be concise.

For marking purposes only

Part A \_\_\_\_\_

Part B \_\_\_\_\_

Part C \_\_\_\_\_

total \_\_\_\_\_

**A. Ripped From the Headlines** (9 points total, 3 points each question)

Read the article from the *Wall Street Journal* at the end of the exam.

1 (3). How should the Chinese government's plan to release frozen pork reserves impact the price of pork? Draw a supply and demand chart from before the release. Then modify the chart to show how the release impacts the chart.

2 (3). Use two supply and demand charts – one for Nanning and one for everywhere else – to give one explanation consistent with the article for why the situation is more severe in Nanning.

3 (3). Give two pieces of evidence from the article about the elasticity of supply of pork.

**B. Short Answer Questions** (40 points, 5 points each question)

1. Give two examples of things that could shift the supply of apples, and explain which way each shifts the supply curve and why.

2. You are a person who really likes chocolate and somewhat likes bananas. Draw indifference curves for these preferences, putting chocolate on the horizontal axis and bananas on the vertical axis, and explain why your curves look the way you've drawn them.

3. If your utility function is  $U = 5XY^8$  are  $X$  and  $Y$  complements or substitutes? Explain.

4. Suppose that the equilibrium price of iron ore falls and the equilibrium quantity of iron ore increases. Assume that only supply or demand changed. Which changed? Explain your answer.

5. The elasticity of supply of chocolate is 0.2. If price increases by 5%, how much more chocolate will suppliers make?

6. Suppose that you observe that one of your favorite lunch spots recently decreased the quantity of fresh vegetables in favor of rice in its lunch bowls (true story!). What can you deduce changed in the relative price of rice and fresh vegetables?

7. If your demand curve is  $Q = 600 - 100P$ , how many peaches do you want when the price is \$6?

8. Define the diminishing marginal utility of consumption of a good, and describe it in action for something you consume.

**C. Medium Answer Questions** (51 points, points as noted on questions)

1 (19 points). Supply, Demand, Quotas and Cookies

The market for cookies is represented by the following supply and demand conditions:  $Q_D = 1,000 - 200P$  and  $Q_S = 400P - 200$ . The variable  $P$  is price per box of cookies and  $Q$  measures boxes per day.

(a, 4) Solve for the equilibrium price and quantity and illustrate your answer with supply and demand curves.

(b, 3) Suppose the government places a quota on cookies of 500 boxes per day. Solve for the equilibrium price and quantity and then use supply and demand curves to illustrate your answer.



(c, 3) Calculate consumer surplus before and after the quota.

(d, 3) Calculate producer surplus before and after the quota.

(e, 3) Calculate the deadweight loss from the quota.

(f, 3) Define deadweight loss and explain why a policymaker should care about it.

2 (16 points). Consumer Optimization

Suppose that Seema's budget constraint is  $75 = 10X + 4Y$ .

(a, 3) Draw the budget constraint, labeling the axes and intercepts. Put  $X$  on the horizontal axis and  $Y$  on the vertical axis.

(b, 3) What is the slope of this budget constraint?

(c, 4) Can Seema afford 4 units of good  $X$  and 10 units of good  $Y$ ?

(d, 3) Draw an indifference curve on your picture from (a) (or repeat the picture) such that Seema is consuming optimally. What is the  $MRS$  at this point?

(e, 3) Now assume that for Seema,  $X$  and  $Y$  are perfect complements in a 1 to 1 ratio. Draw a new picture and add the indifference curve showing Seema's optimal consumption in this case.

### 3 (16). Taxation and Unhappiness

Suppose that the market for solar panels is characterized by demand,  $Q = 400 - 10P$  and supply  $Q = P + 26$ .

(a, 3) What is initial equilibrium price and quantity? Draw a graph, showing this point, and clearly labeling axes and the equilibrium.

(b, 3) Suppose that the government levies a tax of \$22 per unit on solar panels, where the statutory incidence falls on producers. Find the new relevant equation, and add the new curve to your picture.

(c, 3) What are the new equilibrium price and quantity?

(d, 3) What is the consumer burden? and the producer burden?

(e, 4) Explain why one party is stuck paying more of the tax.



Name: \_\_\_\_\_ Blank – for extra work

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<https://www.wsj.com/articles/chinas-rising-pork-prices-amplify-beijings-woes-11568135558>

## CHINA

# China's Leaders Are Penned In as Citizens Stomach High Pork Prices

Efforts to boost supply hit by African swine fever, lower consumer costs have so far fallen short as government grapples with U.S. trade war and Hong Kong protests ahead of 70th anniversary celebrations

*By Stephanie Yang*

Updated Sept. 10, 2019 10:58 pm ET

NANNING, China—Beijing has tried a variety of measures in recent weeks to bump up the pork supply and bring down prices after a yearlong outbreak of African swine fever decimated the country's hogs. So far, they haven't been enough.

