ECON 110, Professor Hogendorn, Spring 2016

First Midterm Exam

Each part of a question (a, b, c, etc.) is worth 5 points. Make sure to allot your time accordingly. Total of 30 points, −1 for messiness.

When you are finished, please keep the exam sheet and hand in your blue book. Thanks.

1. *JettaCorolla.* In 2011, Volkswagen made a decision to redesign its Jetta model into a lower-priced car. This was partly to compete better with the Toyota Corolla.

   In 2010, a Volkswagen Jetta cost $17,700. In 2011, a Jetta cost $15,300. In 2010, a Toyota Corolla cost $15,300. In 2011, a Corolla cost $15,600.

   (a) Suppose a household has an income of $44,000. Draw a budget line diagram with Jettas on the vertical axis and Corollas on the horizontal axis. Show the household's budget line for 2010 and for 2011, labeling the endpoints. (Perfect scale is not necessary, just getting the relative positions of the endpoints right is fine. And don't worry about the fact that you can't really buy fractions of a car.)

   (b) Suppose a rental car company bought 30 Jettas and 90 Corollas in 2010. What is its price index for 2011, using 2010 as the base year (2010=100).

2. *Accord_a.*

   (a)

$$\begin{aligned} \epsilon &= \frac{dq}{dp}\frac{p}{q} \\ -4.5 &= \frac{dq}{dp}\frac{21180}{24000} \\ -5.1 &= \frac{dq}{dp} \end{aligned}$$

   If we approximate using linear demand $q = a - bp$,

$$\begin{aligned} b &= 5.1 \\ a - b21180 &= 24000 \\ a &= 132,000 \end{aligned}$$

   (b) Since the Accord is just one particular type of car, there are many close substitutes available to consumers. Then even a small percentage change in the price of the Accord will cause a large percentage demand response from consumers. In general, the more broadly one defines a "good," the lower the price elasticity. E.g. Accords have a higher elasticity than mid-size cars, which in turn have higher elasticity than all cars, which in turn have higher elasticity than all vehicles.

   The Tesla Roadster, however, is a unique vehicle with no close substitutes. It is also an expensive vehicle that is probably purchased by individuals for whom price is less of an issue. For these reasons, its demand elasticity is probably lower, at least for small changes in price.

   (c) Consumer surplus is the area under the demand curve and above the price. The simple answer to this question that there are two issues: (i) the price of the EX-L V-6 is higher, which reduces consumer surplus, and (ii) the demand curve for the

EX-L V-6 is shifted up because of the value in the additional features, which increases consumer surplus. Thus, the answer depends on whether the features shift the demand curve by more or less than the price increase.

One can go further and argue that the EX-L V-6 is a bit more along the lines of the Tesla Roadster (alas, only a bit). In that case, it may have lower demand elasticity, which would imply a steeper demand curve and perhaps more area under the curve for consumer surplus. This is all conjectural, but it is plausible.

(d) Price elasticity of supply is

$$\begin{aligned} \epsilon_s &= \frac{ds}{dp}\frac{p}{s} \\ &= 0.19\frac{21180}{24000} = 0.17 \end{aligned}$$