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Political Contributions To Influence Consumers: The Example Of The U.S. Drug Reimportation Debate

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POLITICAL CONTRIBUTIONS TO INFLUENCE CONSUMERS: THE EXAMPLE OF THE U.S. DRUG REIMPORTATION DEBATE

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Abstract

To reduce pharmaceutical prices, some legislators have been trying to pass bills authorizing the reimportation of prescription drugs to the United States. Pharmaceutical companies oppose reimportation, by elaborating a message (foreign drugs are of lower quality than domestic drugs) to influence legislators and their constituents. The industry gives contributions to legislators to spread its anti-reimportation message. The amount it gives depends on legislators' and constituents' characteristics. The legislators who receive the most are those whose constituents are most likely to oppose reimports.

Key words: political contributions, lobbying, drug reimportation, pharmaceutical industry, protectionism

Résumé

Afin de réduire les prix des produits pharmaceutiques, des législateurs tentent depuis plusieurs années de faire passer des lois qui autoriseraient la ré-importation de médicaments aux Etats-Unis. Les entreprises pharmaceutiques s'opposent aux ré-importations en élaborant un argument pour influencer les législateurs et leurs électeurs. Ici, l'argument est que les médicaments vendus à l'étranger sont de moins bonne qualité que ceux vendus aux Etats-Unis. L'industrie pharmaceutique finance les législateurs américains pour diffuser ce message contre les ré-importations. Le montant qu'elle donne dépend des caractéristiques des législateurs et de leurs électeurs. Les législateurs qui reçoivent le plus de financement sont ceux dont les électeurs ont le plus de chances d'être opposés aux ré-importations.

Mots clés : financement politique, lobbying, ré-importations, médicaments, industrie pharmaceutique, protectionnisme

JEL Classification: D72, F14, L65

1. INTRODUCTION

Over the past years, some legislators have been trying to pass bills that would authorize wholesalers and pharmacists to reimport 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 market. For instance, Paris and Docteur (2007) estimate that the prices of patented drugs in the United States are between 35% and 45% higher than in Canada, on average. If reimports 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. This measure could bring pharmaceutical prices down.

The pharmaceutical industry is a strong opponent of reimports. The main interest group representing the American pharmaceutical industry, Pharmaceutical Research and Manufacturers of America (PhRMA), argues that drug reimports are dangerous[1], because fake and bad quality drugs could enter the United States. 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. This argument may be justified, but it also enables the pharmaceutical industry to create differences in the way Americans perceive the quality of the domestic drug and the drug that would be imported from a foreign country. If the industry can earn higher profits when reimports are prohibited, it will invest in a campaign against reimports. This campaign includes contributions to legislators to multiply the number of people who campaign against reimports, and persuade consumers that foreign drugs are potential threat to their health.

[1]http://www.phrma.org/taxonomy/term/92.

The model described in the following sections offers a perspective on the role played by contributions and the way an industry decides to allocate contributions to legislators. An interest group representing an industry can provide legislators with arguments and funds to influence voters. In the case of the drug reimportation debate, the content of the message the lobby conveys is the most important factor for obtaining favorable policies. Contributions are funds distributed by the industry to legislators who spread the message that foreign drugs are unsafe. The industry gives the largest amount of contributions to legislators whose constituents are most likely to be sensitive to the drug safety argument.

The paper is organized as follows. After a short review of literature in section 2, a vertical differentiation model is developed in section 3 to show that the pharmaceutical industry will manage to maintain a ban on reimports only if it can convince voters that foreign drugs are of poorer quality on average. Section 4 discusses the data that can be used to test the theoretical model. It also gives the results of an OLS estimation of contributions to House members during the 2003-2004 election cycle, which confirms the conclusions of the theoretical model. Section 5 discusses the validity of the safety message. Section 6 concludes.

2. REVIEW OF LITERATURE

It is often believed that an industry can buy policies which are in its interest thanks to political contributions. 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. In particular, Grossman and Helpman's (1994) *Protection for sale* model, considers that 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. Levitt (1994) also shows that the image and message a legislator gives out to constituents are essential for his or her reelection, more so than contributions. John Wright (2004) shows that the tobacco industry obtained legislative successes because of representatives' characteristics more than PAC money. Some authors have also demonstrated that contributions are a means of obtaining access to legislators, and interest groups provide information to legislators (e.g. Austen-Smith, 1995; Ainsworth and Sened, 1993). Hall and Deardorff (2006) suggest that lobbying provides a service to legislators by giving them policy information, political intelligence and legislative labor.

The ongoing debate concerning the legalization of drug reimports to the United States can help develop the research which argues that contributions do not buy votes directly.

3. THE MODEL

The model takes into account four different decision-makers: a unique pharmaceutical company, a foreign government, consumers of the domestic market and a legislator in the domestic market.

The **pharmaceutical company** has a monopoly on the sale of a drug, which it distributes at a regulated price p_f on the foreign market and at an unregulated monopoly price p_d in the United States, with $p_f \leq p_d$. A ban on reimports means that the company can

discriminate between consumers of the two markets, setting p_f on the foreign market and a higher price p_d on the domestic market, to maximize its profit. If the legislator authorizes reimports, then pharmacists and wholesalers will reimport the drug to sell it at p_f on both markets (with transport costs equal to zero). The pharmaceutical company would then have to apply the foreign regulated price on the domestic market.

