Midterm
Microeconomics for Public Policy I
Fall 2024
October 15, 2024

Name: ______________________________

Exam Instructions

1. **Write your name on page ??.**

2. Write your GWID on each page. If you don't know your GWID, write your birthdate (or some other made-up number) on **each page**. I request this so that we can grade exams blind, and so that if we scan exams we will be sure not to misplace pages.

3. Answer all questions.

4. The exam is graded out of 100 points. Points for each section and question are indicated on the exam.

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. **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

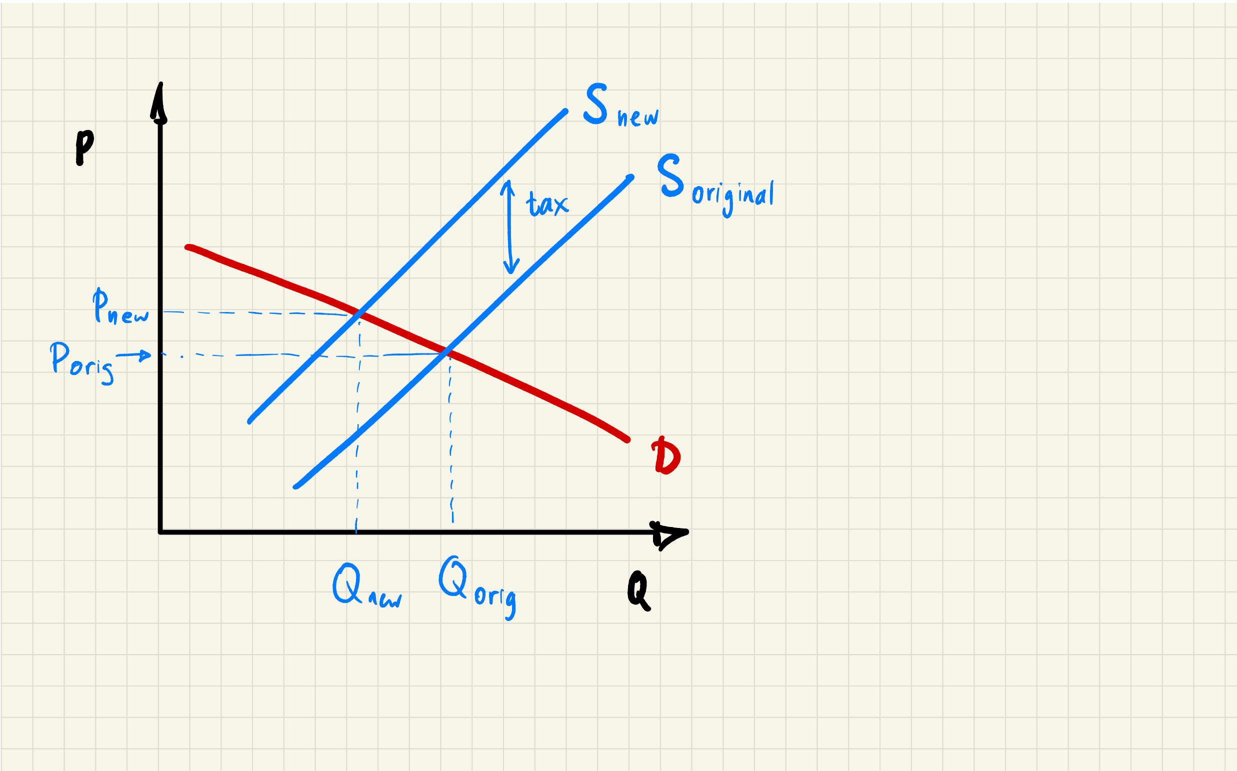
Part A	________
Part B	________
total	________

A. Ripped From the Headlines (48 points)

1. Soda tax (16 points total, 5 points per question except as otherwise noted)

Read the article from *USA Today* at the end of the exam.

1(a,5). Draw a graph showing an original market equilibrium and the new equilibrium, including the statutory incidence of this tax. (I am not looking for specific elasticities in either the supply or the demand curve; show the statutory incidence and the two equilibria.)



1 (b,5). Does the article give enough information to calculate the economic incidence of the tax? Why or why not?

No, because economic incidence is about what happens to prices. we don't know the new average price of sugary beverages after the tax, so we can't say anything specifically about economic incidence.

1 (c, 6 points). Given what you've read in the article, which side of the market is likely more elastic? Explain why, giving two pieces of evidence from the article.

I take from the article that consumers are more elastic. Here is why I think so

- sales fell by quite a bit in Philadelphia, which suggests to me that consumers have substitutes
- sales increased in nearby jurisdictions, which suggests that consumers have geographically proximate places to which they can shift their consumption

