The Political Business Cycle and Trade Policy Formation: How Do Electoral Incentives Impact Trade Policy?

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The Political Business Cycle and Trade Policy Formation: How Do Electoral Incentives Impact Trade Policy?

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Submitted in Partial Fulfillment of the Requirements of Senior Independent Study for the Program in International Relations at The College of Wooster

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Abstract

In this paper, I adopt the framework of the political business cycle to derive a model of politician decision making with regard to international trade policy. To test my model, I estimate a probit regression using a unique data set of 18 U.S. Senate votes on trade liberalization from 1993-2011. My regression measures the impact of impending reelection on an incumbent politician’s trade policy choice, controlling for the capital-labor distribution and employment make-up of the politician’s constituency, as well as the politician's personal ideology. I find empirical support for my hypothesis that, all else equal, a politician within two years of an election is less likely to vote in favor of trade liberalization.

在本文中，我采用了政治经济周期的框架，以获得关于国际贸易政策的政治家决策模型。为了测试我的模型，我用概率回归分析了一个包含从1993年至2011年间，十八次美国参议院就贸易自由化的表决的独特数据集。我的概率回归测试了以下几个方面：即将到来的再次选举对于现任政治家的贸易政策选择的影响，对于控制资本劳动分配和选区内就业组合的影响，以及对于政治家个人的意识形态的影响。我发现了实验证据来证明我这个假设：在一切平等的情况下，一位在两年内即将参与再选举的政治家不太可能就贸易自由化投赞成票。
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1. Introduction

The potential impact of an impending election on public policy formation is intuitive. As an incumbent politician approaches reelection, campaign advertisements and rhetoric highlight his recent accomplishments and policies. Although many economic theories, such as the Heckscher-Ohlin model discussed in section 2.5 of this paper, show that free trade leads to growth in the long run due to the exploitation of comparative advantage, empirical research has shown that trade policies are nearly everywhere biased against trade (Dutt & Mitra, 2002). This finding suggests that protectionist trade policies may be politically popular, given that they survive despite their ill-effects. It stands to reason, then, that trade policy formation may be impacted by electoral incentives. In other words, a pro-trade politician may alter his position on free trade near reelection to appeal to protectionist voters. I hypothesize that a politician will vote in favor of the economically beneficial free trade when not faced with immediate reelection, but will vote for more politically popular protectionist policies when nearing an election, to maximize the number of votes gained and thereby his chances of reelection.

From the firestorm surrounding NAFTA to the current debate over the Trans Pacific Partnership (TPP), trade policy has always been a hotly divisive issue in American politics. There is a massive campaign underway to garner support for the TPP, but proponents are facing an uphill battle against those who say it will lead to more jobs shipped overseas, reductions in environmental and labor standards, and a general deterioration of the U.S.’s economic welfare (Davis, 2015). This political opposition
coincides with public opinion on free trade. In October of 2010, 44% of Americans said that free trade agreements such as NAFTA have harmed the U.S. economy, while only 33% believed that they were beneficial. In total contrast to this division, economists almost unanimously agree on the benefits of free trade. In 2006, a survey of a random sample of 210 Ph.D. economists from the American Economic Association found that 87.5% of these economists believed that it would benefit the U.S. to eliminate tariffs and other barriers to trade (Whaples, 2006, p. 1). Given this huge division between economic thought and political reality, it is clear that politicians are not merely considering the economic benefits of free trade agreements, but also the potential electoral impacts of such agreements. If your constituency does not want free trade (regardless of whether it would be beneficial or not), then a politician is unlikely to vote in favor of trade liberalization, especially if the vote occurs during the enhanced scrutiny of an election cycle. In fact, public opinion surveys have shown that “swing” voters (undecided voters who often provide the crucial turning vote in an election) more frequently favor protectionism (Molyneux, 1994, p. 30).

My hypothesis, therefore, centers on the idea that electoral incentives drive the gap between economic reality and political will when it comes to trade policy. Since the health of the economy is consistently the most salient issue for the majority of voters, a politician considering a free trade bill must balance the positive economic impacts of free trade with the negative electoral impacts (Drazen, 2000, p. 82). I hypothesize that this balance is struck by voting in favor of free trade when not faced with immediate reelection (thereby encouraging healthy economic growth), and voting for the economically harmful but crowd-pleasing protectionism when faced with the increased
scrutiny of impending re-election. I test this hypothesis by building a theoretical model based on the political business cycle work of Nordhaus (1975) and Drazen (2000), then empirically testing this model by analyzing the voting patterns of U.S. Senators on 18 trade liberalization bills from 1993 to 2011.

Through my data analysis in chapter 4, I find that sitting U.S. Senators are less likely to vote for a trade liberalization bill when the vote falls within two years of an election. This result holds even when controlling for the make-up of Senators’ constituencies and their individual ideologies. This is consistent with the findings of Conconi et al. (2014), who have published the only article currently available on the connection between election proximity and trade policy. They find that Senators (who have longer terms than House members) are generally less protectionist than their House counterparts. However, in the final two years of their terms, Senators become less likely to vote for trade liberalization and become just as protectionist as House members (Conconi, Facchini, & Zanardi, 2014, p. 102).

In the next chapter, I will start by constructing a theoretical model, beginning on the intermediate level with the welfare implications of free trade in the Hecksher-Ohlin model and finishing with a modification of the political business cycle model of Nordhaus (1975) and Drazen (2000) to account for the changes in a politician’s behavior over the course of an elected term.
2. Theoretical Framework

2.1 Introduction

The Hecksher-Ohlin (H-O) model of trade implies that a country should specialize and export the good that uses its abundant factor intensively. This results in gains from trade for all, but owners of the abundant factor will benefit relatively more than the scarce factor. For example, the majority of voters in capital-abundant countries (assuming that this capital-abundance also means that the majority of voters are capital owners) should prefer trade liberalization, as it increases the relative returns to owners of factors of production that are used in the exported capital-intensive good. However, as pointed out by Dutt and Mitra (2002), empirical research has shown that trade policies are nearly everywhere biased against trade (Dutt & Mitra, 2002, p. 108).

Building upon the H-O, median voter, and political business cycle theorems, I intend to construct a model of political decision making which accounts for the impact of political time horizon\(^1\) and constituency factor endowment on politician trade policy preferences. In this case, I am referring to “trade policy preferences” as a politician or voter’s preference toward trade liberalization or protectionism. I hypothesize that, as a politician approaches reelection, she\(^2\) will favor more protectionist policies (regardless of the economic impact of such policies on her constituency), because the politician’s utility is based on maximizing the number of votes and such policies are favored by voters in her constituency who have a stronger incentive to vote based mainly on their trade policy preferences. However, since these voters have a short memory regarding the politician’s

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\(^1\) “Political time horizon” refers to the amount of time before an incumbent politician will face reelection.  
\(^2\) For simplicity, an individual politician will herein be referred to using the pronoun “she”.
past trade policy decisions, the politician will vote for the policy that is most economically beneficial to her broader constituency when not faced with immediate reelection. So, in sum, voter’s decisions are affected by two things: the health of the overall economy and the health of their individual sector of employment. The impact of trade policy on the health of the overall economy depends on the factor endowment of the entire constituency. The impact of trade policy on individual sector of employment depends on the factor of production used intensively in that sector. Those whose sector of employment is greatly impacted by trade policy stand to benefit more from voting than those who are not intensely affected. Therefore, in order to capture the votes of both the trade-sensitive and the non-trade-sensitive, the politician will vote for the most economically beneficial trade policy for all when not faced with imminent reelection, and will vote for the preferred trade policy of the trade-sensitive when nearing reelection.