The **foreign government** regulates the price of the drug sold on its market to maximize its consumers' welfare. It therefore negotiates a price ceiling $\overline{p_f}$ for the drug, which is high enough for the company to sell the drug on the foreign market. The price which would maximize the company's profit is p_f^*. So that it makes sense for the foreign government to set a price ceiling, the model assumes that $p_f^* \geq \overline{p_f}$, such that the company sells the drug on the foreign market at the price $p_f = \overline{p_f}$.

The **legislator**, who votes on only one issue, decides on whether to authorize or maintain a ban on the reimport of prescription drugs. The legislator does not regulate prices directly, but sets trade policies for the pharmaceutical industry, which generate a price for the drug that is sold on the domestic market. The legislator has in mind the maximization of consumers' welfare and has an objective function such as in Grossman and Helpman (2002, chap.4):

$$G(p) = -(p - p_m(t))^2 \,. \qquad (1)$$

The company's campaign expenses against reimports are t, which is the sum of contributions it gives to the legislator to take a public stand against reimports, and its other expenses (i.e. TV advertisements, web pages explaining that foreign drugs are unsafe, the financing of studies that oppose reimports, etc.). Contributions are viewed here as a way for legislators to finance advertising campaigns to explain their ideologies, as in Coate (2004). But the company does not depend solely on the legislator to diffuse the anti-reimport

arguments. In order to be reelected, the legislator's goal is to vote for a trade policy p which will yield $p_m \in \{p_f; p_d\}$, the price favored by the median voter.

Consumers from the domestic market are defined by their tastes and their perception of the drug's quality, as in the vertical differentiation model described by Bresnahan (1987) and Tirole (1988, chap.7)[2]. A consumer buys one or zero unit of the drug. Each consumer is characterized by his or her utility of the drug per unit of quality, β, which is uniformly distributed with density one on the interval $[0, \overline{\beta}]$. Consumers elect their legislator. The median voter, who is also the average voter, is β_m.

The drug sold on the domestic market is defined by its perceived quality θ_d. As is the case in the United States, consumers trust the domestic drug, whose quality the Food and Drug Administration is supposed to guarantee, but they may be unsure about the quality of the foreign drug, which could be a counterfeit. If consumers think that the quality of the drug sold on the foreign market is the same as the one sold on the domestic market, those who do not benefit from full health coverage will want to pay the lowest price for the drug. The other consumers may be indifferent to prices. In this case, the legislator takes no risk of losing votes in the next election, and authorizes reimports so that consumers can benefit from the lower price.

The company's goal is to find a credible argument that the legislator can give voters to justify a ban on reimports. Without such an argument, the legislator will not vote against reimports. The company therefore launches a campaign to send out the message that the quality of the foreign drug, θ_f, is on average lower than the quality of the domestic drug. This campaign can work, because consumers have no way to check on their own whether the imported drug is really the same as the domestic good. Even the use of tamper-proof packaging methods cannot guarantee that a drug is not a counterfeit. Therefore, when

[2] For related models applied to the pharmaceutical industry, see Donald Wright (2004) on pharmaceutical regulation in Australia, and Anis and Wen (1998) on the regulation of pharmaceutical prices in Canada.

reimports are allowed, consumers cannot tell the difference between a domestic and a foreign drug. Consumers' perception of the foreign drug's quality is a function of campaign efforts against reimports, such that

$$\theta_f(t) = \theta_d(1 - \sigma.t). \quad (2)$$

In (2), σ represents the consumers' sensitivity to a campaign against reimports, with $0 \leq \sigma \leq 1$. The higher σ is, the more sensitive consumers are to the campaign, and the less the company needs to spend on its campaign (increase *t*) to reduce the perceived quality of the foreign drug. Equation (2) means that efficient campaign efforts against reimports can decrease consumers' perception of the foreign drug's quality. θ_d and $\theta_f(t)$ can be interpreted as the perceived quality of the average drug sold on the market when reimports are respectively banned and authorized.

A consumer from the domestic market has a utility function, such as in Mussa and Rosen (1978), with

$$U = x + \beta\theta_i. \quad (3)$$

In (3), *x* is the consumer's consumption of other goods and $i = \{d; f\}$ depending on whether reimports are banned or authorized.

The demand on the domestic market when reimports are banned is

$$D_d = \overline{\beta} - \frac{p_d}{\theta_d}. \quad (4)$$

The company's profit function is then

$$\pi = (p_d - c).D_d + \left(\overline{p_f} - c\right).D_f - F \quad (5)$$

where F is fixed cost and c constant marginal cost of producing the drug.

The domestic price which maximizes the company's profit is

$$p_d^* = \frac{1}{2}\left(\theta_d.\overline{\beta} + c\right). \quad (6)$$

The consumer surplus is equal to the difference between the utility derived from the consumption of one unit of the drug and the price paid for the consumption of the drug:

$$V_1 = \theta_d.\beta - p_d^* \qquad if\ the\ policymaker\ maintains\ the\ ban\ on\ reimports. \quad (7)$$

$$V_2 = \theta_f(t).\beta - \overline{p_f} \quad if\ the\ policymaker\ authorizes\ reimports. \quad (8)$$

The more the company scares consumers ($\theta_f(t)$ decreases), the more consumers are willing to pay a higher price for the domestic drug they perceive as being of higher quality. When the company manages to create a difference in the perceived quality of the two drugs, i.e. $\theta_d > \theta_f(t)$, the legislator may decide to ban reimports. Indeed, if $\overline{p_f} < p_d^*$, then $V_1 < V_2$ or $V_1 \geq V_2$. With the safety issue, the company found a credible argument to justify a ban on reimports.