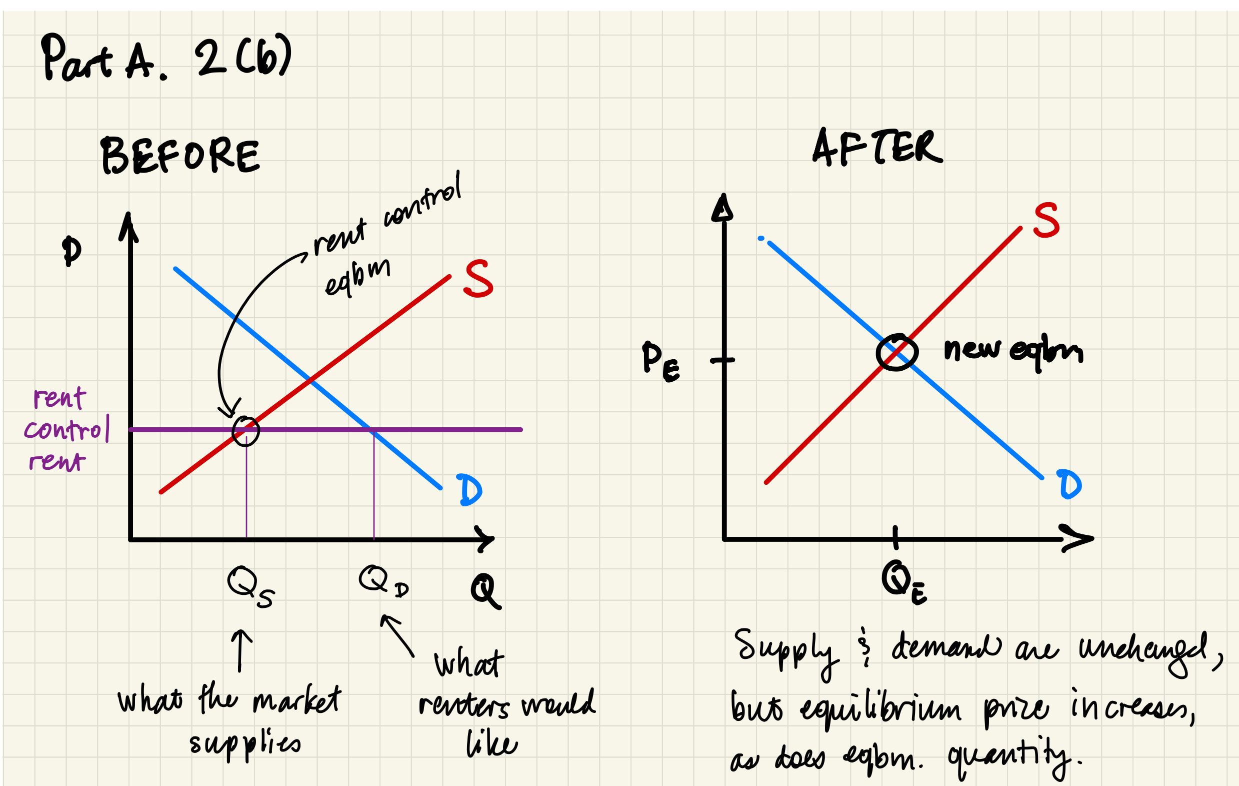
2. Rent control (16 points total, 5 points per question except as otherwise noted)

2(a). Is rent control a price or quantity regulation? Define the type of regulation (price or quantity) that rent control is and use evidence from the article to explain why rent control is that type (price or quantity) of regulation.

Rent control is a price regulation. We see this in the article, which says "He [Millei] said it was necessary to unravel tight economic controls he inherited from the previous, left-wing Peronist government, which implemented price controls on some 50,000 products from food to clothing as part of its Fair Prices program."

Price controls or regulation are policies that limit prices to a price below market price.

2(b). Draw two supply and demand charts. First, show Romina Misenta's outcome (price and quantity) before the abolition of rent control. Then show her outcome after the abolition of rent control – her new price and quantity.



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2(c, 6 points). Explain what economic forces could make the price of apartments fall (see the third paragraph) when the government gets rid of the rent control policy? If a graph is helpful to explain your answer, please draw it.

As landlords see profitable opportunities that previously did not exist (due to rent control), they put units back on the market. This hinges on landlords finding the terms of rent control so abhorent that they would prefer not to rent at all, or rent informally, rather than in the overall market. In such a case, when rent control disappears, supply expands and price declines.

3. Fuels (16 points total, 5 points per question except as otherwise noted)

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

3(a). Does weather impact the supply of or demand for heating fuels? Explain why.

Weather impacts the demand for heating fuels, and consumers are the users of heating fuels.

3(b). Explain why the June fire in Texas lowered prices in the US, and discuss for whom they may have increased prices.

The June fire stopped exports of liquified natural gas, meaning that supply was higher in the US than otherwise anticipated. This decreased prices in the US and increased prices wherever this fuel was meant to go – probably Europe.

3(c,6 points). Do higher inventories of fuels make the supply of heating fuels more or less elastic? Explain why, and whether higher inventories are likely to increase or decrease prices, all else equal.

Higher inventories of fuel make the supply more elastic. suppliers have more fuel to bring to the market in response to price changes.

The second half of this question about prices was not a good question, since as I wrote it the answer is not clear. I therefore graded entirely on the first part.

B. Medium Answer Questions (52 points, 4 points each question)

1. Give two examples of things that could shift demand for movies (movies writ broadly, not just movies in the theatre), and describe which way each example shifts the demand curve. Graphs may be helpful in explaining your answer.

Things that can shift the demand curve include

- income
- tastes/preferences
- price of substitutes
- expectations
- congestion and network effects
- type and number of buyers

For movies, demand could decrease (shift inward) due to an increased taste for video games, which are a substitute. Demand could increase (shift outward) as people's income increases.

An answer of "price" here is incorrect. Prices deliver movement along the demand curve, rather than a demand curve shifts.

2. Define the cross-price elasticity of demand. What is the sign of the cross-price elasticity between new cars and old cars? Explain why. If you tax used cars, what do you expect to happen to the demand for new cars? Explain why.

The cross-price elasticity of demand is the change in consumption of good X due to a change in price of good Y:

$$E_{X,Y} = \frac{\%\Delta Q_Y}{\%\Delta P_X}$$

In the case of this problem, this is as below, where B stands for bananas and A for apples.