### 2.2 The Heckscher-Ohlin Model of Trade

This theoretical explanation of the actions that a politician will take regarding trade policy as reelection approaches begins with an analysis of the Heckscher-Ohlin model of international trade. The basic premise of the H-O model is that trade between two countries will be based on the relative abundance of factors of production within those countries, as well as the relative intensity with which the traded goods use these factors of production (Krugman, Obstfeld, & Melitz, 2012, p. 84). To demonstrate this, we will examine a two good (shoes and cars), two factor of production (capital and labor), and two country (Home and Foreign) model. We will assume that 1) factors of production are mobile between industries, 2) both countries have fixed amounts of labor and capital to allocate to the production of shoes and cars, 3) Home is relatively capital
abundant and Foreign is relatively labor abundant, 4) the production of shoes is labor intensive and the production of cars is capital intensive, 5) each country will produce the combination of goods that yields the maximum total value, which is dependent on the relative prices of the goods.

The production of shoes ($Q_s$) is a function of the inputs labor ($L_s$) and capital ($K_s$), formally stated: $Q_s = f[K_s, L_s]$. The same is true of the production of cars: $Q_c = f[K_c, L_c]$. Since the production of cars is capital intensive, and Home is relatively capital abundant, its production possibilities frontier will be skewed towards the production of more cars. This can be seen in Figure 1.1. Likewise, as we can see in Fig. 1.2, the production possibilities frontier of Foreign is skewed towards the labor intensive good, shoes.

In both graphs, we see that Home and Foreign produce at quantity $Q_1$, where the slope of the production possibilities frontier is equal to the slope of the highest possible isovalue line, a line on which the value of output is constant. This point on both graphs, $Q_1$, is where the economy maximizes the value of production given the prices it faces (Krugman et al., 2012, pp. 88–89). We also see (assuming the graphs are scaled
identically) that the value-maximizing combination of shoes and cars is skewed towards cars in Home and towards shoes in Foreign. Since the H-O model suggests complete specialization, the value maximizing combinations shown in Figures 1.1-1.2 are those in a state of autarky. In other words, they are what Home and Foreign would produce in the absence of trade. This is important to examine because it allows us to then see how a country’s production changes in the presence of trade.

The difference in the intensity of each factor of production is demonstrated in Figure 1.3. We see that, at any given wage-rental ratio, shoe production (SP) uses a higher labor-capital ratio than car production (CP), meaning that shoe production is labor intensive while car production is capital intensive.

![Factor intensity diagram](image)

### 2.3 Stolper-Samuelson

The Stolper-Samuelson theorem explains the impact that a change in the price of a good will have on the return to the owners of the factor of production that is used intensively in the making of that good (Krugman, Obstfeld, and Melitz 2012, 92). For
example, if the price of cars increases, the returns to the owners of the factor of production that is used intensively in the production of cars (in this case, capital owners) will also increase. In order to understand how the Stolper-Samuelson theorem comes to this conclusion, we must first examine how the change in the price of a factor of production impacts the price of the good that uses that factor of production intensively.

In Figure 1.4, we see that there is a one-to-one relationship between the ratio of factor prices \((w/r)\) and the relative price of shoes \((P_s/P_c)\). This means that as the relative price of the labor intensive shoes \((P_s/P_c)\) increases, the relative price of labor \((w/r)\) also increases. This occurs because, in the state of perfect competition that this model assumes, the wage rate will equal the marginal product of labor (and, likewise, the rental rate will equal the marginal product of capital). The marginal product of labor increases due to the increase in the price of the labor-intensive good, shoes. In other words, as the price of labor increases, the price of the labor-intensive good must also increase (Krugman et al., 2012, p. 91). This effect is demonstrated by the SS curve in Figure 1.4.
Now that we have established the relationship between factor price and the price of the good that uses that factor intensively, we can move on to see how an increase in the price of a good affects the returns to the owners of the factor of production that is used intensively in that good. As we can see in Figure 1.5, an increase in the relative price of a good, \((PS/PC)^1\) to \((PS/PC)^2\), causes an increase in the wage-rental ratio, \((w/r)^1\) to \((w/r)^2\), which in turn causes the labor-capital ratio for the production of both goods to decrease.

2.4 The Impact of Trade
Now that we have shown that a change in the price of a good will impact the returns to the owners of the factor of production used intensively in the production of that good, we can examine how trade between countries will impact the prices of goods (and thereby the returns to the owners of factors of production within the trading countries).
To examine this we will establish a few more assumptions: 1) Home and Foreign have the same relative demands for shoes and cars, 2) the two countries have the same technology, meaning that an amount of labor or capital will produce the same output of shoes or cars in both countries. In other words, the only difference between the two countries is that Home is relatively capital abundant and Foreign is relatively labor abundant.

Figure 1.6 illustrates the impact of trade on the price of shoes in Foreign and Home. Since we have established that Foreign will produce relatively more shoes than Home, we see that the relative supply of shoes in Foreign (RS) is greater than that in Home in the absence of trade (RS*). Since the supply of shoes is greater, the price of shoes in Foreign \( \frac{P_S}{P_C} \), found where RS intersects RD (which is the demand curve for both countries because their preferences are the same), is lower than that of Home \( \frac{P_S}{P_C} \). When trade occurs, the relative prices of shoes converge to somewhere
between \((PS/PC)^1\) and \((PS/PC)^2\), in this case \((PS/PC)^3\). So, in the 2x2x2 model established here, Foreign will export shoes and import cars, while Home will export cars and import shoes. This is significant to the overall research question because it establishes that trade will cause the relative price of shoes to decline in Home and the relative price of cars to decline in Foreign, which means that the returns to the owners of labor in Home and returns to the owners of capital in Foreign will be reduced by trade. In other words, the owners of the abundant resource benefit from trade, while the owners of the scarce resources lose (Krugman, Obstfeld, and Melitz 2012, 96). In the next section, we will analyze how this decrease in returns impacts voters’ and politicians’ preferences toward free trade bills.

### 2.5 Median Voter Theorem

Since we have established that trade unevenly benefits owners of certain factors of production, we can conclude that there will be groups within a country in favor of free trade and groups opposing free trade. The median voter theorem is a model of political influence which broadly states that politicians will base their policies on the view of the median voter in order to maximize the number of votes that they will receive in an election (Krugman, Obstfeld, and Melitz 2012, 247). This theorem carries with it several assumptions: 1) there are two competing political parties in a representative democracy (Party A and Party B), 2) the only goal of each party is to win the election, 3) policy can be plotted along a single dimension (e.g. the size of an import tariff), 4) voters differ on the policy they prefer (Krugman, Obstfeld, and Melitz 2012, 247). To see the prediction of the median voter theorem in the case of trade policy, we will apply it to the same
2x2x2 model that we have established in previous sections. Let’s say that there is an
election in Home, and the single issue is a free trade agreement with Foreign.

At present, both Home and Foreign have significant tariffs on imported goods.
Therefore, rather than the state of complete specialization that the H-O model suggests as
optimal, prices are such that both countries produce some combination of shoes and cars.
Both countries, then, have a group interested in trade liberalization (those producing the
export-competing good) and a group interested in protectionism (those producing the
import-competing good). This free trade agreement would reduce these tariffs. As we
have shown in the section on Stolper-Samuelson, the owners of the abundant factor in
Home (capital owners) will benefit from the increase in the relative price of the capital-
intensive good (cars) that would come from the passage of this free trade agreement.
Likewise, the owners of the scarce factor in Home (labor owners) will be against the free
trade agreement, as it would decrease the relative price of the good that uses their labor
intensively and therefore decrease their relative returns.

As we can see in Figure 1.7, if voters are lined up in the order of the tariff size
that they prefer (represented by the upward sloping “political support” line), the policy
that will draw the most political support is that which is closest to the view of the median
voter. To demonstrate this, we will assume that the owners of capital outnumber owners
of labor and therefore the median voter prefers a low tariff ($t_M$). If Party A proposes a
tariff of $t_A$, while the other proposes the lower $t_B$, Party B will receive the votes of all of
the voters that prefer $t_B$ and any smaller tariff, giving them the vast majority. Therefore,
both parties have an incentive to undercut the proposed tariff of the other and will bring
their policy as close to the view of the median voter as possible. So, in our example, the
median voter model predicts that politicians in Home will promise to reduce tariffs through the passage of the free trade bill, thereby bringing the tariff to $t_M$ and capturing the most votes by satisfying the tariff rate proposed by the median voter.