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

$$\widehat{\beta(t)} = \frac{p_d - \overline{p_f}}{\theta_d - \theta_f(t)}. \quad (9)$$

A consumer whose utility for the drug is higher than $\widehat{\beta(t)}$ wants for the legislator to maintain the ban on reimports, while a consumer whose utility for the drug is below $\widehat{\beta(t)}$ prefers for the legislator to vote for reimports. The lobby will therefore invest in its campaign to make sure that enough consumers oppose reimports, i.e. such that $\theta_d - \theta_f(t)$ increases to the point where $\beta_m > \widehat{\beta(t)}$. That point is:

$$\beta_m = \frac{p_d - \overline{p_f}}{\theta_d - \theta_f(t)} + \delta \quad (10)$$

where δ is a small positive number.

Replacing $\theta_f(t)$ and p_d^* by their values from (2) and (6) in (10) yields

$$t^* = \frac{\frac{1}{2}(\theta_d.\overline{\beta} + c) - \overline{p_f}}{\sigma.\theta_d(\beta_m - \delta)} \quad (11)$$

where t^* is the company's optimal amount of campaign spending against reimports when it maximizes its profits. Equation (11) shows that the more sensitive to the anti-reimportation

campaign consumers are, the less the company needs to invest in its campaign for it to be efficient.

Proposition 1: The amount of money that the company is willing to spend on a campaign against reimports depends on the median voter's type, which depends on the constituency's characteristics. It probably also depends on the legislator's own characteristics, because the company will want to give more money to "powerful" legislators, i.e. those whose opinions are more likely to influence consumers.

However, the company will only invest in t^* to make reimports illegal, if it can maximize its profit by doing so. The demand on the foreign market takes the general form:

$$D_f = a_f - b_f . p_f . \tag{12}$$

As was shown in the previous section, if $t = 0$ then the legislator authorizes reimports, such that $p_d = p_f \leq \overline{p_f}$. Therefore, the demand on the domestic market when $t = 0$ and reimports are allowed is

$$D_d(0) = \overline{\beta} - \frac{\overline{p_f}}{\theta_d}. \tag{13}$$

The company's profit function when it doesn't invest in advertizing efforts against reimports is such that

$$\pi(0) = \left(\overline{p_f} - c\right).\left(D_d(0) + D_f\right) - F. \tag{14}$$

The company's profit function when reimports are banned is

$$\pi(t^*) = (p_d^* - c).D_d + \left(\overline{p_f} - c\right).D_f - F - t^*. \tag{15}$$

The condition $\pi(t^*) \geq \pi(0)$ yields the following requirement for the company to spend money on an anti-reimportation campaign

$$\sigma \geq \frac{p_d^* - \overline{p_f}}{\theta_d(\beta_m - \delta)\left[(p_d^* - c)\left(\overline{\beta} - \frac{p_d^*}{\theta_d}\right) - (\overline{p_f} - c)\left(\overline{\beta} - \frac{\overline{p_f}}{\theta_d}\right)\right]} \tag{16}$$

when $(p_d^* - c)\left(\bar{\beta} - \frac{p_d^*}{\theta_d}\right) - \left(\overline{p_f} - c\right)\left(\bar{\beta} - \frac{\overline{p_f}}{\theta_d}\right) > 0$. Only when this condition is met, can the company earn higher profits with a ban on reimports. However, this condition is not always met, so it can be in the company's interest to refrain from investing in a campaign against reimports. Equation (16) shows that if consumers are not very sensitive to a campaign against reimports, i.e. σ is very low, then the amount the company would have to spend on its campaign might be too high to make it worth it. Therefore, according to condition (16), the company should give contributions to the legislators who are the most inclined to voting against reimports, because their constituents are sensitive to the anti-reimports campaign. Spending the amount necessary to influence voters who are not very sensitive to the campaign could result in a drop in the company's profit. This could explain why there is so little money in politics (Tullock, 1972).

Proposition 2: Because it would be too expensive to spend the necessary amount to influence those who are the least sensitive to its arguments, an industry will give funds to the legislators who are the most likely to vote for its interests.

The following empirical analysis will test this proposition after confirming that voters' and legislators' characteristics influence contributions.

4. EMPIRICAL ANALYSIS

Proposition 1 suggests that the amount the company spends on campaign contributions depends on legislators' characteristics and constituencies. The following OLS regressions test this proposition.

The issue of drug reimports has been discussed several times in Congress over the past few years, but the *Pharmaceutical Market Access Act* of 2003 was the only time a bill was debated in itself. The *Pharmaceutical Market Access Act* (H.R. 2427) would have allowed pharmacists and wholesalers to purchase pharmaceuticals from 26 developed countries,

including Canada. The bill passed in the House (243 voted for, 186 against and 6 did not vote), but eventually died in the Senate Committee on Health, Education, Labor, and Pensions. Gokcekus et al. (2006) study 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 representatives' characteristics (gender, party affiliation, as well as ideology regarding free-trade and subsidies) and constituencies (senior population, number of pharmaceutical employees and proximity to Canada or Mexico). The following regressions will test whether these variables and a few others are determinants of the pharmaceutical industry's contributions to legislators, as the theoretical model suggests. The approach differs from Gokcekus et al. (2006), whose goal was to study the determinants of votes, and who found that contributions had a positive impact on votes. Here, the goal is to study the determinants of pharmaceutical contributions.

