

**Lobbying and contributions to influence voters:
The example of U.S. drug re-imports**

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Abstract

In an effort to lower the price of pharmaceuticals, some legislators have been trying to pass bills that would authorize drug re-imports to the United States. Pharmaceutical companies oppose re-imports, by elaborating a message which makes sure their goal (to obtain protectionist measures) and legislators' goals (to be reelected) match. They help legislators reduce the risk of losing votes in the next election campaign, by providing them with a strong message and funds to convince consumers that re-imports should be banned. A vertical differentiation model shows that the pharmaceutical industry can price-discriminate twice against U.S. consumers thanks to efficient lobbying efforts.

Keywords: lobbying, re-imports, pharmaceutical industry, protectionism

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1. Introduction

In an effort to lower the price of pharmaceuticals, some legislators have been trying over the past few years to pass bills that would authorize wholesalers and pharmacists to re-import drugs to the United States. Since the Prescription Drug Marketing Act of 1987, only manufacturers are allowed to import drugs to the United States, which enables pharmaceutical companies to set higher prices on the American market². If re-imports were allowed, pharmacists and wholesalers could purchase a drug from a foreign country which sets price controls on pharmaceuticals, and sell it on the American market without the authorization of the company that owns the intellectual property right on the drug in the United States.

Bills on re-imports will probably be debated in Congress until consumers can afford cheaper drugs. The problem of expensive drugs is especially acute for the 45.7 million Americans who lack health coverage (DeNavas-Walt, et al., 2008). Authorizing re-imports could be a solution, because manufacturers would not be able to practice price discrimination between American and foreign consumers. In one attempt to authorize re-imports, the House voted in 2003 for the *Pharmaceutical Market Access Act* (H.R. 2427), which would have allowed pharmacists and wholesalers to purchase pharmaceuticals from 26 developed countries, including Canada³. The Congressional Budget Office (2003) estimated that the bill could have reduced total prescription drug expenditures in the United States by 40 billion dollars, between 2004 and 2013.

The pharmaceutical industry is a strong opponent of re-imports. It has spent millions of dollars in contributions and lobbying to prevent bills authorizing re-imports

² See Danzon and Furukawa (2006) for example to see differences in biopharmaceutical sales.

³ The bill, though, never made it into law.

from passing. It is often believed that contributions from an industry buy policies which are in its interest. However, contribution patterns from the pharmaceutical industry over the past two decades suggest that another explanation might fit reality better. The following section shows that the message the lobby conveys is at least as important as contributions for obtaining favorable policies. Section 3 presents a vertical differentiation model suggesting that the pharmaceutical industry will manage to maintain a ban on re-imports only if it can convince voters and legislators that foreign drugs are of poorer quality. Section 4 discusses the model's results and shows that it fits an econometric estimation of Representatives' votes on re-imports (Gokcekus et al., 2006).

2. The political economy of pharmaceutical trade

A large part of the economic literature develops the idea that contributions are designed to influence policies or electoral outcomes (e.g. Che and Gale, 1998; Baldwin and Magee, 2000). In these articles, campaign contributions are seen as investments in a political marketplace, with lobbies expecting a return on their investment thanks to favorable votes from politicians (Ansolabehere et al., 2003). A common explanation as to why free-trade, the consumer welfare maximizing solution, does not exist in practice is that legislators cater to lobbies' interests (Gawande and Krishna, 2003). Hillman (1982, 1989) and Grossman and Helpman (1994) study the trade-off legislators make between the interests of lobbies and the welfare of voters. They use a "political support function": to be re-elected, a legislator must find a compromise solution between the increase in welfare lobbies derive thanks to protectionist measures, and the deadweight loss that consumers suffer from. Grossman and Helpman (1994) develop a general equilibrium

model (the *Protection for sale* model), where the legislator's objective function is a weighted sum of aggregate social welfare and contributions from industrial lobbies.

Some economists have offered alternatives to the classical view that contributions are investments in a political market. Ansolabehere et al. (2003) for instance believe that individual and interest group contributions are a type of consumption good. Political scientists generally develop a different approach to lobbying: contributions are a means of obtaining access to legislators, and interest groups provide information to legislators rather than buy policies (i.e. Austen-Smith, 1991, 1995; Austen-Smith and Wright, 1992, 1994; Ainsworth and Sened, 1993).

Following Ansolabehere et al. (2003) and political scientists, this paper argues that contributions from the pharmaceutical industry do not buy trade policy. First of all, the main interest group representing the American pharmaceutical industry, Pharmaceutical Research and Manufacturers of America (PhRMA), does not lobby for trade barriers *per se*. Instead, it argues that drug importations are dangerous, because fake and bad quality drugs could enter the United States⁴. To justify trade restrictions, PhRMA uses the precautionary principle: as long as the drugs that would be imported are not proven to be safe, pharmacists and wholesalers should not be allowed to import them. But if all PhRMA had to do was to buy protectionist policies from legislators who are selling them against campaign contributions, why doesn't it lobby explicitly for protectionist measures? Why does it bother lobbying for the precautionary principle? The message the lobby conveys plays an essential role in obtaining favorable votes. Yet, the political support function does not take this role into account.