In the case of this simple model, in which we have assumed that capital owners outnumber labor owners and the only salient issue is trade policy, the median voter theorem predicts that the politician in Home will vote in favor of the free trade agreement in order to align himself with the median voter and capture the most votes. However, as we will show later in this chapter, altering these assumptions drastically changes the outcome of the theorem. For example, adding the overall health of the economy as a salient issue for voters may change the politician’s decision. In addition, we will examine how a small but politically influential group may be able to sway the politician away from the view of the median voter, especially when the overall salience of trade policy to the median voter is low.
2.6 Collective Action

The median voter theorem can be a useful tool for analyzing how representative politicians choose their policies, but in the case of trade policy its predictions are often the complete opposite of the actual outcome. The median voter theorem predicts that trade policy will be based on the number of people that it benefits. In real life, trade policy often benefits a small but politically influential group (Krugman, Obstfeld, and Melitz 2012, 248). For example, car makers in the United States benefit from import quotas on Japanese cars (Crandall, 1984, p. 8). These quotas benefit the small group of car manufacturers, but negatively impact the much larger group of car consumers by raising prices.

The explanation for the failure of the median voter theorem to correctly predict trade policy can be found in part in the theory of collective action as proposed by Mancur Olson. Olson made the observation that political action is a public good, so the actions of a single individual can benefit a much larger group of people if they result in a change in policy. In other words, political action is based on the combined self-interested actions of individuals (Krugman, Obstfeld, and Melitz 2012, 248–249).

The main implication of this observation for our model is that policies which negatively affect a large group of people but impact each person in a relatively small manner may not receive the political opposition that one would expect given the large absolute value of the impact. On the other hand, a policy with a relatively small absolute negative impact that is distributed among a small group of people, such that the impact on each individual is large, will receive a great deal of opposition. If each individual’s incentive to act is small, then they are not likely to summon the combined political action
nec

ecessary to affect policy. On the other hand, a small but intensely impacted group
would consist of individuals with a great deal of incentive to attempt to influence policy,
giving them a greater chance of summoning the political influence necessary to affect
change (Krugman, Obstfeld, and Melitz 2012, 248–249).

If we apply Mancur Olson’s observations to trade policy formation, we see why
the predictions of the median voter theorem fall short. To demonstrate this, we will
consider the following example. There is a proposed trade agreement that will increase
the quota of cars allowed to be imported into Home. If enacted, it would slightly reduce
the price of cars in Home. We will make the following assumptions: 1) car
manufacturers in Home are much less numerous than the consumers of cars, 2) the
negative impact on each car manufacturer (the reduction in their returns caused by the
lowering in the price of cars) will be smaller in absolute terms than the positive impact of
the efficiency gains and price reduction for consumers, but will be much more intensely
felt by each car manufacturer than by each consumer.

The median voter theorem predicts that trade policy will follow the preferences of
the median voter (in this case, the more numerous consumers would favor the quota
increase). However, each individual consumer has a relatively small incentive to act in
favor the policy, whereas each car producer has a very strong incentive to oppose the
policy. As a result, the car producers may be able to better organize and exert pressure
on politicians to vote down the trade agreement. According to Mancur Olson’s theory,
the smaller but more intensely affected and well-organized car producers would likely
overpower the larger but less organized and less intensely impacted consumers, resulting
in a trade policy that does not reflect the view of the median voter but rather that of the smaller, well-organized interest group.

2.7 Political Science Models of Political Influence

Public choice theory is an interdisciplinary field of study which uses the tools of economics to address questions typically considered only by political scientists (Tullock, 2008, p. abstract). Our model here clearly falls within the realm of public choice theory, so in the spirit of interdisciplinary work, it is important to also consider relevant models of political influence proposed by political scientists. Here we will examine the implications of the models of Austen-Smith and Wright (1992) and Smith (1984).

2.7.1 The Alignment of Special Interest Groups and Voters

Austen-Smith and Wright build a model of lobbyist influence in which campaign contributions from special interest groups buy access to legislators, and these lobbying groups in turn help legislators to make better decisions by providing them with information (research, analysis, etc.) that they might not otherwise have had (Austen-Smith & Wright, 1992, p. 229). This model suggests that campaign contributions from special interest groups are not necessarily harmful to the overall welfare of society (or, in the case of our model, the average voter). Therefore, it is possible that special interest groups and the average voter may be in favor of the same trade policies. The implication of this on the model established here is that voter preferences and the preferences of special interest groups may align. This is further evidence of the connection between voter preferences and politician preferences, as we have assumed (based on the Olson’s collective action theorem) that politician preferences are intensely affected by special interest groups.
2.7.2 The Impact of Interpretation

In contrast to the model of Austen-Smith and Wright (1992), Smith (1984) builds a model of public policy formation in which it is not just the potential outcome of a policy that determines how a politician will vote, but also the politician’s interpretation of the consequences of the policy (Austen-Smith & Wright, 1992, p. 44). In other words, it is not just the outcome of a policy that matters, but also how a politician interprets that outcome. Smith’s model therefore implies that lobbyists may aim not to educate a politician on the potential outcomes of a policy (as suggested by Austen-Smith and Wright (1992)), but may rather seek to simply change a politician’s interpretation of this outcome. In particular, Smith suggests that lobbyists may be able to change politician’s decisions by changing their interpretation of a policy by emphasizing its impact on the politician’s personal goals (such as reelection) (Smith, 1984, p. 44). The implication of this for the model that I develop is that a politician’s preferences on trade policy may not depend on only the direct outcome of the trade policy, but also on the politician’s interpretation of that outcome in relationship to their personal goals (i.e. reelection).

2.8 Voting Costs and Mayer’s Endogenous Tariff Formation

Now that we have theoretically established the impact of trade on owners of factors of production, the role of collective action and the median voter, and the self-interested goals of politicians, we can build a model of political influence in tariff formation that accounts for the disproportionately large impact of a small and trade-sensitive but politically powerful sub-group within a constituency. To do so, we will adapt the framework of Mayer (1984), who derived a model of tariff formation that illustrated the relationship between trade-sensitivity, factor endowment, and political influence with regard to trade policy (Mayer, 1984, p. 970). So, the question we are
answering in this section of the theory is not, “what is the action of the median voter?”,
but rather, “how do voting costs determine the identity of the median voter?”

We will begin modeling the voting cost-benefit analysis from the perspective of
individual utility maximization. First, we will adopt all of the assumptions of the 2x2x2
H-O model stated in sections 2.2-2.4 (perfect competition, etc.). However, rather than
assuming perfectly mobile factors, we will assume that factors are semi-mobile between
industries such that an individual’s trade policy preference can be based on both his
sector of employment and his relative capital endowment. This is consistent with the
empirical findings of Beaulieu (2002), discussed in section 3.6 of this paper.