Table 1 presents the sources and mean values of the variables included in the regressions to test the determinants of pharmaceutical contributions to House members from 409 congressional districts. 26 districts were eliminated because the data on contributions was not available: the incumbent had either retired at the end of the legislature, had run for governor during the election cycle or had been defeated in primary elections. The dependant variable is the total sum of contributions the pharmaceutical and health industry gave to House members during the 2003-2004 election cycle, when the *Pharmaceutical Market Access Act* was debated.

Table 1 Description of the variables

Variable	Source	Mean
Pharma contributions	Center for Responsive Politics www.opensecrets.org	16,901.26
Total contributions	Center for Responsive Politics www.opensecrets.org	1,237,564
Retired contributions	Center for Responsive Politics www.opensecrets.org	48,492.99
Woman	Center for Responsive Politics www.opensecrets.org	0.14
Democrat	Center for Responsive Politics www.opensecrets.org	0.47
Leader or Speaker	U.S. House of Representatives www.house.gov	0.01
Chair	Committee on Ways and Means waysandmeans.house.gov/	0.01
	Committee on Energy and Commerce energycommerce.house.gov/	
Ways and Means	Committee on Ways and Means	0.09
	waysandmeans.house.gov/	
Energy	Committee on Energy and Commerce energycommerce.house.gov	0.13
Ranking	Committee on Ways and Means waysandmeans.house.gov	0.005
	Committee on Energy and Commerce energycommerce.house.gov	
Free-trader	Griswold (2005) www.cato.org	0.06
Internationalist	Griswold (2005) www.cato.org	0.90
Aye vote	The Library of Congress thomas.loc.gov	0.56
Senior	U.S. Census Bureau fastfacts.census.gov	12.41
Labor force	U.S. Census Bureau fastfacts.census.gov	63.92
Individual poverty	U.S. Census Bureau fastfacts.census.gov	12.35
Median Income	U.S. Census Bureau fastfacts.census.gov	43,584.68
Bachelor's Degree	U.S. Census Bureau fastfacts.census.gov	24.29
Canadian Border	nationalatlas.gov	0.18
Mexican Border	nationalatlas.gov	0.22
Pharma employment	Quarterly Census of Employment and Wages www.bls.gov/cew[3]	1,657.22

[3] The Bureau of Labor Statistics gives pharmaceutical employment by county. Because some counties are part of several congressional districts, the author included the number of employees from these counties into all the districts they belonged to. Some employees were therefore counted several times. However, it is very likely that the presence of pharmaceutical employees in one county could influence neighboring districts, for example if employees from a county live in one district and work in another.

The independent variable "Total contributions" is the sum of contributions the representative received during the cycle. It captures the degree of electoral competition as well as district specificities regarding money spent in electoral campaigns. On average, pharmaceutical contributions represented 1.33% of legislators' total contributions. There should be a positive relationship between total contributions and contributions from the pharmaceutical industry: the more contributions a legislator receives from all industries, the more he or she should receive from the pharmaceutical industry. "Retired contributions" is the total of contributions candidates received from retired citizens. On one hand, retirees may choose to give contributions to oppose reimports because of the quality issue: people's health tends to deteriorate with age, so retirees are likely to be sensitive to the quality issue related to prescription drugs. On the other hand, a high amount of contributions from retirees could offset, and therefore discourage, contributions from the pharmaceutical industry: retirees may oppose the ban on reimports because many seniors did not have access to prescription drug coverage in 2003 (i.e. before the Medicare Prescription Drug Improvement and Modernization Act which increased access to seniors starting in 2006).

Several independent variables are used to take into account representatives' characteristics. Gokcekus et al. (2006) find that the vote on the *Pharmaceutical Market Access Act* was essentially a partisan vote, with Republicans voting against and Democrats for the bill (see Table 2). They also find that women in the House are more likely to support reimports. The variables "Woman", which equals one if the member is a woman, and "Democrat", which equals one if the member is part of the Democratic Party, should therefore bear a negative sign: the pharmaceutical industry will unlikely give large contributions to representatives who have high chances of being in favor of reimports, and who would require very large amounts of contributions to change their vote. Gokcekus et al. (2006) also find that free-traders (i.e. House representatives who oppose trade barriers and subsidies) are more

likely to vote for the bill, while internationalists (i.e. House representatives who oppose trade barriers but support subsidies) are more likely to vote against it. There should therefore be a negative relationship between pharmaceutical contributions and the "Free-trader" variable, and a positive one between contributions and the "Internationalist" variable.

The second set of independent variables defines a House member's power. An influential legislator will probably receive more contributions than one who does not have very much power in Congress. The representatives who have the most power in Congress on issues related to the pharmaceutical industry are those who belong to the Committee on Ways and Means or the Committee on Energy and Commerce. The Chairs of these committees are probably those who should receive the most money from the pharmaceutical industry. Ranking members may also receive some money from the industry, though probably less since they belong to the minority party: their influence on the general population and other legislators might be less important.