Furthermore, if an interest group could buy trade policies, why doesn't it pay more to make sure it obtains what it wants (e.g. Tullock, 1972; Ansolabehere et al.,

⁴http://www.phrma.org/index.php?option=com_content&task=view&id=123&Itemid=109&cat=Importation

2003)? According to Gokcekus et al. (2006), the pharmaceutical industry spent 29 million dollars on lobbying efforts against the 2003 *Pharmaceutical Market Access* act, with PhRMA spending 8.5 million dollars on contributions in early 2003. Yet, the Congressional Budget Office (2003) estimated that the industry could lose billions of dollars. Representatives who voted against re-imports could have asked for more contributions, since they knew how much money was at stake. Pfizer, the largest contributor from the pharmaceutical industry during the 2007-08 election cycle, gave 1.6 million dollars in contributions to Democrats and Republicans (half to each according to the Center for Responsive Politics)⁵ and yet the amount the company spent on contributions seems quite low compared to its net income of 8.3 billion dollars in 2007.

If an interest group could buy trade policies, why did the pharmaceutical industry give any money at all to members of Congress when George W. Bush was President? In May 2007, an amendment to the bill reforming the Food and Drug Administration (S. 1082), passed the Senate by a 49-40 vote. This amendment, whose goal was “to protect the health and safety of the public”, maintained the current restrictions on drug re-imports, when the original bill would have authorized re-imports. Senators voted for the amendment because President Bush threatened to veto bills allowing re-imports. Senators did not want to jeopardize a bill reforming the Food and Drug Administration by keeping a clause authorizing re-imports. So if contributions were only meant to buy votes, a rational interest group should not have bothered giving contributions to

⁵ Contributions from PACs and individuals giving \$200 or more. All donations took place during the 2007-2008 election cycle and were released by the Federal Election Commission on Monday, December 08, 2008. <http://www.opensecrets.org/industries/contrib.php?cycle=2008&ind=H04>

members of Congress whose vote in the end did not really count. Yet, the pharmaceutical industry gave contributions to nearly all Senators during the 2007-2008 election cycle⁶.

Another model than Grossman and Helpman's *Protection for sale* model (1994) should be developed to explain the re-imports issue for at least two other reasons. The first one is that Grossman and Helpman's model is a general equilibrium model, which cannot necessarily explain the mechanisms at play in lobbying for protection within a specific industry.

The second reason is that the *Protection for sale* model assumes that consumer welfare decreases with protectionism. But this isn't necessarily true with a consumer welfare function that takes into account differences in product quality. The issue of quality is essential when studying pharmaceutical products. Consumers are unable to determine the quality of a drug they buy just by looking at it, but they need to be sure that the drugs they take are safe. If consumers think that foreign drugs are unsafe compared to American drugs, a simple vertical differentiation model can show that consumers' welfare could decrease if legislators authorized re-imports. The pharmaceutical lobby knows that some consumers will prefer to pay a higher price for a drug they think is of better quality. If the lobby is successful in convincing consumers that only domestic drugs are safe, legislators should vote against re-imports to avoid losing their constituents' support. Contributions are important for a legislator who seeks reelection, but not necessarily as important as the image and message she gives out to voters (Levitt, 1994). A legislator needs to show that she takes into account her voters' opinions. The message the lobby conveys and the expenses it is willing to make to

⁶ Data from the Center for Responsive Politics. The numbers are based from releases by the Federal Election Commission (as of December 08, 2008). They include contributions from PACs and individuals giving \$200 or more during the 2007-2008 election cycle.
<http://www.opensecrets.org/industries/summary.php?ind=H4300&cycle=2008&recipdetail=S&sortorder=N&mem=N>

spread the message are essential in shaping voters' opinions, and thus obtaining legislators' support.

Contributions therefore seem to play another role than buying policies. This article follows Hall and Deardorff's (2006) suggestion that lobbying provides a service to legislators. While Hall and Deardorff view lobbying as an activity that helps legislators to obtain policy information, political intelligence and legislative labor, this article contends that interest groups provide legislators with information, arguments and funds to influence voters. It also develops an idea by Imai et al. (2006), who argue that simpler models can serve as a basis for explaining empirical results supposed to test the Grossman and Helpman framework⁷ (e.g. Goldberg and Maggi, 1999; Gawande and Bandyopadhyay, 2000).

The following model suggests that a legislator caters to a lobby's interest only if its arguments and contributions can help her reduce the risk of losing votes in the following elections. Consumers ask the legislator to vote for bills that will maximize their welfare. If the legislator does her job correctly, they will reelect her. The legislator, though, is never quite sure that the way she votes on a bill maximizes her constituents' welfare. If she wants to vote against re-imports, then the interest group will provide her with the information, arguments and money she needs to convince her constituents that she is making the right decision.

⁷ Imai et al. (2006) provide a summary of papers highlighting theoretical and empirical problems that arise with the *Protection for sale* model

3. The Model

3.1 Hypotheses

A unique pharmaceutical company has a monopoly on the sale of a drug, which it distributes at a regulated price p^* on the foreign market and at an unregulated monopoly price p_M in the United States, with $p^* \leq p_M$.