We assume that voter i’s goal is utility maximization, and his utility \( U^i \) is a
function of his income \( Y^i \) in terms of the relative price of shoes \( P_s \). Formally written:
\[
U^i = U^i(P_s, Y^i).
\]
We assume that there are two sources of income: returns on capital
ownership (r) and returns on labor ownership (w). Mayer (1984) assumes a third source,
the redistribution of tariff revenues, but for our purposes we will omit this from our
analysis. We are concerned with the impacts of free trade on factor ownership, not
redistributive fiscal policy. Therefore, total income of voter i is: \( Y^i = wL^i + rK^i \). We
will assume that each voter is endowed with one unit of labor \( L^i = 1 \), but capital
endowment varies from voter to voter. Therefore, any given voter’s utility is based on
the relative price of capital vs. labor and their individual capital endowment. Since we
established in 2.1-2.4 that trade liberalization causes uneven changes in the relative
returns to factor owners (and, in the case of semi-mobile factors, specific industries), we

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\(^3\) For the purposes of simplicity, and to differentiate from the politician, we will refer to the voter using
the pronoun “he”.

can therefore reason that an individual voter’s trade policy preferences will be based on their individual factor endowment and their sector of employment. We will also assume that current tariff rates are such that countries are not completely specialized and there remains an industry in Home which uses the scarce factor (labor) intensively. As we established using Stolper-Samuelson in section 2.3, a person who is relatively well endowed in the abundant factor of a country stands to benefit more from trade liberalization than a person who is well endowed with the scarce factor. If, as in the case of the relatively capital-abundant Home, a person is relatively well endowed with capital, such that the increase in their income from a rise in \( r \) is greater than their decrease in income from a drop in \( w \), then they will favor trade liberalization. The opposite is true for someone who is not relatively well endowed with capital.

It is well established in the theoretical and empirical literature that there are significant costs associated with voting (opportunity cost of time, effort spent campaigning, transportation to/from the polling location, etc.) (Mayer, 1984, p. 976). We will formally express these voting costs as \( c_v \). We will assume that an individual’s benefit from voting \( b_v \) must be greater than the cost of voting for someone to cast a ballot \((b_v>c_v)\). Since we are interested in trade policy formation, as we have stated earlier in our model, the benefit of voting is exclusively linked to trade policy’s impact on the voter’s income. So, \( b_v = Y^1_1 - Y^1_2 \), where \( Y^1_1 \) is the voter’s income before voting and \( Y^1_2 \) is the voter’s income after voting. Therefore, if the voter’s income increases more than the cost of voting, he will vote. Otherwise, he will stay home. Formally stated: if \( Y^1_1 - Y^1_2 > c_v \), then the voter will go to the polls. The voter’s decision to vote, then, is directly linked to
his individual factor endowments and the relative impact of trade on the returns to these factor endowments.

To illustrate this, we will consider the following hypothetical on the individual level of analysis. There is a voter in the capital-abundant home, \( v_h \), who is, on the individual level, not relatively well endowed with capital. We will say that for \( v_h \), \( K=0.5 \), whereas the median individual’s capital endowment in home is \( K=2 \). There is a proposed tariff decrease. With the current tariff, \( w=4 \) and \( r=5 \). If the tariff decreases takes place, the new returns will be \( w=1 \) and \( r=7 \). Recall that every individual has the same labor endowment, \( L=1 \). So \( v_h \) has a pre-liberalization income of 6.5, and a post-liberalization income of 4.5. On the other hand, the median individual in Home has a pre-liberalization income of 14, and a post-liberalization income of 15. If voting costs \( c \) are greater than or equal to 1, then those who stand to benefit from the trade liberalization, despite their majority status, will not vote, because their \( b_v = 1 \). The less-capital endowed voters have a \( b_v \) of 2 and stand to lose more from trade liberalization. Despite that he is actually in the minority, \( v_h \) is the median voter that a politician must adopt the preferences of in order to win an election. This model illustrates how a smaller, more intensely affected group can decide the trade policy of a constituency because their benefits from voting outweigh voting costs such that they will actually go the polls, while the larger, less intensely affected group will not.

### 2.9 The Political Business Cycle: Modeling the Politician’s Decision

In order to model the decision making of a politician faced with a free trade agreement, we will first make the following assumptions: 1) the politician may either vote yes or no, 2) the politician is utility maximizing, and his/her utility is based entirely
on the number of votes garnered in the next election by the decision on the free trade agreement, 3) the politician has perfect information regarding the composition and trade policy preferences of his constituents, 4) the constituents consider two issues salient: the overall health of the economy, and their personal trade policy preferences based on their sector of employment, 5) constituents have an imperfect memory when considering how their trade policy preferences match up with those of the politician (in other words, more recent trade policy decisions by the politician will weigh more heavily in their voting decision than those in the distant past), 6) the salience of trade policy to voters varies based on the factor intensity of their sector of employment.

Most importantly, we will assume, based on the model put forth in section 2.8, that not all constituents will vote. For some, the costs of voting will outweigh the potential benefits, and they will simply remain at home. The politician knows this, and acts accordingly. Therefore, the trade policy preference of the median individual in the entire constituency may vary from that of the median voter in the portion of the constituency that will actually vote. Beyond the theoretical model justification of 2.8, this assumption is realistic for several reasons. First, voter turnout in the United States (the country which this paper focuses on) is historically very low. Turnout has averaged 55% of voting-age citizens over the last 35 years, including 48% in mid-term elections and 63% in Presidential elections (US Census Bureau, 2012). Second, empirical and theoretical work has shown support for Mancur Olson’s theory of collective action, suggesting that geographically dense industries are more politically active in terms of common trade policy preferences, campaign donations, and voter turnout, because their physical proximity reduces the costs of organizing (Busch & Reinhardt, 2000, p. 703). In
fact, by Busch & Reinhardt’s (2000) estimation, being in a geographically concentrated industry increases voter turnout by up to 15.4% and donating money by up to 97.5%. If an individual is employed in an industry that is import-competing *and* geographically concentrated, the probability of that individual supporting protectionism increases by 67.2% (Busch & Reinhardt, 2000, pp. 712–713). Along with this empirical reality, the idea of a voter cost-benefit analysis has received wide-spread theoretical support (Mayer, 1984, p. 976).

A multitude of literature has shown that, in representative governments, the most salient issue for the majority of voters is the health of the economy (Drazen, 2000, p. 82). Therefore, we would expect that a politician’s decision on a trade-related bill would be based on the overall welfare impact of that bill on the majority of his constituents. That is, the politician should choose the option that has the largest positive impact on the economy of his constituency. This is the case for the majority of a politician’s trade policy decisions, but, when approaching reelection, the politician’s incentives change. To illustrate this, let us assume that there is a small sub-sector of the politician’s constituency that cares deeply about trade policy because it heavily influences their sector of employment. Let us also assume that the trade-sensitive constituency favor a trade policy that is detrimental to the overall economic welfare of the constituency, but positively benefits their sector of employment (a realistic assumption, given that we have established that trade liberalization leads to an overall welfare gain using the H-O model). We will also, in the method of Drazen (2000), Nordhaus (1975), and Macrae (1977), assume a myopic constituency with regard to trade policy. Since the constituents have a relatively short memory regarding trade policy, in non-election years the politician can
vote for the trade policy that has the greatest positive welfare impact on his constituency. However, when closer to reelection, an incumbent politician will vote for the policy preferred by this small sub-sector, allowing him to capture the votes of both the larger constituency concerned with the health of the economy and the smaller sub-sector concerned with trade.

To demonstrate this, let us first formally construct the loss function of the median voter that will determine whether he will vote for the incumbent or the upstart. This model is based heavily upon the political business cycle models of Nordhaus (1975) and Drazen (2000), who dealt with the political business cycle in the context of monetary and fiscal policy, respectively (Drazen, 2000, pp. 78–80, 101–112). One key assumption of this model, which we stated earlier, is that voters have a relatively short memory when it comes to trade policy. This will be represented by a coefficient, $\delta$, which we will assume is relatively small (meaning that voters heavily discount trade policy decisions by the politician in the distant past, and rely mostly on recent decisions). The voter’s loss function is as follows:

$$L_t = \alpha \frac{(x_t - x')^2}{2} + \frac{(y_t - y')^2}{2},$$

$t$ is the time period being considered, while $x'$ is the expected economic output of the constituency and $y'$ is the expected performance of the voter’s sector of employment (which determines his trade policy preference). $x_t$ and $y_t$ are the actual economic output of the constituency and the performance of the voter’s sector of employment. $\alpha$ is the relative weight that the voter puts on the health of the economy vs. the health of their sector of employment. From this function we see that, depending on a voter’s $\alpha$, they will vote based on either their feelings on the overall health of the economy or their feelings on the overall health of their sector of employment.
Based on the loss function of the median voter, we can construct a model of the election itself: $N_t = N(\sum_{s=0}^{T} \delta L_{t-s}) + \varepsilon_t$. $N_t$ is the number of votes captured by the incumbent, which is a function of the voter’s past well-being (represented by the loss function $L_{t-s}$). We also see that the “forgetfulness coefficient” $\delta$ helps to account for the differing in the politician’s decisions depending on the proximity to reelection.