Finally, several variables are used to define constituents' characteristics. The "Senior" variable represents the percentage of the population within the district that is 65 years and over. For the same reasons as the "Retired contributions" variable, seniors may oppose or favor reimports, but are probably sensitive to the issue. The variable "Labor force" represents the percentage of the population (16 years and older) that is working. The industry should give more money to representatives from districts with a high percentage of workers. Such a population should oppose reimports, since they are more likely to be covered by a medical insurance policy than the unemployed, and are less likely to fall sick than the elderly. They probably prefer to have access to "safe" drugs, even if they are more expensive. The variable "Individual poverty" represents the percentage of individuals who are below poverty level and the variable "Median income" is the median household income in 1999 dollars in the member's district. Poor people should be more sensitive to the price aspect of the debate,

because it is probably better to risk taking an affordable reimported drug, than to not be able to buy an expensive safe drug. The more there are poor people in the district, the less likely the industry should give high contributions to its representative. However, representatives from rich districts could receive high levels of contributions, because their constituents are more likely to be willing to pay high prices for drugs they think are of higher quality, especially since they are more likely to have some type of health insurance. The variables "Median income" and "Individual poverty" are complementary because the percentage of poor individuals can vary for a given level of median income. The variable "Bachelor's degree" is the percentage of the district's population that holds a bachelor's degree or higher. More educated constituents may be more skeptical of the industry's safety argument, and could favor reimports. Their representatives should therefore receive less money from the pharmaceutical industry. The variable "Pharma employment" represents the number of individuals employed in pharmaceutical and medicine manufacturing in the member's district. This variable should be positively correlated to pharmaceutical contributions: pharmaceutical employees are more likely to oppose reimports because they want for their companies to earn high profits or because they actually believe that foreign drugs are a health hazard. The two last variables used to define constituencies' characteristics are "Canadian border" and "Mexican border". They equal one if the member's state shares a land border with Canada or Mexico, respectively. Representatives from these districts should receive less money from the industry, because their constituents are probably more aware of the price and quality of a drug in the foreign market, and are less likely to believe that foreign drugs are unsafe.

Finally, the effect of the actual vote of a House member on the *Pharmaceutical Market Access Act* is measured with the variable "Aye", which is equal to one if the member voted for the bill. Because a positive vote would lead to a legalization of reimports, members who voted against reimports should have received more contributions than those who voted

for. Those who voted against are also those who need the industry's funds to justify their position on the issue. More than a reward for a positive vote, the theoretical model suggests that members should have received more contributions when voting against reimports because the industry wanted to give funds to these House members to speak out against reimports. This is confirmed by Table 2, which shows the voting decisions of legislators according to their own or their constituents' types. A large majority of those who received above average levels of contributions from the pharmaceutical industry voted against the bill. Table 2 also confirms that a majority of women and Democrats voted for the bill. Of the members of the Committee on Energy and Commerce, 61% voted against, while only a small majority of the Committee on Ways and Means also voted against. Members whose constituencies had above average levels of seniors voted for the bill in majority, as well as members from poor or more educated districts. Those from districts in states bordering Canada or Mexico also voted against reimports.

Table 2 Voting decisions by types of legislators and constituents

Legislator/constituents' type	Aye vote	No vote	Didn't vote
Above average pharma contributions	19.66%	78.63%	1.71%
Above average total contributions	50.78%	48.44%	0.78%
Above average retired contributions	55.83%	44.17%	-
Woman=1	71.93%	28.07%	-
Democrat=1	75.77%	22.16%	2.06%
Leader or Speaker=1	33.33%	66.67%	-
Chair=1	-	100%	-
Ways and Means=1	50.00%	47.22%	2.78%
Energy=1	38.89%	61.11%	-
Ranking=1	50.00%	50.00%	-
Free-trader=1	60.87%	39.13%	-
Internationalist=1	54.86%	43.78%	1.35%
Above average senior	59.90%	39.58%	0.52%
Above average labor force	51.39%	48.15%	0.46%
Above average individual poverty	61.67%	35.93%	2.40%
Above average median income	51.44%	47.98%	0.58%
Above average Bachelor's degree	56.65%	42.77%	0.58%
Canadian Border=1	69.44%	30.56%	-
Mexican Border=1	57.14%	41.76%	1.10%
Above average pharma employment	53.76%	44.09%	2.15%

Column (1) in Table 3 shows the results of the full model, which tests the impact of representatives' characteristics and power, as well as constituents' characteristics. Column (2)

gives the results of the regression using only constituents' characteristics, while column (3) displays the results of the regression using only representatives' characteristics and power. Finally the impact of a vote in favor of the *Pharmaceutical Market Access Act* on contributions is added to the full model in column (4).

Most variables are significant and show the expected sign. Total contributions have a significant positive impact on pharmaceutical contributions: the more a House member raises money during the cycle, the higher the contributions he will receive from the pharmaceutical industry. However, there is no significant correlation between contributions and being a woman or a Democrat in the model that takes into account votes on the *Pharmaceutical Market Access Act*. This result can be explained by the fact that women and Democrats voted in majority for the bill. In the regressions that do not take votes into account, the Democrat variable is significant: a Democrat will receive nearly 10,000 dollars in contributions less than a Republican. A member's power in the House is an important determinant of contributions from the pharmaceutical industry. A Leader or Speaker of the House receives an increase in pharmaceutical contributions of more than 50,000 dollars. The increase is around 60,000 dollars for a Chair of the Committee on Ways and Means or the Committee on Energy and Commerce, more than 17,000 dollars for a member of the Committee on Ways and Means, and more than 20,000 dollars for a member of the Committee on Energy and Commerce. However, being a Ranking member of one of these committees, a free-trader or an internationalist does not have a significant impact on contributions.

House members with older constituents receive more money from the pharmaceutical industry, whereas those who receive a lot of contributions from retirees obtain fewer contributions from the pharmaceutical industry. This result is probably due to the fact that groups that lobby on the behalf of retirees, such as the AARP[4], are in favor of reimports,

[4] http://assets.aarp.org/www.aarp.org_/articles/international/ReimportationQA.pdf.

especially from Canada. Representatives from districts with a high percentage of seniors are not necessarily those who receive the largest contributions from retirees. The pharmaceutical industry may therefore give more contributions to House members from districts with a large population of seniors, but where senior interest groups are not necessarily well organized.