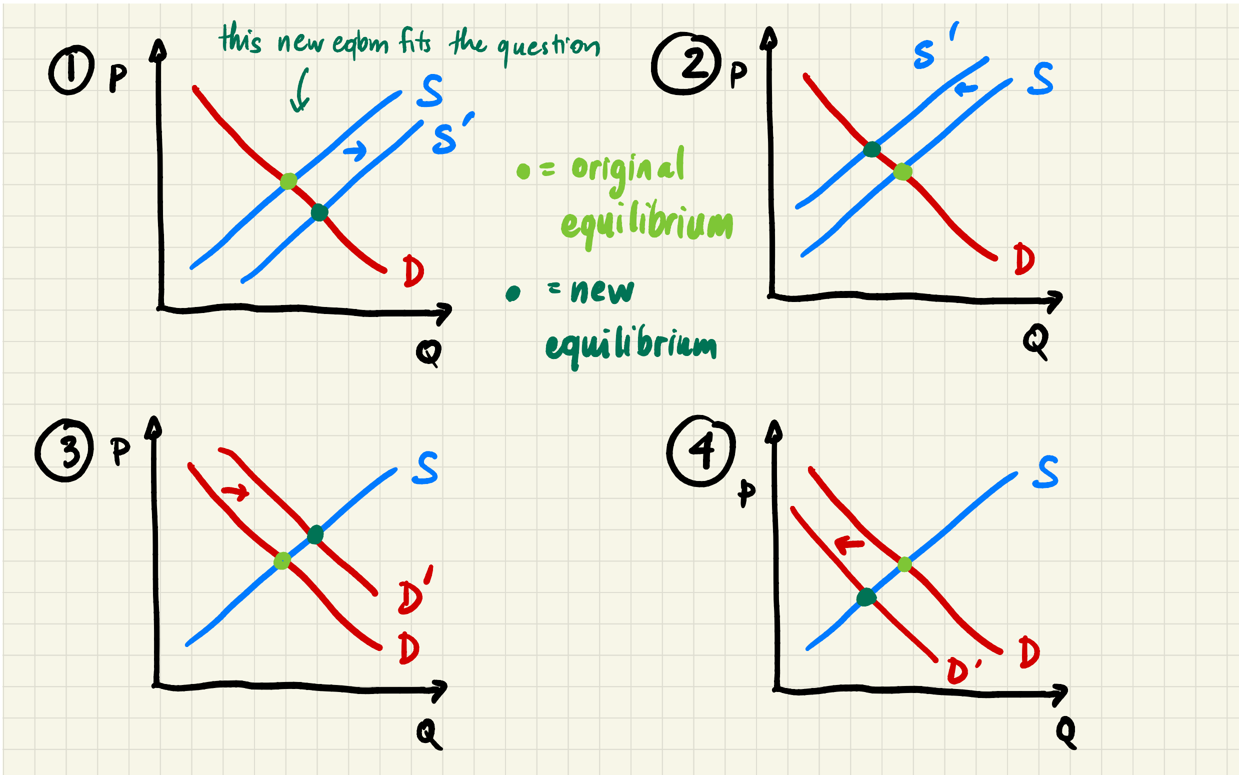
$$E_{\text{new,old}} = \frac{\%\Delta Q_{\text{new}}}{\%\Delta P_{\text{old}}}$$

The sign of the cross price elasticity of new cars and old cars is positive. If the price of old cars increases, we expect the consumption of new cars to increase. New cars and old cars are substitutes.

If you tax old cars, this increases the price of old cars. An increased price of old cars should make people switch from old cars to new cars.

3. Suppose that either supply or demand (not both!) change in the market for lentils. Further suppose that the equilibrium price declines and the equilibrium quantity increases. Did the supply curve or the demand curve move? Which way?

Below I draw four possibilities when only the supply or demand curve shifts. The only picture consistent with this problem is when the supply curve shifts outward.



4. Suppose that the price of tomatoes increased by 5% and that the price elasticity of demand for tomatoes is -0.5. By how much does the quantity of tomatoes consumed change? Can you tell whether tomatoes are an inferior good? Why or why not?

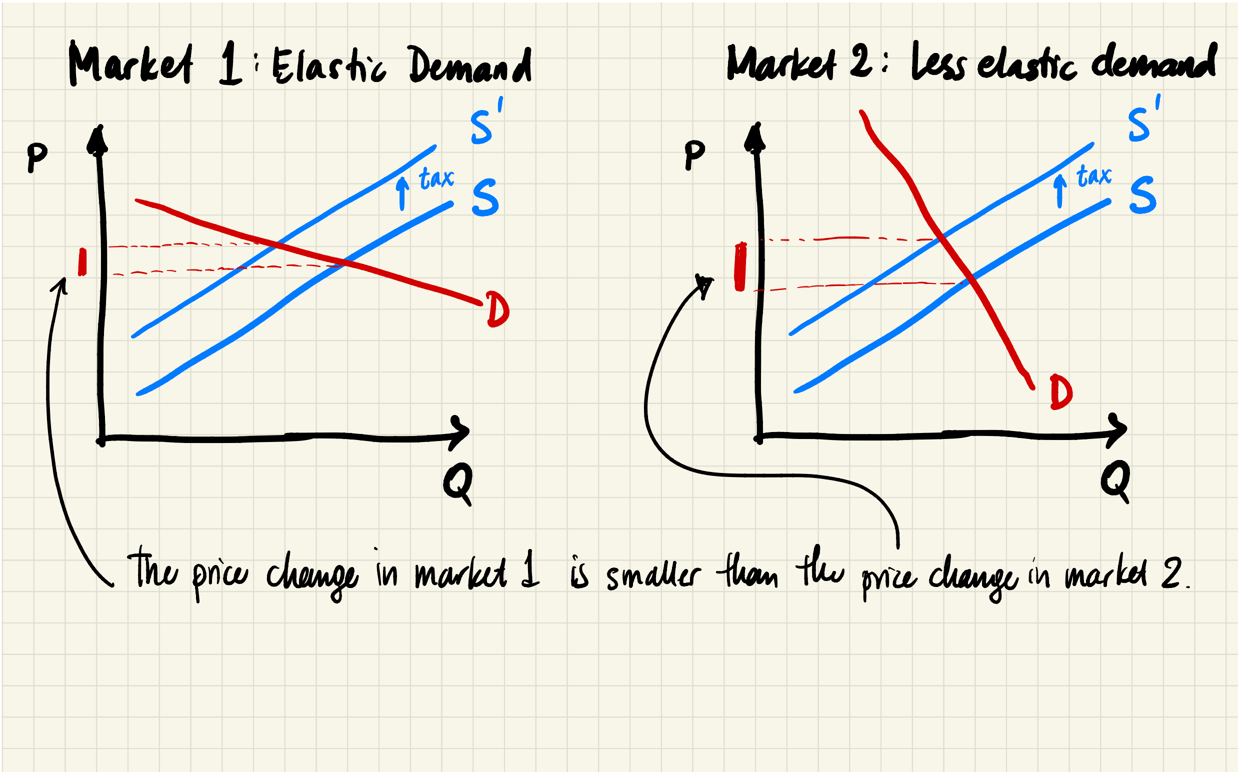
$$
\begin{aligned}
E_D &= \frac{\%\Delta Q}{\%\Delta P} && (1)\\
-0.5 &= \frac{\%\Delta Q}{0.05} && (2)\\
\%\Delta Q &= (-0.5) * (0.05) && (3)\\
\%\Delta Q &= -0.025 && (4)
\end{aligned}
$$