To see how this will pan out in real life, let us examine the following hypothetical. First, we will reinstate all of the assumptions outlined in the theory sections above (H-O, Median Voter, mobile factors, etc.), but we will add a third sector: services. We will assume that the production of services uses equal parts capital and labor, so factor endowment (and therefore trade policy) has no impact on those employed in the services industry ($\alpha = 1$). This assumption is justified by the fact that many services (such as healthcare, retail, and food service) can’t be imported or exported at this time.

There is a politician in Home who operates on a six year election cycle. Let us say that 75% of his constituency is employed in this services sector, but the other 25% is employed in the capital-intensive car production industry. This assumption is justified by the empirical reality that the United States is an extremely services-heavy economy, with an average of 6 services jobs for every 1 goods-producing job in 2011 (Bureau of Labor Statistics, 2011).

In our original H-O model, we said that home and foreign each produced entirely either cars or shoes. In this model, we are assuming that import tariffs in both countries are such that there is incomplete specialization and it is still feasible to produce some shoes in Home, and some cars in Foreign. All of the constituents consume equal amounts of services, shoes, and cars. The politician must vote “yes” or “no” on a free
trade agreement with Foreign that will lower import tariffs on Foreign shoes. This agreement would have a significant positive impact on all of Home’s consumers of shoes (100% of the constituents) by reducing the price of shoes, but would harm Home’s shoe production industry, and therefore the returns of those employed in it, by introducing greater price competition. We will assume that this price competition represents an existential threat to the shoe production industry in home, and therefore the votes of those employed in shoe production are highly based on the politician’s decision on the free trade agreement ($\alpha = .25$).

For the purposes of this model, we will assume that the forgetfulness coefficient operates such that voters will fully discount any trade policy decision that occurred more than two years before an election. This is an arbitrary distinction, but it is necessary to draw a line somewhere so that we may illustrate the conclusions of the theoretical model.

Since we have assumed that 75% of constituents are employed in the services sector and stand to benefit from free trade, why wouldn’t the politician simply reflect the preference of the median voter and vote for trade liberalization regardless of political time horizon? Recall that an earlier assumption of our model was that less than 100% of the constituents would vote in the election, only those whose benefits from voting outweighed their voting costs would actually vote. This is where Olson’s theorem on collective action and median voter theorem come into play. In this relatively simplistic model, the only issues considered by a voter are the health of the economy and the health of one’s industry of employment. As we showed in our analysis of H-O theorem, Olson, and Mayer, those who are negatively impacted by trade liberalization may face a much greater effect, per person, than those who benefit from trade liberalization. We can
assume, then, that those employed in a trade-sensitive industry have a much greater potential benefit from voting, given that their vote may influence the trade policy of the politician. This assumption is consistent with the theoretical work of Mayer (1984) on endogenous tariff formation. Mayer analyzed the voting costs and benefits of a constituency with regard to tariff rates and came to the conclusion that tariffs will follow the preferences of a small but intensely trade-sensitive sub-group of a constituency, because this group’s voting benefits with regard to trade policy are much greater than their voting costs, which is not the case for the larger, less trade sensitive groups (Mayer, 1984, p. 971).

It is important to remember that the politician is assumed to have perfect information regarding his constituent’s trade policy preferences and their voting likelihood. Therefore, despite their relative scarcity in the constituency, those opposed to trade policy are more likely to vote and thereby the “actual” median voter is opposed to trade policy during the period immediately before an election. For the purposes of this model, we will say that the actual distribution of voters is 51% employed in shoe-producing industry and 49% employed in the services industry.

Now let us say that the politician is outside of two years from an election. Although it will harm the shoe production industry, the politician would vote “yes” on the free trade bill, as it will be economically beneficial for all of his constituents, and the politician knows those who are concerned with trade agreements (those employed in the shoe industry, for whom said $\alpha = .25$) will forget by the next election cycle. It is important to note that those employed in a trade-sensitive industry, despite their aversion to trade liberalization, do not contain the “actual” median voter outside of two years of an
election because the politician is aware that they will not remember her vote by election time. In other words, the trade policy preferences of those employed in the import-competing shoe industry effectively have no impact on the trade policy choices of the politician outside of two years from an election. The only consideration that matters to the politician outside of the election cycle is the health of the economy. Just as the politician can’t ignore the politically powerful minority around election time, she also can’t completely ignore the overall health of the economy. Both those in the services sector and those in the shoes-producing industry base their vote partially on the health of the economy. The solution, then, is that the politician will vote for the economically beneficial trade liberalization outside of the election cycle and will vote for shoe-industry-benefitting protectionism within the election cycle.

Therefore, faced with the same choice within two years of an election, the politician will vote “no” on the trade bill, as this will have a minimized negative impact on the overall economy (a small increase in the price of shoes), but will have a large positive impact on the returns to the now-relevant 51% of actual voters employed in the shoe industry, earning the politician the vote of the “actual” median voter and winning her the election. It is important to note that winning the vote of the trade-sensitive constituency does not necessarily preclude the politician from also winning the vote of the non-trade-sensitive constituency. If the economy does well and the politician votes against trade liberalization near an election, the politician has the potential to capture the votes her entire constituency.
2.10 Conclusion

In the model we have constructed here, we see that the deciding factor in the politician’s vote on a free trade agreement changes when she moves within two years of an election. When she is outside of the two year range, she votes for what is economically most beneficial for all of her constituents (maximizing \( x_t \) and thereby increasing the votes garnered from being associated with a healthy economy). When she is inside of two years, she must vote for what is slightly economically detrimental for all of his constituents but very beneficial for the import-competing employment sector of a portion of his constituents. In this manner, she is able to both maintain a healthy economy and appease the demands of the small sub-section of politically influential trade-opposed constituents, giving her the maximum number of votes.

The causal relationship proven by this theory is that a politician’s decision on a free trade agreement will be affected by both the make-up of her constituency (capital vs. labor abundant, industry of employment of constituents) and the distance from reelection (inside or outside of two years). These are the causal factors that I will test through my empirical work in sections 4 and 5.

3. Review of Empirical Literature

3.1 Introduction

In order to determine if there is a relationship between electoral incentives and trade policy, we must first examine the relevant empirical literature on the determinants of trade policy formation and other areas in which electoral incentives have been found to impact government policy. There is only one empirical article which directly addresses my research question. The work of Conconi et al. (2014) find a significant relationship
between impending reelection and protectionist votes on trade liberalization measures in the U.S. Congress. Aside from Conconi, recent literature on trade policy formation has largely focused on the impact of special interest groups (Baldwin and Magee 2000, Goldberg and Maggi 1999). Others have studied the impact of income inequality and the application of median voter theorem to trade policy formation (Dutt and Mitra 2002), and still others have examined the impact of factor endowments and industry of employment on individual voter’s trade policy preferences (Beaulieu 2002). In the area of political time horizon, empirical tests on the theory of political business cycles have found a relationship between time to reelection and expansionary fiscal policy (Alesina et al 1993).

The literature varies widely in unit of analysis. They include individual politicians (Conconi et al.), individual voters (Beaulieu), countries (Dutt and Mitra, Alesina et al.), industries (Goldberg and Maggi) The literature examined here provides valuable insight into the various determinants of trade policy preferences and the potential impact of political time horizon on public policy, allowing us to gather a sense of the potentially relevant variables that should be considered in the empirical testing of our theory in section 4. It also provides insight into the different units of analysis and empirical methods that have been used in the literature. A table summarizing the findings, methods, and data of these articles can be found in section 6.1.

