The Market for Kidneys

America faces a desperate organ shortage. Today, more than 76,000 people are waiting for a kidney. About one in four will receive a transplant this year; the rest will either die—at the rate of twelve per day—or languish on dialysis as their names crawl to the top of the national list, an ordeal that can take up to eight years.

Despite decades of public education about the virtues of organ donation, only 6,000 living donors stepped forward last year; another 7,400 people allowed their organs to be transplanted after their death. The gap between the need and the supply of organs for transplantation is large—and growing. What can be done?

Though altruism often moves relatives and friends to donate to a loved one, strangers usually need a stronger incentive if they are to relinquish an organ. Compensation, in some form, for organ donations could motivate thousands of new donors to come forward—but the 1984 National Organ Transplant Act (NOTA) made it a felony to provide any material reward for organ donation.


The Market for Kidneys, Livers and Lungs

It already exists, but unwise laws push it dangerously underground.

By SALLY SATEL

Last month, Levy Itzhak Rosenbaum, a 60-year-old Israeli who made his home in Brooklyn, pleaded guilty in federal court to illegally brokering kidney sales. Between 2006 and 2009, he arranged transplants for three New Jersey patients with renal failure. The donors, poor Israelis, were flown to the U.S. The surgeries took place at American hospitals where doctors had no knowledge that each patient had paid Rosenbaum about $160,000.

The New York Times

Why Selling Kidneys Should Be Legal

By ALEXANDER BERGER

Published: December 5, 2011

A well-regulated legal market for kidneys would not have any of these problems. It could ensure that donors were compensated fairly — most experts say somewhere in the ballpark of $50,000 would make sense.
Price Controls and Shortages - 1973 Oil Embargo

Chronology:

- October 6, 1973: Start of Yom Kippur War
- October 17: Arab states placed an embargo on oil as punishment for U.S. support for Israel.
- Price controls in the United States, intended to promote oil exploration, limited the price of "old oil" (that already discovered) while allowing newly discovered oil to be sold at a higher price.
- National average retail price of a gallon of gasoline:
  - May 1975 – 38.5 cents
  - June 1974 – 55.1 cents

Adapted from Barzel, *Economic Analysis of Property Rights* (1986), Figure 2.2, p. 18
While the immediate effect of the attacks on petroleum markets was to drive prices up, market forces – reflecting little change in supply and demand – acted quickly, and crude oil prices eased within little more than a week. Average crude oil prices paid by U.S. refiners actually declined for the month of September 2001 – falling to $23.73 per barrel from $24.44 in the previous month. The remainder of 2001 saw a continuation of price drops due to weakening demand caused by lower jet fuel consumption, and a warm winter in North America and Europe. Crude oil prices bottomed in December at a level one-third below those existing before the attacks. Events in 2002 – action by the Organization of Petroleum Exporting Countries and Iraq’s supply policy prominent among them – have resulted in crude prices re-attaining 2000 highs near $30 per barrel. Politically sensitive gasoline pump prices followed a somewhat similar path. September 2001 retail prices for unleaded regular averaged seven cents per gallon above August’s $1.43. But pump prices dropped sharply by year-end, reaching $1.13 per gallon before rising in spring 2002. They remained stable in the $1.40 per gallon range between then and September 2002.

October 2, 2001 | Jefferson City, Mo.
Forty-eight gasoline retailers from around the state are going to pay $60,043.51 in penalties and costs for violating Missouri's rules and regulations on price gouging in the wake of the Sept. 11 terrorist attacks, Attorney General Jay Nixon announced today.
## Types and Levels of Taxation in the U.S.