The quantity of tomatoes consumed decreases by 2.5%.

An inferior good is one the consumption of which decreases as your income increases. We don't know anything about consumption and income changes here, so we can't say whether tomatoes are an inferior good.

5. Suppose that the government is contemplating a new tax, for which the statutory incidence is on suppliers. The government is considering two markets on which to levy this tax. Market 1 has relatively elastic demand, and Market 2 has relatively inelastic demand. In which market do consumers bear a greater burden of the tax? Explain the logic behind your

conclusion using pictures and words.



6. Suppose that Chicago is hit by a hailstorm and that this increases the demand for new cars. Further suppose that we have a trade war and the price of metal for cars increases. What can you predict about the new equilibrium price and quantity in the market for new cars? Explain your logic. A graph may be helpful in this explanation.

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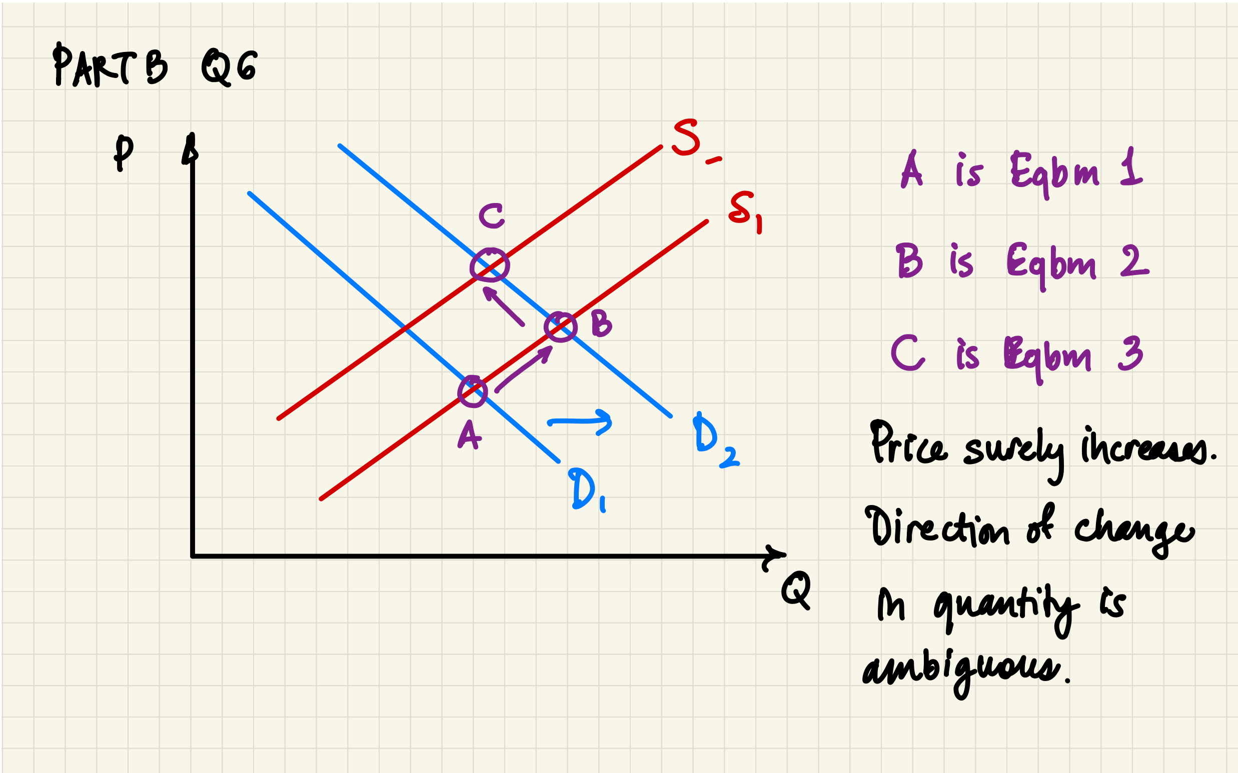
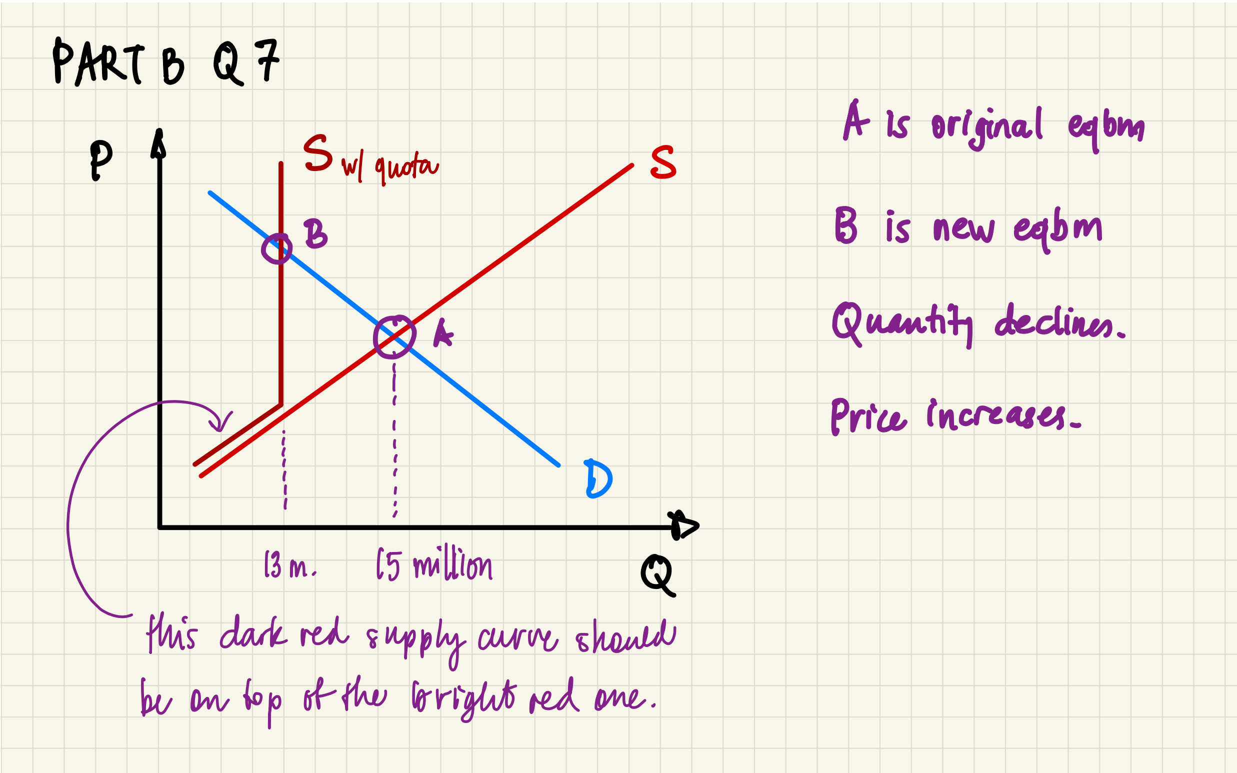