3.2 Conconi et al. (2014)

Conconi et al. (2014) have published the only article that directly addresses the impact of election proximity on trade policy decisions. They hypothesize that the protectionist leanings of U.S. trade policy are, at least in part, influenced by the electoral
incentives of protectionist policies. To test their hypothesis, they conduct a variety of empirical tests on a collection of 27 trade liberalization bills in the United States Congress. To isolate the impact of election proximity, they control for other factors that may impact trade policy decisions, including the make-up of constituencies, interest group contributions, personal ideology, and whether the examined politician is retiring or holds a relatively “safe seat.” Although our empirical methods and theoretical explanations differ, the hypothesis of Conconi et al. is very similar to my own. The article adds to the body of literature on the legislative impact of election proximity, which until now has focused almost exclusively on monetary and fiscal policy (Drazen, 2000, pp. 75–77).

Conconi et al. do not expressly construct a theoretical explanation for their empirical results, although they do suggest some relevant theoretical literature. They mention the relevance of the political business cycle, and hypothesize that the protectionist impact of elections is due to a protectionist bias among voters and a “recency bias” among voters that places more weight on recent trade decisions at the ballot box (Conconi et al., 2014, pp. 104, 115–116).

The empirical methods of Conconi et al. are of particular interest to this paper, as their central research question is identical to my own. Although we come to the same result, that election proximity does have a protectionist impact on trade policy, our methods differ in several key ways. Conconi et al. begin their analysis with a comparison of the voting habits of Members of the U.S. House of Representatives and U.S. Senators. They find that House Members are generally more protectionist than Senators, suggesting that the shorter terms (2 years) of House members compared to Senators (6 years) may be
responsible for this difference. To further support their hypothesis, they examine the differences between Senators of different generations (the focus of this paper). They find that, even when controlling for differences between these Senator’s constituencies, political contributions, and ideology, the generation of Senators that are closest to reelection (a full third of Senators for any given bill) are 10% less likely to support a trade liberalization bill than their colleagues who are further from reelection (Conconi et al., 2014, p. 109).

Conconi et al. run a number of empirical equations to test their hypothesis. They begin with equation (1), a probit model, to determine if, all other factors equal, Senators are more protectionist than House Members.

\[
\Pr(Vote_{ijt}) = \Phi(\beta_0 + \beta_1 Senate_j + \beta_2 X_{it} + \beta_3 Z_{jt} + \mu_j + \delta_t + \epsilon_{ijt})
\]

(1)

The dummy variable Senate accounts for the difference between House and Senate Members, the matrix X accounts for controls specific to the legislator (party identification, age, gender), and the matrix Z contains variables that are specific to the legislator’s constituency (population, export/import ratio, skill level). \(\mu_j\) and \(\delta_t\) are fixed effects dummies, with \(\mu_j\) accounting for state specific variables not attached to time, while \(\delta_t\) accounts for year-specific variables that are not attached to a particular state (Conconi et al., 2014, p. 107). To measure the export/import ratio of each constituency (both states and Congressional districts), Conconi et al. use the number of workers in import competing industries vs. the number of workers in export competing industries. To calculate this, they use County Business Patterns census data on SIC/NAICS
sector of employment and classify industries as import or export competing based on whether the U.S. was a net importer or exporter of that good in a particular year (Conconi et al., 2014, pp. 105–106). From this equation, they find that, ceteris paribus, Senators support trade liberalization a statistically significant amount (6%-8%) more than House Members. They also find that age (older = more support), party identification (democrat = less support), export ratio (more export oriented = more support), and constituency skill endowment (more educated = more support) are statistically significant across all specifications (Conconi et al., 2014, pp. 106–108).

To test the difference between House Members and different generations of Senators (3 generations: furthest from election, closer to election, and closest to election), Conconi et al. estimate the following probit equation (2):

\[
Prob(Vote_{ijt} = 1) = \Phi(\gamma_0 + \gamma_1 Senate_{1it} + \gamma_2 Senate_{2it} + \gamma_3 Senate_{3it} + \gamma_4 X_{it} + \gamma_5 Z_{jt} + \mu_j + \delta_t + \epsilon_{ijt})
\]

(2)

The coefficients of Senate1 and Senate2 are positive and statistically significant (between 13.2% and 17.7% more likely to support liberalization), while the Senate3 variable is statistically insignificant. Since House members face election at the same time as Senate3, Conconi et al. conclude that the last generation of Senators is equally as protectionist as House members, while Senators who are further from election are significantly more likely to favor trade liberalization (Conconi et al., 2014, pp. 107–108).
The linchpin of Conconi et al.’s analysis (and the focus of my paper) is their final equation, which they use to compare differences in trade liberalization voting patterns among Senators of different generations. The equation is as follows:

\[
\operatorname{Prob}(Vote_{ijt} = 1) = \phi(\delta_0 + \delta_1 \text{Senate}_2 + \delta_2 \text{Senate}_3 + \delta_3 X_{it} + \delta_4 Z_{jt} + \mu_j + \delta_t + \epsilon_{ijt})
\]

They find that, ceteris paribus, Senators are less 10% less likely to vote for trade liberalization if they are in the last two years of their terms (Conconi et al., 2014, p. 109). They also estimate a logit and linear regression model for comparing the individual voting records of Senators who voted on multiple bills. They find results in line with those of their probit model, indicating that even a Senator who has voted for trade liberalization in the past is less likely to vote for it in the last two years of their term (Conconi et al., 2014, pp. 110–111). To further test their results for robustness, they interact their Senate3 variable with the variables retiring and safe (dummies for if the Senator willfully chose not to run in the following election of if they won their last election by a margin of 60% or greater). They find that the interaction term is significant and positive in both cases, indicating that planning to retire or holding a safe seat removes the electoral incentive of opposing trade liberalization. Meanwhile, the coefficient for Senate3 remains negative and significant, further indicating that votes against trade liberalization are partly driven by electoral considerations (Conconi et al., 2014, p. 111). With regard to campaign contributions, Conconi et al. find results
in line with those of Baldwin and Magee (2000), indicating that contributions from business groups are associated with votes for trade liberalization, while votes for trade restriction are associated with greater labor contributions. Additionally, the inclusion of this variable did not affect the sign or significance of Senate 3, indicating that it is not campaign funding cycles that cause the protectionist impact of elections (Conconi et al., 2014, p. 110).

The principal finding of Conconi et al. is that election proximity has a significant (as great as 10% in some specifications) protectionist impact on trade policy. They find that Senators are more likely to vote for trade liberalization than shorter-termed members of the House of Representatives, and Senators who are in the last two years of their term are less likely than their colleagues to support liberalization. These results are robust when including controls for constituency make-up and legislator ideology, as well as when examining the voting records of individual Senators over time.

Conconi et al.’s results are striking, but there are several opportunities for expansion to their research that I will take advantage of here. First, their approximation of the capital-labor ratio of constituencies was limited to the education level of constituents. They made no attempt to examine a more exact measurement of constituencies’ capital-labor ratios. Second, they did not check if the protectionist impact of elections increases as elections draw closer (say, within one year). Third, they did not include trade agreements after 2005, including the Peru, Panama, Colombia, and Korea Free Trade Agreements. If
the impact of election proximity on trade legislation is as great as Conconi et al. theorize, then these three issues require further investigation.