The model describes what happens in a given congressional district of the United States. The consumers of the district vote for their legislator, who can set trade policies for the pharmaceutical industry, but does not regulate prices directly. Her objective is to vote for a law that will enable her reelection. She therefore has in mind the maximization of consumers' welfare when she chooses between authorizing re-imports and maintaining the ban on re-imports⁸. A ban on re-imports means that the company can discriminate between consumers of the two markets, setting p^* on the foreign market and a higher price p_M on the domestic market. If the legislator authorizes re-imports, then pharmacists and wholesalers will re-import the drug to sell it at p^* on both markets (for the sake of simplicity, transport costs are assumed to be equal to zero). The pharmaceutical company would then have to apply the foreign regulated price on the domestic market, providing the company cannot negotiate p^* with the foreign government.

3.2 Consumers' demand, with uncertainty on the drug's quality

For the sake of simplicity, a consumer i from a total of N consumers buys one or zero unit of the drug. Total demand for the drug on the domestic market thus depends on the number of consumers who purchase the drug.

⁸ The legislator votes on only one issue in this model.

Each consumer is characterized by his willingness to pay for the drug (β_i). For example, consider a consumer who is sick. If he is wealthy and has good health coverage, he will have a higher β than a consumer who is just as sick but is poorer and has no coverage. β_i is uniformly distributed with density $\frac{1}{\beta_{max}}$ on the interval $[0, \beta_{max}]$, which means that there are an equal number of consumers with each β .

A consumer's demand depends on the drug's perceived quality. Consumers are unable to check the quality of the drug. As is the case in the United States, they trust the domestic drug, whose quality the Food and Drug Administration is supposed to guarantee, but they are unsure about the quality of the foreign drug, which could be the authentic domestic re-imported drug or a counterfeit. The domestic drug is defined by its perceived quality θ_{dom} while the foreign drug's perceived quality is θ_{for} with $\theta_{dom} \geq \theta_{for}$. If consumers think that the foreign drug re-imported to the United States is exactly the same as the one sold directly on the domestic market, then $\theta_{dom} = \theta_{for}$. Consumers have doubts on the quality of the foreign drug, because they have no way to check on their own whether the imported drug is really the same as the domestic good⁹.

To decide whether to authorize re-imports or not, the legislator observes the consumer's objective function:

$$(1) \quad U_i = \beta_i \theta_{dom} + y - p_M \quad \text{if the policymaker bans reimports}$$

$$(2) \quad U_i = \beta_i \theta_{for} + y - p^* \quad \text{if the policymaker authorizes reimports}$$

With $y - p$ consumers' utility from money not spent on the drug.

The consumer who is indifferent between the two options has a willingness to pay $\widehat{\beta}_1$ such that:

⁹ While the *Pharmaceutical Market Access Act* required that prescription drugs be in counterfeit-resistant packaging, government authorities say they cannot guarantee that re-imported drugs are not actually counterfeits.

$$(3) \quad \theta_{dom}\widehat{\beta}_1 - p_M = \theta_{for}\widehat{\beta}_1 - p^* \Leftrightarrow \widehat{\beta}_1 = \frac{p_M - p^*}{\theta_{dom} - \theta_{for}}$$

A consumer whose willingness to pay is higher than $\widehat{\beta}_1$ wants for the legislator to maintain the ban on re-imports, because he prefers to pay a higher price for a drug he thinks is safe. A consumer whose willingness to pay is below $\widehat{\beta}_1$ prefers for the legislator to vote for re-imports. In this case, either the consumer believes the quality of the foreign drug is close to or the same as the domestic drug's quality or he prefers risking buying a foreign drug at a lower price because he cannot afford to pay p_M .

To be reelected, the legislator must decide what solution will enable her to keep a majority of votes: the free trade of pharmaceutical products to lower prices or protectionism to avoid the risk of buying counterfeit drugs. The legislator must therefore establish whether a majority of voters have a willingness to pay above or below $\widehat{\beta}_1$. To do so, she observes the share of the demand for each good on a virtual market where both drugs would be sold at different prices. This market does not exist in practice: the current ban on re-imports implies that only the domestic drug is for sale on the market. If re-imports were legal, then consumers would not be able to tell the difference between the authentic domestic drug and a possible counterfeit imported from a foreign country.

Each consumer will choose the drug which minimizes the following function:

$$p^* - \beta_i \theta_{for} \text{ or } p_M - \beta_i \theta_{dom}$$

In figure 1, the lines represent the total price for each drug.