<table>
<thead>
<tr>
<th>Type of Tax</th>
<th>Level of Taxation:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Federal</td>
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<tr>
<td><strong>Personal Income</strong></td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td>X</td>
</tr>
<tr>
<td>Capital Gains</td>
<td>X</td>
</tr>
<tr>
<td><strong>FICA Contributions</strong></td>
<td></td>
</tr>
<tr>
<td>Social Security</td>
<td>X</td>
</tr>
<tr>
<td>&quot;Payroll&quot; Taxes</td>
<td></td>
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<tr>
<td>Medicare</td>
<td>X</td>
</tr>
<tr>
<td><strong>Corporate Income</strong></td>
<td>X</td>
</tr>
<tr>
<td><strong>Excise (Unit)</strong></td>
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</tr>
<tr>
<td><strong>Sales</strong></td>
<td>X</td>
</tr>
<tr>
<td><strong>Property (Real and Personal)</strong></td>
<td>X</td>
</tr>
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</table>
Taxes may be characterized as proportional, progressive, or regressive:

**Proportional tax**: Remains a fixed amount (percentage) no matter the amount being taxed.

**Progressive tax**: Increases as the amount being taxed increases.

**Regressive tax**: Decreases as the amount being taxed increases.

**Tax incidence** is the analysis of the effect of a particular tax on the distribution of economic welfare. It asks the question: “who really bears the burden of a tax?”

We may distinguish two levels of tax incidence:

1. **Statutory incidence**: Who remits the tax revenue to the government?

2. **True incidence**: Who bears the burden of the tax?
### State Sales, Gasoline, Cigarette, and Alcohol Taxes