Since in this case both the supply and demand curve both shift, we can only be sure about the direction of change either price or quantity and not both. In this case, price increases and the change in quantity is ambiguous.

7. Suppose that the market equilibrium quantity of eggs supplied is 15 million per month. Now suppose that the government decides to limit the total production of eggs to 13 million. Draw a graph that shows the original equilibrium and the new equilibrium. Describe in words what happens to the price and quantity. Is there a surplus or a shortage? Show it in the graph.



8. Name a fixed cost, variable cost and sunk cost in the production of vanilla. Explain your answer using the definitions of these terms.

fixed cost is the cost required to produce any units. For vanilla, land is a fixed cost.

variable cost is a cost that is required for each unit. For vanilla, pollinating the flowers is a variable cost.

A sunk cost is a fixed cost that is not recoverable. Suppose that you rent land for a year and are not allowed to sublease. Then the land rental is a sunk cost in the production of vanilla.

9. Define the marginal benefit of consumption. As consumption increases, do we expect that the marginal benefit increases or decreases? Give an example from your life illustrating the increase or decrease as consumption increases.

the marginal benefit of consumption is the additional benefit/happiness you get from consuming an additional unit of a good. in general, we expect that the marginal benefit of additional consumption is declining. this answer needs an example that illustrates this declining marginal benefit.

10. Explain why a firm in a perfectly competitive market cannot charge more than marginal cost.

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perfectly competitive markets have many many firms that produce identical products. If one firm tries to price higher than marginal costs, other firms will charge marginal cost and the high price firm will get competed away.

11. Name two features of a market not in equilibrium, give a real world example of one of them and explain why it fits the market not in equilibrium.

The three features of a market not in equilibrium are

1. queuing
2. bundling of extras
3. secondary market

A good answer explains why the example fits.

A shortage is a so-so answer to this question for which we gave credit. It's so-so because it gets at the idea of a market out of equilibrium (good), but a it's not really clear what a shortage means. A lot of times people refer to a "shortage" in markets where prices are high. Is that a shortage? Not necessarily – if the price clears the market, it's not a shortage.

12. Name three things that determine the price elasticity of supply, including whether they make supply more or less elastic. Five a real world example of two of them.

The textbook says

1. inventories make supply more elastic
2. easily available inputs make supply more elastic
3. extra capacity makes supply more elastic
4. easy entry and exit make supply more elastic
5. a longer time period makes supply more elastic

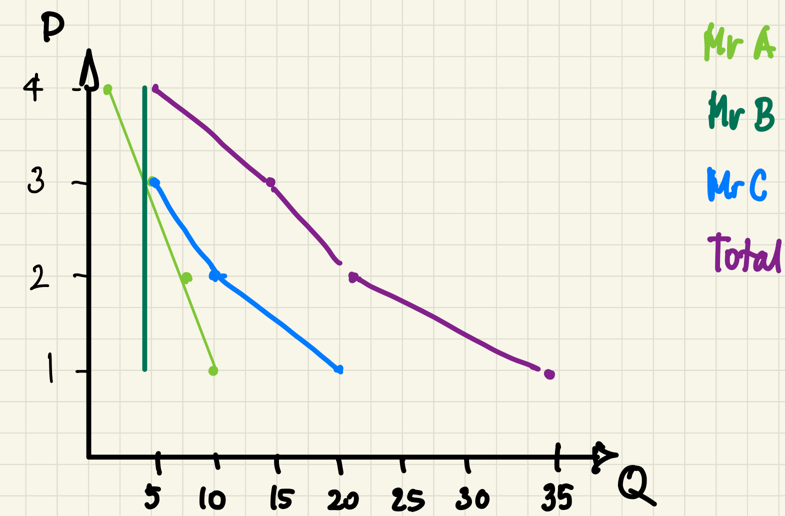
We accept any logical and well-reasoned answer here.