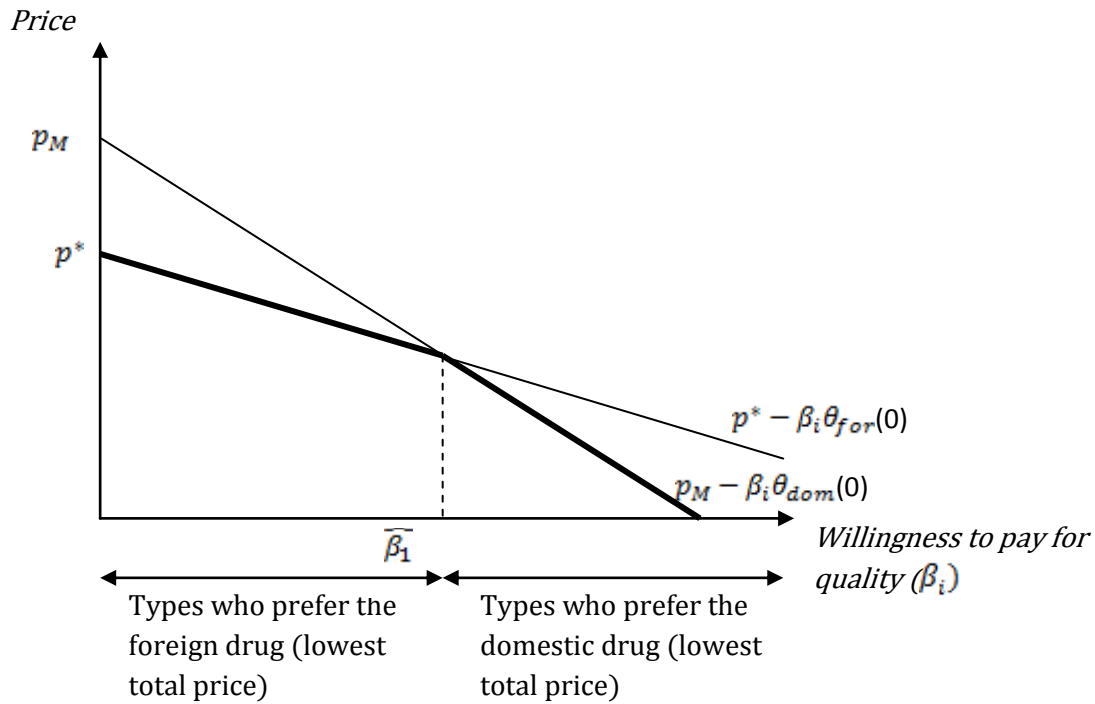


Figure 1: The virtual market where both drugs would be available

The virtual total demand for the domestic drug is therefore:

$$(4) \quad q_{dom} = \frac{N}{\beta_{max}} (\beta_{max} - \bar{\beta}_1)$$

The virtual total demand for the foreign drug becomes:

$$(5) \quad q_{for} = \frac{N}{\beta_{max}} \left(\bar{\beta}_1 - \frac{p^*}{\theta_{for}} \right)$$

Those who do not consume the drug have types such that $\beta_i < \frac{p^*}{\theta_{for}}$

The virtual market share of the domestic drug is defined by:

$$(6) \quad s_{dom} = \frac{q_{dom}}{q_{dom} + q_{for}}$$

A rational legislator who thinks that $s_{dom} > 50\%$ should vote for a ban on re-exports. This result contradicts the traditional political economy theory of protectionism, which suggests that legislators would vote for re-exports if there did not exist a pharmaceutical lobby. Here, some legislators will choose to vote against re-

imports even without the influence of a lobby. If she believes that $s_{dom} < 50\%$ then she should vote for re-imports. If $s_{dom} \geq 50\%$ the legislator is not quite sure what she should vote for.

The demand for the domestic drug if re-imports are banned (q_{M1}) is:

$$(7) \quad q_{M1} = \frac{N}{\beta_{max}} \left(\beta_{max} - \frac{p_{M1}}{\theta_{dom}} \right)$$

With p_{M1} the monopolistic price the company sets on the domestic market before it campaigns against re-imports.

The legislator may have a good idea of what her voters want, but she knows she will risk losing votes in the following elections. If she votes against re-imports she will probably lose votes from consumers who will not be able to buy the domestic drug because it is too expensive. However, if she decides to vote for re-imports, she might lose votes from consumers who can afford the more expensive domestic drug, but fear the foreign drug is of poor quality. The legislator does not have an accurate knowledge of her constituents' opinions and can only make an educated guess. The legislator might want to influence her voters to be against re-imports even though she thinks most of her voters support re-imports in the first place. If she voted for re-imports and deadly counterfeit drugs from a foreign country made their way to the American market, then she could be held liable for authorizing re-imports. Voters would probably think that she should have known better. The legislator's problem is to minimize the number of votes she will lose when she casts her vote: that's where the interest group can help her.

3.3 The lobby offers its help to the legislator

If the legislator wishes to vote against re-imports, she can decide to ask for the help of the pharmaceutical lobby, which can help her reduce the risk of losing votes by organizing and financing campaigns against re-imports. The lobby therefore helps the legislator convince her constituents that foreign drugs are unsafe. Or the lobby might want to pressure a hesitant legislator to vote against re-imports. The legislator might be more willing to vote in favor of the lobby's interests if it can provide her with a convincing message for her constituents.

Now a consumer's perception of a drug's quality is a function of advertising efforts against re-imports, such that:

$$\theta_{dom} = \theta_{dom}(a) \text{ and } \theta_{for} = \theta_{for}(a)$$

Where a is the sum the lobby spends on advertizing efforts against re-imports. This sum includes the contributions the lobby gives to the legislator so she can finance her own advertising campaign against re-imports to persuade voters that she is taking the right decision (with $\theta'_{for}(a) < 0$ and $\theta''_{for}(a) \geq 0$, and with $\theta'_{dom}(a) > 0$ and $\theta''_{dom}(a) \leq 0$). A consumer starts out with an initial perceived quality equal to $\theta_{for}(0)$ and $\theta_{dom}(0)$.

Efficient advertizing efforts against re-imports increase consumers' perception of the domestic drug's quality, and decrease their perception of the foreign drug's quality.