As of February 1, 2010

<table>
<thead>
<tr>
<th>State</th>
<th>Sales Tax (a)</th>
<th>Gas Tax Per Gallon (k, l)</th>
<th>Cigarette Tax Per 20-Pack</th>
<th>Spirits Tax (Per Gallon)</th>
<th>Table Wine Tax (Per Gallon)</th>
<th>Beer Tax (Per Gallon)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>4%</td>
<td>20.9¢</td>
<td>$0.425</td>
<td>$18.78 (n)</td>
<td>$1.70</td>
<td>$1.05 (u)</td>
</tr>
<tr>
<td>Alaska</td>
<td>none</td>
<td>8.0¢</td>
<td>$2.00</td>
<td>$12.80</td>
<td>$2.50</td>
<td>$1.07</td>
</tr>
<tr>
<td>Arizona</td>
<td>5.6% (b)</td>
<td>19.0¢</td>
<td>$2.00</td>
<td>$3.00</td>
<td>$0.84</td>
<td>$0.16</td>
</tr>
<tr>
<td>Arkansas</td>
<td>6%</td>
<td>21.8¢</td>
<td>$1.15</td>
<td>$2.58</td>
<td>$0.77</td>
<td>$0.21</td>
</tr>
<tr>
<td>California</td>
<td>8.25% (w)</td>
<td>46.6¢</td>
<td>$0.87</td>
<td>$3.30</td>
<td>$0.20</td>
<td>$0.20</td>
</tr>
<tr>
<td>Colorado</td>
<td>2.9%</td>
<td>22.0¢</td>
<td>$0.84</td>
<td>$2.28</td>
<td>$0.28</td>
<td>$0.08</td>
</tr>
<tr>
<td>Connecticut</td>
<td>6%</td>
<td>41.9¢</td>
<td>$3.00</td>
<td>$4.50</td>
<td>$0.60</td>
<td>$0.20</td>
</tr>
<tr>
<td>Delaware</td>
<td>none (c)</td>
<td>23.0¢</td>
<td>$1.60</td>
<td>$5.46</td>
<td>$0.97</td>
<td>$0.16</td>
</tr>
<tr>
<td>Florida</td>
<td>6%</td>
<td>34.5¢</td>
<td>$1.339</td>
<td>$6.50</td>
<td>$2.25</td>
<td>$0.48</td>
</tr>
<tr>
<td>Georgia</td>
<td>4%</td>
<td>12.4¢</td>
<td>$0.37</td>
<td>$3.79</td>
<td>$1.51</td>
<td>$1.01 (v)</td>
</tr>
<tr>
<td>Hawaii</td>
<td>4% (d)</td>
<td>44.4¢</td>
<td>$2.80 (m)</td>
<td>$5.98</td>
<td>$1.38</td>
<td>$0.93</td>
</tr>
<tr>
<td>Idaho</td>
<td>6%</td>
<td>25.0¢</td>
<td>$0.57</td>
<td>$10.96 (n)</td>
<td>$0.45</td>
<td>$0.15</td>
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<tr>
<td>Illinois</td>
<td>6.25%</td>
<td>39.0¢</td>
<td>$0.98</td>
<td>$8.55</td>
<td>$1.39</td>
<td>$0.231</td>
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<tr>
<td>Indiana</td>
<td>7%</td>
<td>34.1¢</td>
<td>$0.995</td>
<td>$2.68</td>
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<td>$0.115</td>
</tr>
<tr>
<td>Iowa</td>
<td>6%</td>
<td>22.0¢</td>
<td>$1.36</td>
<td>$12.47 (n)</td>
<td>$1.75</td>
<td>$0.19</td>
</tr>
<tr>
<td>Kansas</td>
<td>5.3%</td>
<td>25.0¢</td>
<td>$0.79</td>
<td>$2.50</td>
<td>$0.30</td>
<td>$0.18</td>
</tr>
<tr>
<td>Kentucky</td>
<td>6% (e)</td>
<td>22.5¢</td>
<td>$0.60</td>
<td>$6.46 (o)</td>
<td>$0.50 (o)</td>
<td>$0.08 (o)</td>
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<tr>
<td>Louisiana</td>
<td>4%</td>
<td>20.0¢</td>
<td>$0.36</td>
<td>$2.50</td>
<td>$0.11</td>
<td>$0.32</td>
</tr>
<tr>
<td>Maine</td>
<td>5%</td>
<td>31.0¢</td>
<td>$2.00</td>
<td>$5.21 (n)</td>
<td>$0.60</td>
<td>$0.35</td>
</tr>
<tr>
<td>Maryland</td>
<td>6%</td>
<td>23.5¢</td>
<td>$2.00</td>
<td>$1.50</td>
<td>$0.40</td>
<td>$0.09</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>6.25%</td>
<td>23.5¢</td>
<td>$2.51</td>
<td>$4.05</td>
<td>$0.55</td>
<td>$0.11</td>
</tr>
<tr>
<td>Michigan</td>
<td>6%</td>
<td>35.0¢</td>
<td>$2.00</td>
<td>$10.91 (n)</td>
<td>$0.51</td>
<td>$0.20</td>
</tr>
<tr>
<td>Minnesota</td>
<td>6.875%</td>
<td>27.2¢</td>
<td>$1.504</td>
<td>$5.03</td>
<td>$0.30</td>
<td>$0.15</td>
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<tr>
<td>Mississippi</td>
<td>7%</td>
<td>18.8¢</td>
<td>$0.68</td>
<td>$6.75 (n)</td>
<td>$0.427</td>
<td>$0.427</td>
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<tr>
<td>Missouri</td>
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<td>$0.17</td>
<td>$2.00</td>
<td>$0.42</td>
<td>$0.06</td>
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<tr>
<td>Montana</td>
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<td>$1.70</td>
<td>$8.62 (n)</td>
<td>$1.06</td>
<td>$0.14</td>
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<tr>
<td>Nebraska</td>
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<td>27.7¢</td>
<td>$0.64</td>
<td>$3.75</td>
<td>$0.95</td>
<td>$0.31</td>
</tr>
<tr>
<td>Nevada</td>
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<td>33.1¢</td>
<td>$0.80</td>
<td>$3.60</td>
<td>$0.70</td>
<td>$0.16</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>none</td>
<td>19.6¢</td>
<td>$1.78</td>
<td>(q)</td>
<td>(p)</td>
<td>$0.30</td>
</tr>
<tr>
<td>New Jersey</td>
<td>7%</td>
<td>14.5¢</td>
<td>$2.70</td>
<td>$5.50</td>
<td>$0.875</td>
<td>$0.12</td>
</tr>
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<td>New Mexico</td>
<td>5.5% (g)</td>
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<td>$0.91</td>
<td>$6.06</td>
<td>$1.70</td>
<td>$0.41</td>
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<tr>
<td>New York</td>
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<td>$6.44</td>
<td>$0.30</td>
<td>$0.14</td>
</tr>
<tr>
<td>N. Carolina</td>
<td>5.75%</td>
<td>30.2¢</td>
<td>$0.45</td>
<td>$13.39 (n)</td>
<td>$2.34</td>
<td>$0.9971</td>
</tr>
</tbody>
</table>
Suppose the government imposes a tax on a good where previously there was no tax. How will the price change and what effect will there be on firm profits?