13. Imagine that there are three consumers in the market for cloth napkins and that each consumer's demand is as in the table below. Graph the individual demand curves and the market demand curve.

	Quantity demanded		
Price	Mr. A	Mr. B	Mr. C
1	10	4	20
2	8	4	10
3	5	4	5
4	1	4	0

PARTB Q 13

P	Mkt D
1	34
2	22
3	14
4	5



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USA TODAY

MONEY Soft Drinks Add Topic

Philadelphia soda tax caused 'substantial decline' in soda sales, study finds

Nathan Bomey
USA TODAY

Published 9:44 a.m. ET May 15, 2019 | **Updated 7:47 a.m. ET May 17, 2019**

Soda sales plummeted in Philadelphia following the implementation of a tax on them, according to a new study.

A study published in the Journal of the American Medical Association found that the city's new tax caused a "significant and substantial decline" in soda sales.

The results also show that the tax crushed sales of soda in the city of Philadelphia while boosting sales in nearby areas as customers sought to avoid the levy.

Overall, sales fell by 38% even when factoring in the spike in neighboring areas, according to the study.

Philadelphia region shoppers bought almost 1 billion fewer ounces of soda in 2017 than in 2016, according to the study.

Just do it, already: 'Apple Watch or it doesn't count': How tech addiction might be ruining your workout

The outcome could influence policymakers weighing similar moves in other jurisdictions.

Supporters say the soda tax effectively discourages unhealthy consumption of sugary beverages, potentially fighting obesity and other conditions. Opponents say it disproportionately hurts lower-income people, damages businesses and represents an inappropriate infringement on consumer rights.

The tax, which took effect at the beginning of 2017, is 1.5 cents per ounce on sugary or artificially sweetened drinks. That translates into 30 cents for a 20-ounce bottle and about a dollar for a 2-liter.

Sales inside the city of Philadelphia fell 51%. Sales in nearby areas increased 43%.

Beverage tax: Connecticut may be home to the first statewide beverage tax in the U.S.

Soda taxes, ad limits, better labels: Doctors want to limit sugary drinks for kids, teens

The study authors are Christina Roberto and Michael LeVasseur of the University of Pennsylvania's Perelman School of Medicine and Hannah Lawman of the Philadelphia Department of Public Health.

They examined 291 stores, including supermarkets, mass merchandise stores and pharmacies. They used the city of Baltimore as a control group to account for other factors not related to the tax.

The American Beverage Association, which has opposed soda taxes, said the study shows that "beverage taxes hurt working families, small local business and their employees."

The interest group said "taxes on common grocery items like beverages have never really improved public health" and said half of all beverages contain no sugar.

“America’s beverage companies believe there is a better way to help people reduce the amount of sugar they get from beverages than unproductive taxes," the group said in a statement. "We’re creating more drinks with less or no sugar and we’re making smaller bottle and can options more widely available and boosting consumer demand for these options through our marketing."

Follow USA TODAY reporter Nathan Bomey on Twitter @NathanBomey.

https://www.wsj.com/world/americas/argentina-milei-rent-control-free-market-5345c3d5

Argentina Scrapped Its Rent Controls. Now the Market Is Thriving.

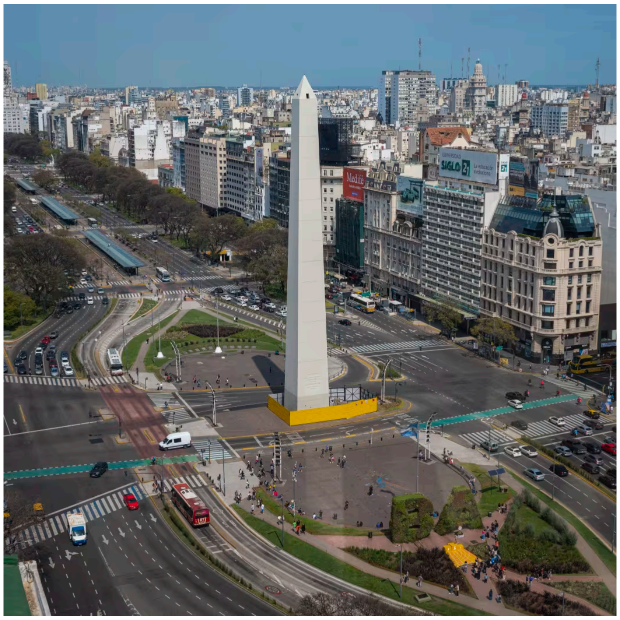
President Javier Milei's fiscal 'shock therapy' yields lower rents overall, but some people feel squeezed

By Ryan Dubé Follow *and Silvina Frydlewsky / Photographs by Irina Werning for WSJ*
Updated Sept. 24, 2024 10:27 pm ET

BUENOS AIRES—For years, Argentina imposed one of the world's strictest rent-control laws. It was meant to keep homes such as the stately belle epoque apartments of Buenos Aires affordable, but instead, officials here say, rents soared.

Now, the country's new president, Javier Milei, has scrapped the rental law, along with most government price controls, in a fiscal experiment that he is conducting to revive South America's second-biggest economy.