The consumers' new utility function becomes:

$$(8) \quad U_i = \theta_{dom}(a) \cdot \beta_i + y_i - p_{M2} \quad \text{if the policymaker bans reimports}$$

$$(9) \quad U_i = \theta_{for}(a) \cdot \beta_i + y_i - p^* \quad \text{if the policymaker authorizes reimports}$$

With p_{M2} the monopolistic price the company sets in the country after it campaigns against re-imports.

The consumer who is indifferent between the two options is such that:

$$(10) \quad \widehat{\beta}_2(\alpha) = \frac{p_{M_2} - p^*}{\theta_{dom}(\alpha) - \theta_{for}(\alpha)}$$

Note that $\widehat{\beta}_2(0) = \widehat{\beta}_1$

The lobby knows the consumers' utility function as well as the indifference equation defining $\widehat{\beta}_2(\alpha)$. In particular, the lobby observes:

$$\frac{d\widehat{\beta}_2(\alpha)}{dp_{M_2}} > 0; \quad \frac{d\widehat{\beta}_2(\alpha)}{dp^*} < 0; \quad \frac{d\widehat{\beta}_2(\alpha)}{d\theta_{dom}(\alpha)} < 0; \quad \frac{d\widehat{\beta}_2(\alpha)}{d\theta_{for}(\alpha)} > 0$$

The lobby therefore knows that more consumers will prefer the foreign drug when the price of the domestic drug and the perceived quality of the foreign drug increase. More consumers will prefer the domestic drug when the price of the foreign drug and the perceived quality of the domestic drug increase.

The lobby has no power over p^* , which is set by the foreign government. The lobby, which represents the pharmaceutical company, has the power to change the price it sets on the domestic market. If it lowers the price, then more people will be willing to buy the domestic drug. But the company wants to increase its domestic price as much as possible. The lobby knows that it will alienate consumers if it chooses to publicly call for protectionist measures to maximize its profits. If the company lobbies for protectionism alone (with an increase in p_M , all other variables remaining equal), the legislator will lose voters if she decides to oppose re-imports. Figure 2 illustrates this argument: if the lobby increases its domestic price alone, then more consumers will want to buy the foreign drug.

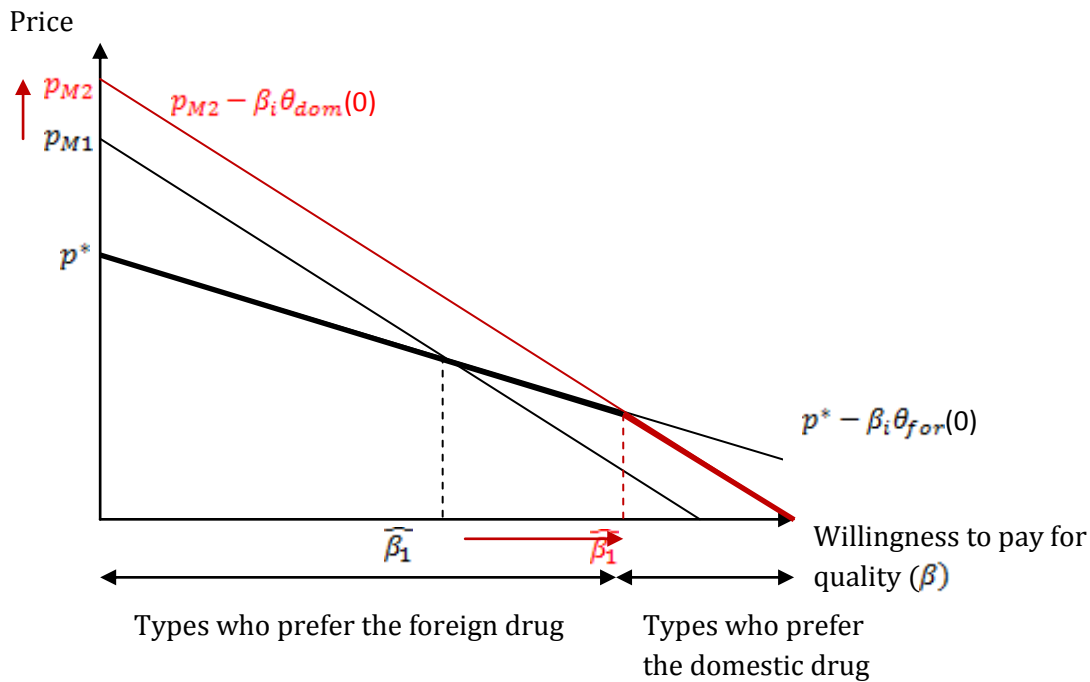


Figure 2: The virtual market after an increase in prices

Trying to buy protection with contributions is therefore counterproductive for the company. Yet, the lobby wants to maintain high monopolistic prices. The only way it can succeed is by increasing consumers' risk aversion for the foreign drug. If the lobby explains that it is necessary to restrict trade because the foreign drug represents a serious threat to Americans' health, then more people will be willing to buy the domestic drug even though it is more expensive. The more the lobby manages to scare consumers ($\theta_{for}(a)$ decreases), the more consumers are willing to pay a higher price for the domestic drug they perceive as being of higher quality ($\theta_{dom}(a)$ increases). The lobby will therefore invest enough in advertizing (including contributions) to make sure that more consumers oppose re-imports, such that:

$$(11) \quad \widehat{\beta}_2(a) < \widehat{\beta}_1$$

Thanks to the company's lobbying for the precautionary principle, the legislator can feel more comfortable in voting for a law banning re-imports. With the lobby's help, she manages to limit the number of votes she might lose, by convincing her voters that the foreign drug is likely to be dangerous. It is in the lobby's interest to give contributions to the legislator to spread the anti-foreign drug message as widely as possible. The lobby may even want to finance other interest groups to make sure the anti-foreign drug arguments come from as many different sources as possible and thus reach as many people as possible.