Government officials have pushed farming incentives, rationing, campaigns encouraging people to eat more chicken—even opening its emergency pork reserves.

But rising prices still threaten to mar the celebratory mood ahead of the 70th anniversary of Communist Chinese rule on Oct. 1, adding to a litany of headaches that includes the trade war with the U.S. and protests in Hong Kong.

Government data released on Tuesday showed prices of pork—a key staple of the Chinese diet—surging 46.7% in August from the year-earlier month, the biggest such jump in eight years. The leap in pork prices alone was enough to lift the overall headline consumer-inflation figure for the month by more than 1 percentage point to match July's 17-month high.

African swine fever, which is harmless to humans but lethal for hogs, pushed up meat prices across the board by nearly 31% in August as consumers sought alternatives like beef and mutton, government figures show.

The price of pork in China is closely watched by authorities at the Ministry of Commerce, which in August pledged to release frozen pork reserves to keep prices from fluctuating too dramatically.

The southern province of Guangdong, one of China's most prosperous, on Monday said it would release more than 3,000 tons of pork from its reserves ahead of the Mid-Autumn Festival on

<https://www.wsj.com/articles/chinas-rising-pork-prices-amplify-beijings-woes-11568135558>

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Chen Yufang, 37, purchases pork and other groceries in Nanning for the cafeteria of a private property developer employing about 60 people. PHOTO: RAUL ARIANO FOR THE WALL STREET JOURNAL

Friday and the country's 70th birthday.

The fallout is particularly acute in markets around Nanning, the capital of neighboring Guangxi province and traditionally one of the country's leading regions in pork supply and consumption. Here, consumers and producers are struggling with the financial fallout from the outbreak.



A vendor selling chicken and lamb at the Nanning wet market. PHOTO: RAUL ARIANO FOR THE WALL STREET JOURNAL

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pped prices, lowering them by 10% and handing out pink ration tickets at some local markets—limiting buyers to 1 kilogram a day, in a move that prompted comparisons to Mao-era China.

After two days, the pink-slip system was abandoned. Even with price cuts across the board, local residents said the meat was still too expensive. Markets selling discounted pork had few customers. Vendors lamented a sales slump they hadn't seen in decades of doing business.

He Jie, a 30-year-old father of two, said he was unable to get a ticket after standing in line on the first day. Two days later, he bought a handful of ribs at the same marketplace during a quiet lunch hour, to make into soup for his wife and nursing infant. "I can't imagine life without pork. But our income is not growing and prices are rising," he said.

With few signs of a price reversal, authorities hope citizens will learn to cope. In recent days, state media have begun building a case for not eating pork.

The Life Times, an official newspaper tied to the People's Daily, ran a story on Friday last week proclaiming the benefits of eating less pork for one's health and pocketbook. It recommended chicken or fish instead, eliciting skeptical responses from Chinese readers. "I see. Next time, when beef prices are up, you will say eating beef is bad," one online user wrote.

In the latest sign of the distress setting in among policy makers, China's cabinet on Tuesday urged local officials to step up their efforts to stabilize pork prices, ordering them to "ensure efficient supply of pork during major holidays" and requiring them to submit progress reports by the end of the year.

"There's a significant reversal in the direction of policy," said Zhang Wendong, an assistant economics professor at Iowa State University and co-founder of the school's China Ag Center. "I think the Chinese government originally underestimated the potential magnitude of this outbreak."

In Nanning, Wang Yuling, a vendor who has been selling pork for more than 20 years, said the recent government subsidies wouldn't be enough to keep her afloat. "That money can't do anything. I will have to close my business and go back to farming again," she said.

The Nanning Daily, an official newspaper, quoted the city's economic-planning agency acknowledging the impact of high pork prices, saying they had severely affected the lives of locals. Nanning officials didn't reply to requests to comment.

In the longer run, some analysts said, one of the government's biggest hurdles will be persuading farmers to raise more pigs after more than a year of combating the disease. Without a viable vaccine for African swine fever, the threat of another outbreak has discouraged farmers from expanding or restoring production.

The possibility of infection compelled Luo Hengfeng, 63, to rush his hogs to market at a 40% discount, despite the fact, he said, that none of them had fallen ill. Two months ago, the farmer bought about 5,000 chickens that now roam freely around the empty concrete pig pens. Out of a herd of hogs that once numbered more than 500, Mr. Luo now has just two—piglets he has kept to see whether or not they're capable of surviving. So far, Mr. Luo said, they seem to be healthy.

"If there are vaccines, I'd like to keep raising pigs until I'm 70," he said.