The result: The Argentine capital is undergoing a rental-market boom. Landlords are rushing to put their properties back on the market, with Buenos Aires rental supplies increasing by over 170%. While rents are still up in nominal terms, many renters are getting better deals than ever, with a 40% decline in the real price of rental properties when adjusted for inflation since last October, said Federico González Rouco, an economist at Buenos Aires-based Empiria Consultores.



Buenos Aires, the capital of Argentina, is undergoing a rental-market boom.

Milei's move to undo rent-control regulations has resulted in one of the clearest-cut victories for what he calls "economic shock therapy." He is methodically taking apart a system of price controls, closing government agencies and lifting trade restrictions built up over eight decades of socialist and military rule in an effort that has upended the lives of many Argentines.

In Buenos Aires—a city dubbed the Paris of the South for its broad avenues and cafe culture—many apartments long sat empty, with landlords preferring to keep them vacant, or lease them as vacation rentals, rather than comply with the government's rent law.

In 2022, there were some 200,000 empty properties in Buenos Aires, up 45% from 2018, according to a report by Cedesu, a Buenos Aires-based policy group that focuses on urban development. Finding an affordable apartment under the rent-control law was difficult.

Aldana Oliver spent about 18 months looking for a place to rent when she left home for the city of La Plata to study dentistry.

"There were few places to rent and those available were very expensive," said Oliver. After rent control was scrapped, she quickly found a studio apartment for about $200 a month. "I found something really nice. And I got a good price," she said.

Many new contracts—now permitted in dollars as well as pesos—stipulate rent increases every three months, real-estate agents and tenants say. That has made housing costs unaffordable for some people already struggling to pay higher food and utility prices, said Gervasio Muñoz, who represents an association of tenants in Buenos Aires.

Many apartments in Buenos Aires long sat empty. Landlords preferred to keep them vacant, or lease them as vacation rentals, rather than comply with the government's rent law. PHOTO: SARAH PABST/BLOOMBERG NEWS

Romina Misenta, a 40-year-old teacher, said rent on her small apartment increased almost threefold when her previous contract ended.

"My situation has worsened a lot," she said. "I would be paying a lot less in rent if the previous law was still in effect."

Still, rental prices appear to be stabilizing. Monthly price increases are now at their lowest rate since 2021 as more apartments become available, according to Zonaprop, Argentina's largest real-estate website.

https://www.wsj.com/articles/higher-heating-bills-poised-to-hit-u-s-households-this-winter-11665805210

MARKETSCOMMODITIES

Higher Heating Bills Poised to Hit U.S. Households This Winter

More expensive natural gas, heating oil, propane and electricity are colliding with forecasts for slightly colder temperatures

The Energy Information Administration's seasonal outlook has a base case for a 27% increase in home heating oil expenses this winter.

PHOTO: ROBERT F. BUKATY/ASSOCIATED PRESS

By Ryan Dezember Follow

Oct. 16, 2022 5:30 am ET

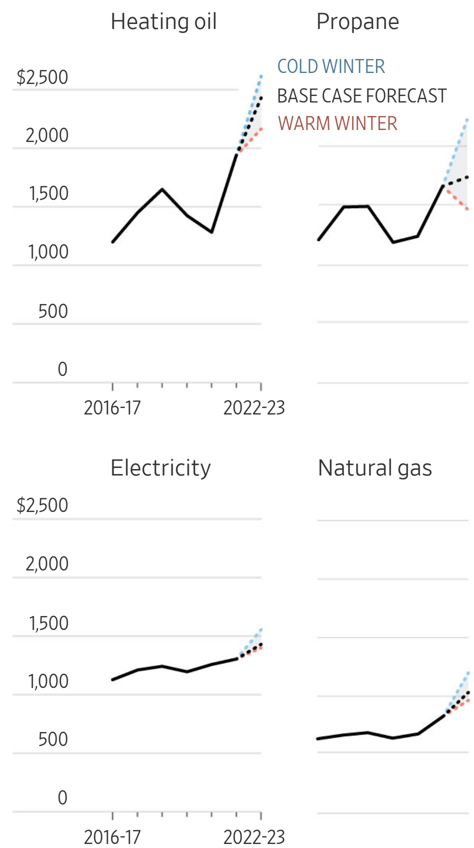
High fuel prices have been a big driver of inflation, pumping up the cost of summer travel and air conditioning, and federal energy forecasters say that staying warm this winter will be more expensive as well.

Americans should expect bigger home-heating bills compared with last winter, thanks to higher prices for natural gas, heating oil, propane and electricity as well as slightly colder weather, the U.S. Energy Information Administration said in its seasonal outlook.

Government energy specialists predict that it will cost $931 to warm the typical home that is heated with natural gas between this month and March. That is up 28% from a year earlier in nominal terms. If it gets colder than federal weather forecasters expect, heating bills could be

51% more than last year for homes with gas-fueled furnaces and boilers, which is nearly half of U.S. households. A 19% year-over-year jump is anticipated if it is a warm winter.

Historical and forecast average household winter heating expenditures by energy type



Note: Years refer to October through March
Source: U.S. Energy Information Administration
Aziz Sunderji/THE WALL STREET JOURNAL

The base case for those who burn heating oil—mainly in the Northeast, where low imports and closed refineries have reduced supply—is for 27% greater expense. Those with propane, popular in rural areas, and electric heat are expected to pay 5% and 10% more, respectively, if temperature forecasts hold.

“Winter energy expenditures for most households are likely to be higher than last winter,” said Joseph DeCarolis, EIA administrator. “Much higher if the weather is very cold.”

A really chilly winter could throw energy markets back into overdrive and turn up the pressure on central bankers, who are fighting what has been the highest inflation in four decades with the steepest interest-rate increases since the early 1980s.