Contributions do not buy votes *per se*. However, if a legislator believes that the safety argument is convincing, she might as well accept contributions from the pharmaceutical industry, vote against re-imports and publicize her stand.

3.4 The company can discriminate twice against US consumers

The equation of $\widehat{\beta}_2(\alpha)$ suggests that the company can raise its monopoly price on the domestic market if it increases the difference between the perceived quality of the two products $(\theta_{dom}(\alpha) - \theta_{for}(\alpha))$. The extent to which the lobby can increase the domestic price thus depends on the sensitivity of the demand for the domestic drug to $\theta_{dom}(\alpha)$, as shown by the new demand function for the domestic drug once re-imports are banned:

$$(12) \quad q_{M2} = \frac{N}{\beta_{max}} \left(\beta_{max} - \frac{p_{M2}}{\theta_{dom}(\alpha)} \right)$$

$$(13) \quad p_{M2} = \beta_{max} \cdot \theta_{dom}(\alpha) - \frac{\beta_{max} \cdot \theta_{dom}(\alpha)}{N} \cdot q_{M2}$$

Equation (15) shows that the demand curve should move upwards and shift inwards as the demand for the domestic drug becomes more inelastic with the increase in $\theta_{dom}(\alpha)$. The more θ_{dom} is sensitive to an increase in α , the more the company can set a higher price.

The lobby's profit if re-imports are banned and if $\alpha = 0$:

$$(14) \quad \pi_1 = p^*(q_T - q_{M1}) + p_{M1} \cdot q_{M1} - TC$$

With TC total cost (without contributions and advertizing expenses) and q_T the total quantity the company sells on both markets.

The lobby's profit if re-imports are banned and if the company increases α :

$$(15) \quad \pi_2 = p^*(q_T - q_{M2}) + p_{M2} \cdot q_{M2} - (TC + \alpha)$$

The company can earn higher profits thanks to advertizing and lobbying efforts against re-imports if and only if:

$$(16) \quad \pi_2 > \pi_1 \Leftrightarrow p^*(q_{M1} - q_{M2}) + p_{M2} \cdot q_{M2} - p_{M1} \cdot q_{M1} > \alpha$$

Figure 3 illustrates this case: the publicity against re-imports enables the company to discriminate twice against American consumers and to increase its profits.