Table 3 The impact of constituencies' and representatives' characteristics on pharmaceutical contributions in the House, 2003-2004 cycle

	Full model	Constituencies' characteristics	Legislator's characteristics	Full model with votes
	(1)	(2)	(3)	(4)
Variables	Coefficient	Coefficient	Coefficient	Coefficient
Constant	-144,764***	-60,579.79	-5,485.298	-153,887.5***
Total contributions	0.02***	0.01***	0.02***	0.02***
Retired contributions	-0.07*		-0.06*	-0.06*
Woman	-1271.53		-292.11	223.46
Democrat	-9,606.08***		-7,137.30***	-4296.01
Leader or Speaker	54,025**		51,084.73*	51,685.89**
Chair	60,214.4***		61,225.26***	59,292.93***
Ways and Means	18,861.3***		17,195.79***	17,402.34***
Energy	23,552.95***		23,882.31***	20,823.52***
Ranking	19,924.37		16,004.31	19,216.99
Free-trader	-703.59		-1,656.97	77.15
Internationalist	5,304.09*		2,616.96	3,024.25
Aye				-13,482.38***
Senior	1,220.35**	323. 20		1,748.26***
Labor force	1,002.35**	432.64		1,222.81***
Individual poverty	1,827.64***	626.85		1,818.91***
Median income	1.14***	0.71**		1.03***
Bachelor's degree	-564.55***	-485.97**		-527.74***
Canadian border	-4,192.53*	-3,976.08		-2,372.59
Mexican border	-7,267.80***	-3,405.66		-5,248.69**
Pharma employment	1.71***	1.66**		1.59***
R^2	0.58	0.37	0.50	0.62
Observations	409	409	409	409

Estimation by OLS with robust standard errors clustering by state. The dependant variable is total contributions received by a House member from the pharmaceutical and health industry during the 2003-2004 election cycle. *,**,*** Significant at the 10%, 5%, and 1% levels, respectively.

The variable "Median income" shows a positive sign, which was expected, but the variable "Individual poverty" also shows a positive sign. This unexpected result may be explained by the fact that poor people tend to have a lower voter turnout (e.g. Timpone, 1998). The higher the number of poor individuals and the higher the median household income in a district, the more the industry gives contributions to influence those who vote *and* care more about quality than price. The variables "Bachelor's degree", "Mexican border" and "pharma employment" all show the expected sign and are significant in the full model and the

full model with votes. The variable "Canadian border" shows the expected sign but is not significant in the full model with votes.

Finally, a vote for the *Pharmaceutical Market Access Act* reduces the amount of contributions from the pharmaceutical industry, by 13,482 dollars. The model suggests that contributions do not buy votes, but are meant to help House members express their opposition to reimports. The industry will therefore give more money before the vote to members who are most likely to vote against, and after the vote to members who actually voted against reimports. A legislator who voted against reimports may need contributions even after the vote to convince constituents that he or she made the right decision. Table 4 shows that, on average, the legislators who voted against reimports received 30,204 dollars during the 2003-2004 election cycle, while those who voted for reimports received only 6,445 dollars.

Table 4 Summary statistics by vote

	Nay or abstention		Aye	
Variables	Mean	Std	Mean	Std
Pharma contributions	30,203.83	38,805.56	6,445.10	12,881.63
Total contributions	1,386,300	1,305,290	1,120,654	971,861.1
Retired contributions	51,156.79	85,460.5	46,399.17	78,336.41
Woman	0.09	0.29	0.18	0.38
Democrat	0.26	0.44	0.64	0.48
Leader or Speaker	0.01	0.11	0.00	0.07
Chair	0.02	0.13	0	0
Ways and Means	0.1	0.30	0.08	0.27
Energy	0.18	0.39	0.09	0.29
Ranking	0.01	0.07	0.00	0.07
Free-trader	0.05	0.22	0.06	0.24
Internationalist	0.93	0.26	0.89	0.32
Senior	11.94	3.10	12.78	3.12
Labor force	64.46	4.88	63.50	5.14
Individual poverty	11.61	5.44	12.93	5.96
Median Income	45,064.81	11,710.21	42,421.26	10,414.58
Bachelor's Degree	24.48	8.95	24.13	9.31
Canadian Border	0.12	0.33	0.22	0.41
Mexican Border	0.22	0.41	0.23	0.42
Pharma employment	1,942.06	4,117.07	1,433.33	2,772.56
Observations	180		229	

While deciding to whom it will give money after the vote is easy, the industry needs to go through a selection process before the vote. The selection is based on House members'

characteristics and power, as well as on constituents' characteristics. The company faces four cases:

(i) *The legislator and consumers probably favor reimports.* The company should not give any money to the legislator on the reimports issue, since it is not in the legislator's interest to take a public stand against reimports. The legislator would probably use the funds for other purposes than diffusing the anti-reimports arguments.

(ii) *The legislator probably opposes reimports, but consumers probably favor reimports.* The legislator needs the contributions to convince voters that reimports should be banned. For instance, the legislator may not want to take the responsibility of voting for reimports if he or she thinks that people may die because of counterfeit drugs. But voters might favor reimports despite contributions. The company may decide to not waste resources on a legislator who would vote for reimports to be reelected.

(iii) *The legislator probably favors reimports, but consumers are probably sensitive to the anti-reimports campaign.* In this case, the legislator's objective function suggests he or she should vote against reimports to be reelected. However, the legislator may not want to speak out against reimports.