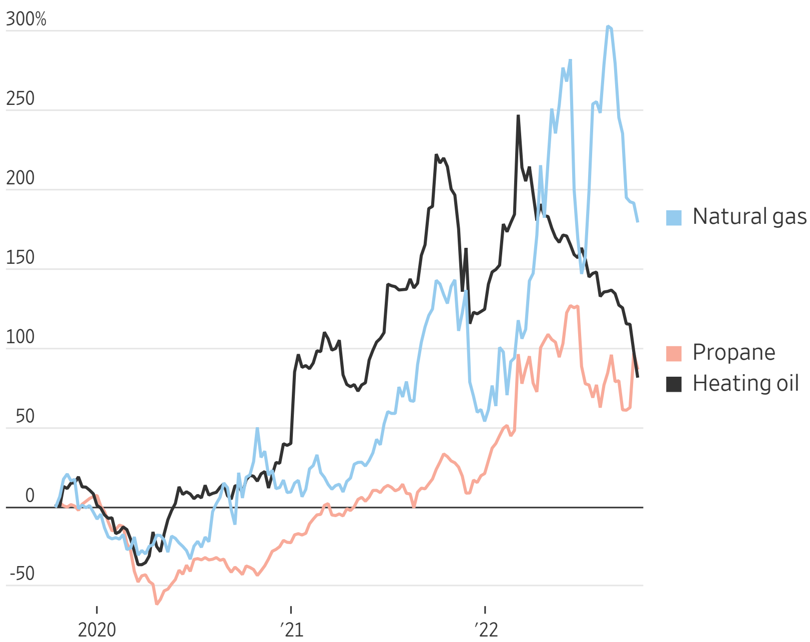
Fuel prices have come down from summer highs as inventories built up from critically low levels.

The declines were reflected in September inflation data, which registered a 19.8% rise in energy costs from a year earlier. That is less than half the year-over-year increase in June and is the slowest gain since March 2021. It is a big reason for the decline in overall inflation from August.

Federal weather officials believe that, on balance, this winter will be colder than last and require more energy to heat homes. Though milder temperatures are expected in the Southwest and along the Atlantic Coast, the National Oceanic and Atmospheric Administration forecasts colder weather in the frigid parts of the country, where the most heating fuel is consumed.

As recently as August, the outlook for winter-fuel prices looked a lot worse for consumers. Natural-gas futures hit shale-era highs above $10 per million British thermal units, and the amount of gas in storage was more than 12% below normal levels. Sky-high coal prices kept gas consumption among U.S. power plants at all-time highs, while Russia's invasion of Ukraine created insatiable demand in Europe for overseas shipments of liquefied natural gas, or LNG.

Futures price performance, weekly



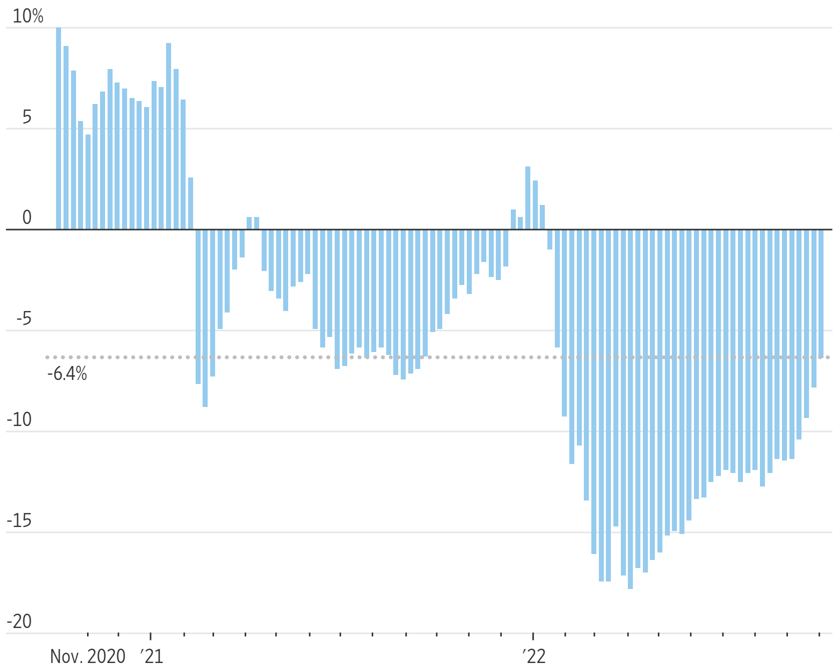
Source: FactSet

Natural-gas prices have declined by about a third since then. They would have likely lingered in double digits had a big LNG shipping terminal in Texas not shut down following a June fire, said Rusty Braziel, chief executive of the consulting firm RBN Energy LLC.

Freeport LNG's outage has reduced U.S. export capacity by nearly one-sixth.

"Instead of going on a ship, these volumes went into inventories, effectively giving the market a reprieve," Mr. Braziel said. "As painful an event as it has been for the folks at Freeport and its customers, it actually helped the U.S. dodge a bullet this summer."

Weekly U.S. natural-gas inventories versus rolling five-year average



Source: Energy Information Administration

Between the gas that otherwise would have been shipped abroad and domestic production that has lately notched daily records, the volumes pumped into U.S. storage facilities over the past month have been the biggest four-week build of the shale era, EIA data show.

Injections of gas into underground caves by traders hoping to sell the fuel for higher prices this winter have halved the deficit to normal inventories that pushed up prices in August.

Analysts and traders say inventories are still low enough that there could be price surges during very cold weather, especially once Freeport resumes operations. The company has said it is aiming to restart next month.

Natural-gas futures ended Friday at $6.453 per million British thermal units, declining for the eighth consecutive week but still 19% higher than a year earlier.

"While we think gas prices are close to fair value, do not write off volatility this winter," said RBC Capital Markets analyst Christopher Louney.

Write to Ryan Dezember at ryan.dezember@wsj.com