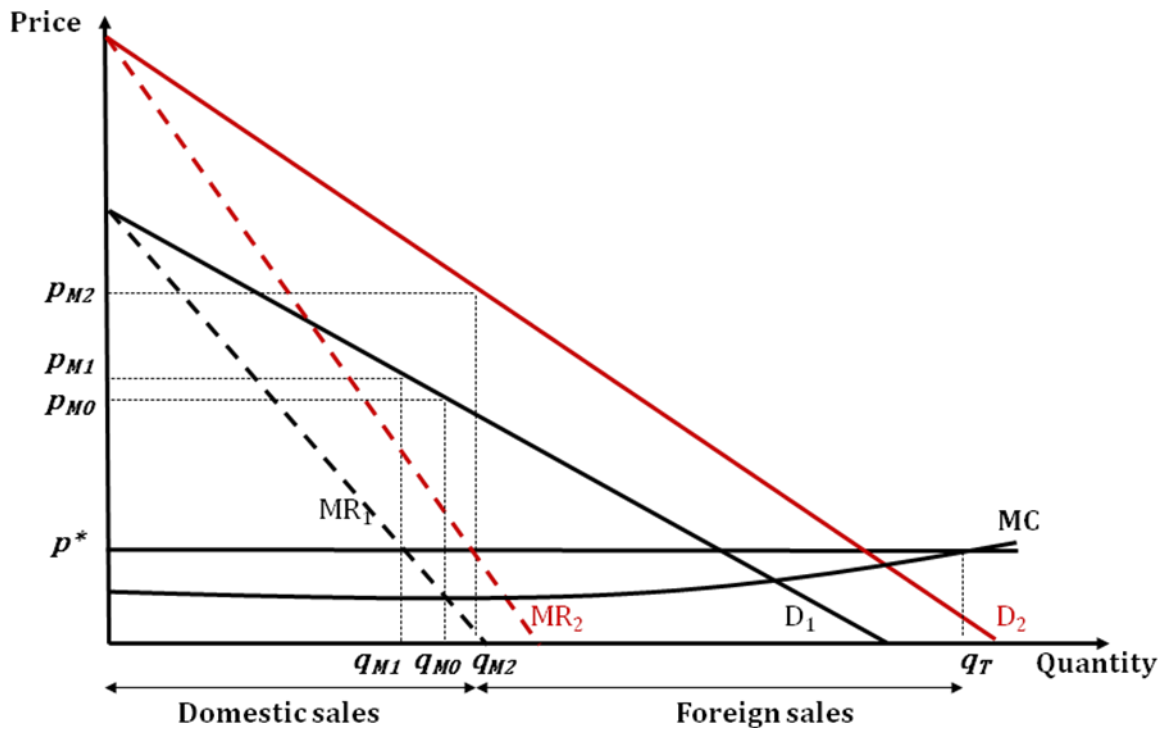


Figure 3: The demand for the domestic drug when re-imports are banned

In figure 3, D_1 corresponds to demand function (9) and D_2 to demand function (15). In both cases, the company can discriminate between domestic and foreign consumers. Before it advertizes against re-imports, it sells what it can on the domestic market at price p_{M1} such that $MR_1 = p^*$ (with MR_1 marginal revenue before advertizing). After it advertizes, the company can sell the drug on the domestic market at price $p_{M2} > p_{M1}$ such that $MR_2 = p^*$ (with MR_2 marginal revenue after advertizing). The rest is sold on the foreign market until $p^* = MC$ (with MC marginal cost). p_{M0} is the autarky monopoly price (such that $MR_1 = MC$) the company would have set if it couldn't practice price discrimination. The figure suggests that an efficient advertizing campaign against re-imports increases total domestic demand for the domestic drug despite higher prices ($q_{M2} > q_{M0} > q_{M1}$ with $p_{M2} > p_{M1} > p_{M0}$).

However, if the company's advertizing campaign is unsuccessful ($\theta_{for}(0) = \theta_{for}(a)$ and $\theta_{dom}(0) = \theta_{dom}(a)$), then the company must reduce its domestic price to make sure that $\bar{\beta}_2(a) < \bar{\beta}_1$. Although it would decrease its profit, the company must reduce its domestic price if it does not want to run the risk that the legislator will vote for re-imports. A vote for re-imports would reduce its profit even more.

To maximize its profit on the domestic market, the company wants to set p_{M2} such that $MC = MR_2$ which yields:

$$(17) \quad p_{M2} = p^* + \frac{\beta_{max} \theta_{dom}(a)}{N} \cdot q_{M2}$$

However, the company has to set its domestic price to make sure that more than half the population of voters wants a ban on re-imports, i.e.:

$$s_{dom} \geq 50\%$$

This yields:

$$(18) \quad p_{M2} \leq \frac{1}{2} \left[p^* \left(1 + \frac{\theta_{dom}(a)}{\theta_{for}(a)} \right) + \beta_{max} \left(\theta_{dom}(a) - \theta_{for}(a) \right) \right]$$

The more consumers see a difference in quality, the more the company will be able to set a higher price on the domestic market.

Pecorino (2002) develops a Nash bargaining game model to show that companies' profits could increase if re-imports were allowed, because companies would negotiate higher prices in the foreign country. The vertical differentiation model can help explain why companies lobby nonetheless against re-imports: if re-imports were authorized, they could not practice a double price discrimination against American consumers. The companies' lobbying and advertizing efforts promoting product differentiation enable them to set even higher prices in the United States than when re-imports are illegal and no active lobbying on quality is undertaken.

An important point to be made is that it is in the company's interest to maintain advertizing efforts praising the quality of domestic drugs even when there is no law being debated in Congress. These advertizing efforts enable the company to set higher prices than p_{M1} on the domestic market, all the time during which re-imports are banned.

4. Discussion

4.1 How does the model explain Gokcekus et al.'s (2006) results?

Gokcekus et al. (2006) studied how the *Pharmaceutical Market Access Act* managed to pass the House in 2003 despite the pharmaceutical industry's heavy lobbying efforts. They found that a vote in favor of the bill depended on several factors regarding constituencies (senior population, number of pharmaceutical employees and

proximity to Canada or Mexico) and representatives' characteristics (gender, party affiliation, as well as ideology regarding free-trade and subsidies). They also found that campaign contributions from the pharmaceutical lobby reduced the probability that a Representative would vote for the bill. These results are consistent with the vertical differentiation model: Gokcekus et al. (2006) find a positive relation between votes against re-imports and contributions, because legislators who vote against re-imports are those who need funds from the pharmaceutical industry to convince constituents that re-imports should be banned.

Gokcekus et al. (2006) also show that a male Republican from a district with no border with Canada or Mexico, who is neither a free-trader nor an internationalist¹⁰, and whose constituents are young (low presence of seniors) does not need any contributions from the pharmaceutical industry to vote against the bill. If contributions were meant to buy trade policies, then Representatives who vote against re-imports should obtain contributions. The vertical differentiation model suggests that the interest group does not need to give contributions to this Representative, because he will vote against re-imports, with or without contributions. The pharmaceutical lobby might nonetheless give money to such a legislator in the hope that he will convince more of his constituents, and maybe other legislators, to be against re-imports. An influential legislator will probably receive more contributions than one who does not have very much power in Congress.