3.3 Dutt and Mitra (2002)

Dutt and Mitra (2002) examine the relationship between differences in inequality between countries and differences in the levels of trade barriers. They hypothesize that an increase in inequality will raise trade barriers in relatively capital-abundant countries and lower trade barriers in capital scarce countries (Dutt & Mitra, 2002, p. 107). This examination of the impact of inequality is relevant to our discussion here because they define inequality as the difference between the mean and median capital-labor ratios of a country. This means that, by examining inequality in this fashion, they are also examining the impact of capital-labor endowments on trade policy determination. In effect, this paper provides an empirical test (and, in its results, support) for the assertions made in the Heckscher-Ohlin/median voter/Mayer portions of our theoretical model.

To theoretically examine their hypothesis, they construct a model of trade policy determination similar to that of Mayer (1984) (which is covered briefly in section 2.8), using median voter theorem within a two-factor, two-sector Heckscher-Ohlin framework (Dutt & Mitra, 2002, p. 107). They note that the median voter theorem predicts that labor-abundant countries should be pro-trade, while capital-abundant countries should be anti-trade, but in reality nearly all countries are in some way biased against trade (Dutt & Mitra, 2002, p. 108). Therefore, they choose to focus not on pro-trade vs. anti-trade, but rather on variations in the magnitude of anti-trade policy between countries. Their

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4 For example: a country with very high import tariffs is considered to have a high magnitude of trade barriers, while a country with relatively low import tariffs is considered to have a low magnitude of trade barriers.
theoretical model supports their hypothesis that, holding constant overall relative factor endowments, higher inequality within a country increases the magnitude of trade barriers in capital-abundant economies and lowers the magnitude of trade barriers in capital-scarce economies. In other words, they find support for a modified version of the Mayer-H-O/median voter model that considers the magnitude of trade barriers rather than the pro-trade/anti-trade orientation of policies. This result is consistent with the theoretical predictions of my model in section 2.

In order to empirically test their theoretical model, they run several OLS regressions of cross-sectional country-level data from the 1980s with magnitude of trade protection as the dependent variable. First, they seek to determine the point in the capital-labor level at which inequality and trade go from being positively related (considered a relatively high capital-labor ratio) to being negatively rated (when the capital-labor ratio is relatively low). To do this, they estimate equation (1):

\[ TR_i = \alpha_0 + \alpha_1 INEQ + \alpha_2 INEQ \times (K/L)_i + \alpha_3 (K/L)_i + X_i \beta + \epsilon_i \]

(1)

\( TR_i \) is the magnitude of trade restrictions in country \( i \), \( INEQ \) is the level of inequality, \( (K/L) \) is the capital-labor ratio, and \( X_i \) is a row vector of control variables (Dutt & Mitra, 2002, p. 115). To measure inequality, they use both the Gini-coefficient and the share of the third quintile in national income. They acknowledge that these are imperfect measurements, as they represent income inequality rather than inequality in individual factor endowments. To calculate the capital-labor ratio, they use data from
Nehru-Dhareshwar⁵ on average physical capital endowment in the 1980s and define labor as the population between ages 15 and 64. For control variables that may impact trade barriers, they include level of democracy defined by the Freedom House 1-7 scale of democracy and schooling defined as the average number of schooling years of the total population over age 25 (Dutt & Mitra, 2002, p. 117). For their dependent variable, they use several different measurements of the level of trade protection. These include: “total import duties collected as a percentage of total imports, an average tariff rate calculated by weighing each import category by the 15 fraction of world trade in that category, a coverage ratio for non-tariff barriers to trade and an indirect measure of trade restrictions-the magnitude of trade flows relative to GDP, defined as (X + M)/GDP” (Dutt & Mitra, 2002, p. 117). Their sample size ranges from 44-64.

Dutt and Mitra find empirical support for the prediction of their modified Mayer-Hecksher-Ohlin/median voter model. Their results indicate that an increase in inequality leads to an increase in trade barriers in capital-rich countries and a decrease in trade barriers in capital-poor countries, holding relative factor endowments constant (Dutt and Mitra 2002, 130). This result is robust for all of the different measures of trade barriers considered except for the quota coverage ratio, the failure of which they attribute to coding problems and weaknesses in the underlying data (Dutt & Mitra, 2002, p. 119). They identify the critical capital-labor ratio (the level at which a country is considered capital abundant vs. capital scarce) as around 8.5. Below this level, the positive relationship between inequality and trade protection turns to a negative relationship (Dutt & Mitra, 2002, p. 122).

Among their control variables, level of schooling is found to have a significant negative impact on trade restrictions. They reason that this may be because it is a measurement of overall development, or a more educated constituency may understand the dead-weight costs of protectionist trade policy (Dutt & Mitra, 2002, p. 124). Level of democracy is found to have a significant, but weak, positive impact on trade restrictions, which they attribute to a democratic government being more concerned with the distribution of an economy than its overall size (Dutt & Mitra, 2002, p. 123). They note that this provides support for the idea that the median voter theorem is a more accurate predictor of trade policy in the case of democracies (Dutt & Mitra, 2002, p. 126). They use a Hausman test to check for endogeneity, and find evidence of endogeneity in the case of the tariffs dependent variable. They correct for this by modifying the standard errors by a factor of 1.94 to obtain consistent IV standard error estimates, and all main coefficients remained statistically significant (Dutt & Mitra, 2002, p. 125).

The findings of Dutt and Mitra (2002) suggest statistical support for the predictions of the Mayer-Heckscher-Ohlin/median voter theorem model presented in this paper. Dutt and Mitra have shown using a Heckscher-Ohlin model that inequality (by their definition) can impact trade policy, increasing trade barriers in capital-abundant countries and decreasing trade barriers in capital-scarce countries. Therefore, the level of inequality in a country should be included in my empirical analysis.

### 3.4 Goldberg and Maggi (1999)

Goldberg and Maggi (1999) empirically examine Gene M. Grossman and Elhanan Helpman (1994)’s theoretical model on the impact of special interest group contributions on trade policy. The authors hypothesize that an analysis of cross-sectional data will
confirm the predictions of the Grossman-Helpman model. The model predicts that trade protection will be higher where industries are represented by a lobby and in industries with lower import elasticity. Further, within organized industries, protection increases with lower import penetration, and in non-organized industries protection increases with higher import penetration (Goldberg & Maggi, 1999, p. 135). The analysis of Goldberg and Maggi is fairly unique within the literature on the political economy of trade policy in that they strictly adhere to the theoretical model in their empirical analysis, including almost exclusively theoretically relevant variables (Goldberg & Maggi, 1999, pp. 1136–1137). Their hypothesis is related to my own in that both account for the political influence of organized groups, but mine does so through the analysis of voting costs and collective action rather than the direct examination of campaign contributions.

The Grossman-Helpman model of the political impact of special interest group contributions builds a theoretical model on the assumption that organized industries will contribute more to politician’s campaigns, giving them more influence over political trade policy decisions. It assumes that each good has an input of labor and one factor that is specific to that sector. The model predicts that protection increases with domestic output, because specific factor owners stand to gain more from protection. Likewise, if the volume of imports is lower, the overall economy suffers less from protectionism. It also predicts that sectors with higher import elasticity will be less protected, because the deadweight loss from such protection is higher and the government will therefore be less willing to grant protection (Goldberg & Maggi, 1999, pp. 1138–1139).

Goldberg and Maggi empirically test the predictions of this model using a maximum-likelihood regression with level of trade barriers as the dependent variable and
import-demand elasticities, the import-penetration ratio, and level of political organization as the independent variables (Goldberg and Maggi 1999, 1144). They estimate the following equation (1):

\[
y_i^* = \frac{t_i^* e_i}{1 + t_i^*} = \gamma \frac{X_i}{M_i} + \delta I_i + \epsilon_i
\]

(1)

\(t_i^*\) is a measurement of the level of protection, \(e_i\) is the import demand elasticity, \(\frac{X_i}{M_i}\) is the inverse import penetration ratio, and \(\delta I_i\) is a dummy for political organization (Goldberg & Maggi, 1999, pp. 1139–1144).