\[ \Delta P = P_t - P^* \]

Important concepts to be applied:
- Price elasticity of demand.
- Price elasticity of supply.

Without tax:

\[
\begin{align*}
Q_d &= a - bP \\
Q_s &= c + dP
\end{align*}
\]

\[ P^* = \frac{a - c}{b + d} \]

With tax: \( P_s = P_b - t \)

\[
\begin{align*}
Q_d &= a - bP_b \\
Q_s &= c + d(P_b - t)
\end{align*}
\]

\[ P_b = \frac{a - c + dt}{b + d} \]

\[ P_b - P^* = \left( \frac{d}{d + b} \right) t \]

\[ \Delta P = \frac{\varepsilon_s}{\varepsilon_s + \varepsilon_d} \]
Incidence and Elasticity
Irrelevance of statutory imposition to incidence

\[ S_1 = S_0 + t \]

\[ t = \text{tax} \]

\[ P_s = P_b - t \]

\[ P_b = P_s + t \]
Calculating the Effects of a Unit Tax

Calculate the effects of a $0.50 excise tax in a market where demand and supply are described by the following functions:

\[ Q_d = 210 - 10P \quad \text{and} \quad Q_s = 105 + 20P \]

Include with your answer the initial equilibrium, the post-tax equilibrium, a diagram that illustrates your answer, and a clear description of the true incidence of the tax.
Constructing Economic Diagrams

In the space provided below, carefully construct two diagrams according to the following instructions. Neatness and detail count! Label all important details in your diagrams.

Diagram 1: Draw a production possibility frontier (PPF) illustrating tradeoffs between healthcare services and everything else. The PPF should illustrate the principle of increasing opportunity cost. Label a point “A” on the PPF to represent an initial (arbitrarily chosen) allocation of resources. Modify the diagram to show a new PPF that illustrates growth in all sectors except healthcare. Label a new point “B” on this new PPF that illustrates how growth in other sectors might allow consumption of more healthcare services.

Diagram 2: Draw a supply and demand diagram in which supply is relatively elastic and demand is relatively inelastic. Label the equilibrium price and quantity on the appropriate axes with $P^*$ and $Q^*$. Then modify the diagram to illustrate the imposition of a tax with statutory incidence on sellers. Label the post-tax equilibrium price and quantity on the appropriate axes with $P_b$, $P_s$, and $Q_1$. The finished diagram should accurately reflect the true incidence of the tax – thus illustrating who really ends up paying most of it.
5: Policy Interventions in Markets

Name: ________________________________

Answer Sheet

1. ○ ○ ○ ○ ○
   a b c d

2. ○ ○ ○ ●
   a b c d

3. ○ ○ ● ○ ○
   a b c d

4. ○ ○ ○ ○
   a b c d

5. ● ○ ○ ○
   a b c d

6. ○ ○ ○ ●
   a b c d

7. ○ ○ ● ○
   a b c d

8. ○ ○ ○ ●
   a b c d

9. ○ ○ ○ ●
   a b c d

10. ● ○ ○ ○
    a b c d

11. ○ ○ ● ○
    a b c d

12. ○ ○ ○ ○
    a b c d

13. ○ ○ ○ ○
    a b c d

14. ○ ○ ● ○
    a b c d

15. ○ ○ ● ○
    a b c d

16. ● ○ ○ ○
    a b c d

17. ○ ○ ● ○
    a b c d

18. ○ ○ ● ○
    a b c d

19. ○ ○ ● ○
    a b c d

20. ● ○ ○ ○
    a b c d