(iv) *The legislator thinks that reimports should be banned and consumers are probably sensitive to the anti-reimports campaign.* The legislator does not need contributions to vote against reimports. The company could nonetheless give a high amount of contributions to a legislator in this case, to speak-up against reimports and influence legislators or constituents from other congressional districts.

Figure 1[5] gives the estimated amount of contributions the pharmaceutical industry gives to legislators, according to these four cases.

[5] See appendix for details on the values used for this simulation.

Figure 1 Estimated amount of contributions according to legislators' and voters' characteristics

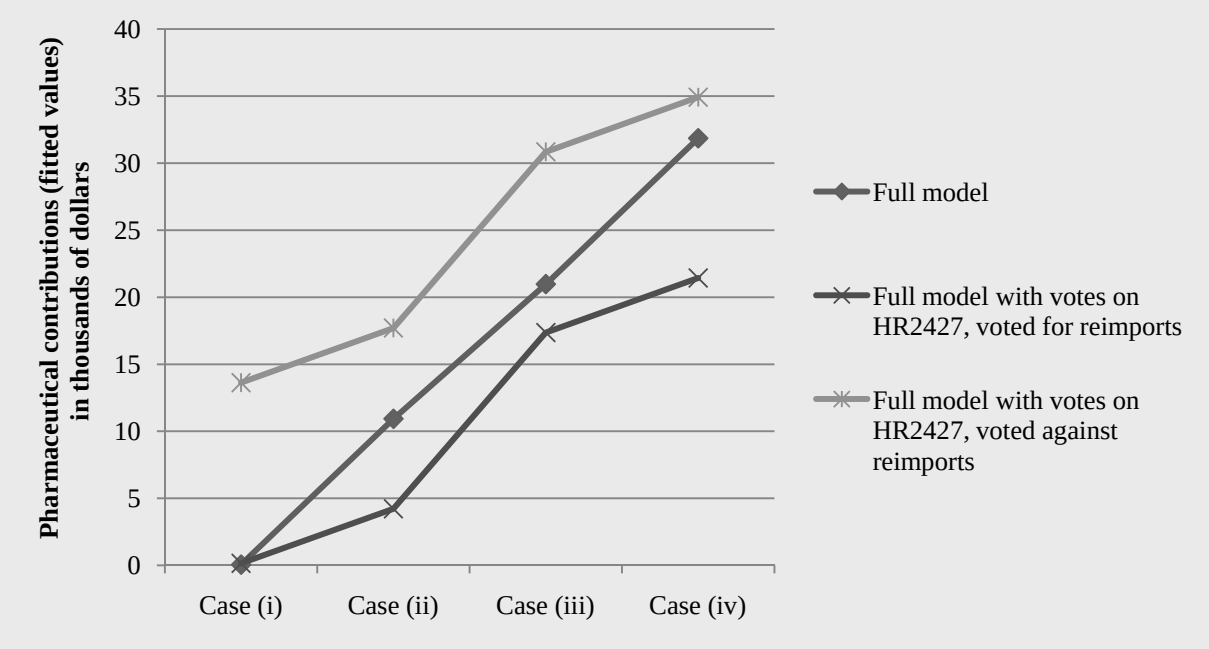

Figure 1 suggests the industry invests the most money when voters and legislators are more likely to oppose reimports. It also suggests that legislators will more likely follow what voters should want. The pharmaceutical industry attaches more importance to constituents' characteristics than to legislators' characteristics when deciding to whom it will give its contributions: it actually gave the largest funds to legislators whose constituents were most likely to oppose reimports.

5. DISCUSSION

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, and New Zealand) have less than 1% of market value[6] of counterfeit drugs in the market.

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 Bureau[7]. 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.[8]

Yet, drugs currently sold in the United States seem to be quite safe, a part from drugs bought by consumers from abroad on the Internet. Legislators and consumers can therefore hold legitimate doubts on the quality of foreign drugs.

Recently, the reimportation issue has been discussed twice in the Senate as amendments of major bills. The first time was in May 2007 during the debate on the Food and Drug Administration Revitalization Act: the authorization of reimports was included in a first version of the bill, but an amendment removed the clause from the bill. The second time was in December 2009 during the debate on the Healthcare Reform Bill: an amendment for a

[6] http://www.who.int/mediacentre/factsheets/fs275/en/.
[7] US Bureau of the Census: Foreign Trade Division, 2008.
[8] http://energycommerce.house.gov/index.php?option=com_content&task=view&id=274&Itemid=106.

clause authorizing reimports failed to pass. Both times, Senators who favored reimports voted against to avoid the main text from failing to pass. President George Bush had threatened to veto any bill which would legalize drug reimports[9], and President Barack Obama apparently did not want to risk losing a precious vote for the bill on the reform of healthcare. If Senators voted on a bill whose sole object was reimports, the bill could pass. Another econometric estimation could then be performed to confirm the results of the present model.

6. CONCLUSION

The model shows that the quality of the message the interest group gives out is essential in obtaining votes. Contributions enable the interest group to outsource part of the campaign efforts against reimports; they are not directly meant to buy the interest group's preferred trade policy. The pharmaceutical industry gives contributions to legislators who are most likely to vote for its interests, and therefore does not buy votes. The more legislators take public stands in favor of the industry's interest, the more the industry's message becomes credible. 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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[9] This probably explains why the 2003 *Pharmaceutical Market Access Act* died in the Senate Committee on Health, Education, Labor, and Pensions.