Gokcekus et al. (2006) then show that a male Democrat who is neither a free trader nor an internationalist, whose district shares no borders with either Canada or Mexico and who has many senior constituents, has a higher probability of voting for re-imports than a Republican (92% versus 62%) from the "same" district. The authors

¹⁰ Gokcekus et al. (2006) define "free traders" as those who oppose trade barriers and subsidies, while "internationalists" oppose trade barriers but support subsidies.

calculate that the first 10,000\$ in contributions from the pharmaceutical industry increases the probability of the Democrat's vote against re-imports by 9%, while the second 10,000\$ increases the probability by 16% and a contribution between 20,000\$ and 30,000\$ increases the probability by 21%. According to the political support function, the pharmaceutical industry could have increased contributions to these Democrats to raise the probability they would vote against re-imports. The vertical differentiation model suggests that the company will not give them more money because the contributions do not influence their votes. Instead, such a Democrat could use that money to advertize his stand in favor of re-imports for instance, which would be quite counterproductive for the pharmaceutical industry. The interest group will probably avoid wasting resources on Representatives who clearly favor re-imports.

Finally, Gokcekus et al. (2006) find a post-electoral reward in contributions to those who voted against re-imports. The vertical differentiation model suggests that the vote served as a signal for the lobby to know who was seriously against re-imports and pro-pharma. The lobby might not be able to distinguish at first legislators who want contributions to publicize views against re-imports, from those who want the money but in the end will not support a ban on re-imports. The lobby may accept to give a small amount of money at first to access legislators and separate those who are not serious about their support against re-imports from those who are willing to make a strong public stand against re-imports.

The vertical differentiation model suggests that there is not much money in politics because giving more money will not have a great enough impact on the population to change its opinion. Also, if the lobby gave more contributions, the legislator might want to use the funds for other purposes than advancing the pharmaceutical lobby's agenda.

Even though President George W. Bush said he would veto any bill that would allow re-imports, it was in the lobby's interest to have many legislators express their opposition to re-imports. The interest group wants to foster support in the long run against re-imports and it needs to make sure that it keeps its credibility: consumers will be more likely to believe what it says if the opposition to re-imports message originates from many different sources.

However, the pharmaceutical industry did not manage to convince consumers that foreign drugs are unsafe. This would explain why the *Pharmaceutical Market Access Act* passed the House in 2003. An Associated Press poll, conducted by IPSOS-Public Affairs in December 2004, showed that a majority of Americans (68%) wanted the government to facilitate consumers' access to foreign prescription drugs, with men being slightly more in favor than women. The poll found that Republicans were generally more opposed to re-imports (33%) than Democrats (20%). This could explain why Republicans voted more against re-imports than Democrats (Gokcekus et al., 2006).

4.2 How credible is the safety argument?

According to PhRMA, no country can guarantee that the drugs it would export to the United States are safe. Yet, what risks undergo patients in France, Canada or the United Kingdom for instance? According to the World Health Organization, most developed countries (e.g. USA, most of EU, Australia, Canada, Japan, New Zealand) have less than 1% of market value¹¹ of counterfeit drugs in the market. European countries authorize parallel imports and European consumers do not appear to be more exposed to sanitary threats than American consumers.

¹¹ <http://www.who.int/mediacentre/factsheets/fs275/en/>

Furthermore, pharmaceutical companies in the United States oppose pharmacists' and wholesalers' right to import drugs, but many companies outsource a large part of their production overseas. In 2007, the United States imported nearly 49 billion dollars worth of pharmaceutical products, from 84 countries according to data from the U.S. Census Bureau¹². According to Bart Stupak, Chairman of the Oversight & Investigations Subcommittee of the House Committee on Energy and Commerce (2007), at least 80% of the active pharmaceutical ingredients in pharmaceuticals sold in the United States are imported from abroad. He adds that the FDA is unable to guarantee the quality of all the drugs that manufacturers import to the United States, because it is unable to effectively inspect foreign drug-making facilities. Following the introduction on the U.S. market of contaminated lots of the blood-thinner heparin manufactured in China, which caused several deaths, John Dingell, Chairman of the Committee on Energy and Commerce, confirmed in March 2008 that the FDA was unable to control the facilities that manufacture overseas the drugs that are sold on the U.S. market.¹³

Drugs sold in the United States do not seem to be safer than those sold in other developed countries. However, what matters to the legislator and the lobby is that consumers believe that foreign drugs are unsafe. To be credible, manufacturers will have to do a better job at guaranteeing the safety of the drugs they manufacture abroad and sell in the United States.

5. Conclusion

The vertical differentiation model shows that the quality of the message the interest group gives out is essential in obtaining votes. If the interest group lobbied

¹² US Bureau of the Census: Foreign Trade Division, 2008.

¹³ http://energycommerce.house.gov/index.php?option=com_content&task=view&id=274&Itemid=106

explicitly for protectionist measures without developing a message on safety, then more legislators would actually support re-imports, despite contributions. To foster support against re-imports, the interest group must increase consumers' aversion to foreign drugs. Contributions enable the interest group to outsource part of the advertising efforts against re-imports; they are not directly meant to buy the interest group's preferred trade policy. The main difference with the "political support function" is that the vertical differentiation model suggests that contributions are meant to influence constituents more than legislators. The model further suggests that the use of the precautionary principle is a way for interest groups of benefitting from protectionist measures. Finally, the vertical differentiation model implies that an interest group's "power" resides in its ability to publicize a forceful message. If the interest group only has contributions to give to legislators and no powerful message, then chances are it will not get a favorable vote from legislators, especially on an important topic such as the prices of pharmaceuticals.

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