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APPENDIX – Values used for the estimation of Graph1

	Fitted Value	Woman	Democrat	Senior	Labor force	Individual poverty	Median Income	Canadian Border	Pharma employment	Model
Case (i)	481.35	1	1	13	62	13	40,000	1	1,500	Full model
Case (ii)	11,358.96	0	0	13	62	13	40,000	1	1,500	
Case (iii)	20,975.30	1	1	11	67	11	50,000	0	5,000	
Case (iv)	31,852.92	0	0	11	67	11	50,000	0	5,000	
Case (i)	149.52	1	1	13	62	13	40,000	1	1,500	Full model, voted yes
Case (ii)	4,222.07	0	0	13	62	13	40,000	1	1,500	
Case (iii)	17,364.53	1	1	11	67	11	50,000	0	5,000	
Case (iv)	21,437.08	0	0	11	67	11	50,000	0	5,000	
Case (i)	13,631.90	1	1	13	62	13	40,000	1	1,500	Full model, voted no
Case (ii)	17,704.45	0	0	13	62	13	40,000	1	1,500	
Case (iii)	30,846.91	1	1	11	67	11	50,000	0	5,000	
Case (iv)	34,919.46	0	0	11	67	11	50,000	0	5,000	

For all:
- Total contributions: 1,250,000 dollars
- Retired contributions: 46,000 dollars
- Leader or speaker: 0
- Chair: 0
- Ways and Means: 0
- Energy: 0
- Ranking: 0
- Free-trader: 0
- Internationalist: 1
- Bachelor’s Degree: 23%
- Mexican border: 0

REFERENCES

Ainsworth, S. and I. Sened, 1993, The role of lobbyists: entrepreneurs with two audiences. *American Journal of Political Science* 37, 834–866.

Anis, A.H. and Q. Wen, 1998, Price regulation of pharmaceuticals in Canada. *Journal of Health Economics* 17, 21–38.

Ansolabehere, S., J. M. de Figueiredo, and J. M. Snyder Jr., 2003, Why is there so little money in U.S. politics? *Journal of Economic Perspectives* 17, 105–130.

Austen-Smith, D., 1995, Campaign contributions and access. *American Political Science Review* 89, 566–581.

Baldwin, R. E. and C.S. Magee, 2000, Is trade policy for sale? Congressional voting on recent trade bills. *Public Choice* 105, 79–101.

Bresnahan, T., 1987, Competition and collusion in the American automobile industry: the 1955 price war. *The Journal of Industrial Economics* 35, 457–482.

Coate, S., 2004, Political competition with campaign contributions and informative advertising. *Journal of the European Economic Association* 2, 772–804.

Che, Y.-K. and I. L. Gale, 1998, Caps on political lobbying. *American Economic Review* 88, 643–651.

Gawande, K. and P. Krishna, 2003, The political economy of trade policy: empirical approaches, in: E. K. Choi and J. Harrigan, eds., *The Handbook of International Trade* (Basil Blackwell Publishing) 213–250.

Gokcekus, O., M. Adams, H. Grabowski, and E. Tower, 2006, How did the 2003 prescription drug re-importation bill pass the House? *Economics & Politics* 18, 27–45.

Griswold, D., 2005, Free trade, free markets: rating the 108th Congress. *Cato Institute Trade Policy Analysis Papers* 28 (http://www.cato.org/pub_display.php?pub_id=6799).

Grossman, G. M. and E. Helpman, 1994, Protection for sale. *American Economic Review* 84, 833–850.

Grossman, G. M. and E. Helpman, 2002, *Special Interest Politics* (MIT Press, Cambridge, MA, and London, UK).

Hall, R. L. and A. V. Deardorff, 2006, Lobbying as legislative subsidy. *American Political Science Review* 100, 69–84.

Hillman, A. L., 1982, Declining industries and political support protectionist motives. *American Economic Review* 72, 1180–1187.

Hillman, A. L., 1989, *The Political Economy of Protection* (Harwood Academic Publishers, London, UK).

Levitt, S. D., 1994, Using repeat challengers to estimate the effect of campaign spending on election outcomes in the U.S. House. *Journal of Political Economy* 102, 777–798.

Mussa, M. and S. Rosen, 1978, Monopoly and product quality. *Journal of Economic Theory* 18, 301–317.

Paris, V. and E. Docteur, 2007, Pharmaceutical pricing and reimbursement policies in Canada. OECD Health Working Papers, no. 24, Paris. Available online at: http://www.oecd.org/dataoecd/21/40/37868186.pdf.

Timpone, R., 1998, Structure, behavior, and voter turnout in the United States. *The American Political Science Review* 92, 145–158.

Tirole, J., 1988, *The Theory of Industrial Organization* (MIT Press, Cambridge, MA).

Tullock, G., 1972, The purchase of politicians. *Western Economic Journal* 10, 354–355.

U.S. House of Representatives, 2003, H.R. 2427 Pharmaceutical Market Access Act of 2003. (Bill in the House of Representatives, June 11, 2003.)

U.S. House of Representatives, Oversight & Investigations Subcommittee, 2007, *FDA Foreign Drug Inspection Program: a System at Risk* (http://energycommerce.house.gov/images/stories/Documents/Hearings/PDF/110-oi-hrg.110107.StaffTripReport.pdf).

Wright, D. J., 2004, The drug bargaining game: pharmaceutical regulation in Australia. *Journal of Health Economics* 23, 785–813.

Wright, J., 2004, Campaign contributions and congressional voting on tobacco policy, 1980-2000. *Business and Politics* 6, 1–26.