It is important to note that they examine exclusively non-tariff barriers as their measurement of trade protection, whereas the Grossman-Helpman model is based on tariff predictions. Their reasoning for this is that tariffs are often determined through international cooperative agreements such as GATT, but the G-H model does not account for cooperation between countries (Goldberg and Maggi 1999, 1137). To represent non-tariff barriers, they use coverage ratios from 1983 (Goldberg and Maggi 1999, 1140). They use a number of variables to account for political organization, including data on campaign contributions comes from the 1982 and 1984 congressional elections, unionization, industry employment size/unemployment rate, and industry growth (Goldberg and Maggi 1999, 1145). They used demand elasticity estimates from Clinton R. Shiells et al. (1986) (citing their relative reliability), but place them on the left-hand side of the equation to combat the notorious unreliability of demand elasticity predictions in general. Data on the import penetration ratio comes from the National Bureau of Economic Research Trade and Immigration data file.
Their empirical tests find support for all of the predictions of the G-H model, asserting that trade protection will be higher where industries are represented by a lobby and in industries with lower import elasticity. Also, within organized industries, protection increases with lower import penetration, and in non-organized industries protection increases with higher import penetration (Goldberg & Maggi, 1999, p. 1136). Therefore, in sum, political organization does have an impact on protection, but it also varies depending on the import penetration and import elasticity of the industry. Of particular interest to this paper, their analysis suggests that the U.S. government places much more importance on the overall welfare implications of trade policy, rather than the influence of special interest groups. This difference between the two impacts is quite large, with a weight of .98 for welfare considerations and a weight of only .02 for campaign contributions (Goldberg and Maggi 1999, 1136). These results are relevant to my research question in that they suggest that, while interest group contributions matter, welfare considerations are far more important determinants of trade policy. Therefore, when building an empirical model, it is important to consider the impact of special interest groups, but the overall welfare implications of the trade policies must be given even greater consideration.

3.5 Baldwin and Magee (2000)
Baldwin and Magee (2000) empirically examine how members of the U.S. House of Representatives respond to campaign donations from business and labor groups when they make decisions on trade policy. Rather than using one specific theoretical approach to test this question, they draw from a wide variety of both economic and political science theoretical work to hypothesize that legislators’ preferences toward trade policy are
determined by both the impact of the policy on their constituents and the input of special interest groups attained through major campaign contributions (Baldwin & Magee, 1998, pp. 85–87). This hypothesis is consistent with my own, as I also consider the impact of overall welfare and the influence special interest groups in my theoretical model.

In order to empirically test the impact of campaign donations on politicians’ trade voting habits, Baldwin and Magee examine three separate independent variables in the form of votes of members of the U.S. House of Representatives on three high-profile trade bills from 1993-1994: the North American Free Trade Agreement, the General Agreement on Tariffs and Trade Uruguay Round, and Most Favored Nation status for China (Baldwin and Magee 2000, 80). They then compare these votes to several independent variables using a full information maximum likelihood simultaneous regression of three separate equations for each of the three votes (this is to control for possible correlation between the politician’s votes on the three trade bills). The equations (1), (2), and (3) are as follows:

\[
\text{Vote}_{\text{nafta}} = F(A'X + A_L^*(\text{Labor contributions}) + A_B^*(\text{Business contributions}) + E_n
\]

\[
\text{Vote}_{\text{gatt}} = F(B'X + B_L^*(\text{Labor contributions}) + B_B^*(\text{Business contributions}) + E_g
\]

\[
\text{Vote}_{\text{mfn}} = F(C'X + C_L^*(\text{Labor contributions}) + C_B^*(\text{Business contributions}) + E_m
\]

“F is the cumulative standard normal distribution, X is a vector of constituency variables that influence members’ voting behavior” (Baldwin & Magee, 1998, p. 87). They run Hausman tests to test for endogeneity in the campaign donation variables of each
equation. The results of these tests are mixed, with endogeneity in NAFTA’s business, but not labor, contributions, no evidence of endogeneity in the GATT equation, and evidence only in the labor variable in the China MFN equation. As a result, the authors elect to treat all campaign donations as endogenous (Baldwin and Magee 2000, 88). In addition to the independent variables presented above, Baldwin and Magee include control variables for the measurements of the ideology of a legislator based on party affiliation and ratings from interest groups (Baldwin and Magee 2000, 87).

Despite the inherent endogeneity of campaign contributions, the authors conclude that these donations have a significant impact on Congressional voting on trade policy (Baldwin and Magee 2000, 79). They estimate that campaign contributions from labor groups accounted for 67 extra votes against NAFTA and 57 extra votes against the GATT bill. They also find that contributions from business groups accounted for 41 votes for NAFTA and 35 for GATT. The cost-per-vote that they estimate for labor groups is $352,000 for NAFTA and $313,000 for GATT (Baldwin and Magee 2000, 99). Other factors that they found significantly impacted the votes were certain variables involving the economic make-up of the Congressman’s district (import-based vs. export-based), and the ideology of the Representative (by interest group rating) (Baldwin and Magee 2000, 99). As predicted by the HO model (assuming that the U.S. is a capital abundant country and therefore exports capital-intensive goods), labor groups’ donations were linked to votes against trade liberalization while business groups’ donations were linked to votes for trade liberalization (with business groups representing a rough equivalent to capital owners) (Baldwin and Magee 2000, 79).
Baldwin and Magee’s article is an important step toward determining the impact of campaign donations on politician’s voting habits, but there are also a number of issues with the article. Although they attempted to account for the possible endogeneity of campaign donations (meaning that donations will go to candidates who are known to vote in a group’s interests rather than donations being a “bribe” for votes) by including all of the other variables in the same regression equation, it is possible that this endogeneity is too deep-rooted to be avoided (Baldwin and Magee 2000, 87). The findings of this article are relevant to my work in that they show that special interest group may have an impact on legislator trade policy preferences through campaign contributions.

3.6 Beaulieu (2002)

Beaulieu (2002) does an empirical investigation of two different hypotheses based on the perfect factor mobility of Stolper-Samuelson Theorem and its opposite, a situation of factor immobility (Beaulieu, 2002, p. 99). According to the predictions of the Stolper-Samuelson Theorem, if factors of production are mobile then trade policy preferences will form along factor lines because factor endowment determines the cost/benefit of trade. In this case, industry of employment is irrelevant to distributions from trade (this is known as the factor-industry detachment corollary) (Beaulieu, 2002, p. 103). However, if factors aren’t mobile, then it follows that trade policy preferences will from along industry lines because industry of employment determines the cost/benefit of trade (Beaulieu 2002, 99). The empirical comparison of these two competing models is relevant to my hypothesis because it reveals the possible importance of both individual factor endowment and industry of employment, a situation of partial factor mobility that my model assumes.
To empirically test these two competing hypotheses, Beaulieu first separately estimates an equation for each theory using maximum-likelihood logit models. Equation (1) represents perfect factor mobility and therefore states that supporting trade liberalization is a function of factor endowments (in this case, represented as skill type).

\[
\Pr(\text{support} = 1) = F(\beta_0 + \sum_{j=1}^{J} \beta_j \text{skill}_j + X_\gamma)
\]

(1)

Equation (2) represents completely immobile factors, meaning that the probability of supporting a free trade agreement is a function of industry affiliation.

\[
\Pr(\text{support} = 1) = F(\alpha_0 + \sum_{i=1}^{I} \alpha_i \text{ind}_i + X_\gamma)
\]

(2)

In both equations, \(X\) is a matrix of control variables that may affect the probability of supporting trade liberalization, including region, age, union membership, and party affiliation (Beaulieu, 2002, pp. 106–107).

To test the performance of the two models in relationship to each other, a Cox test is performed in which with the null hypothesis is equation (1), and the alternative hypothesis is equation (2). In addition to using a Cox test to test the null/alternative hypotheses above, he also tests a comprehensive FIML logit regression equation containing both the skill level and industry affiliation as independent variables, this is equation (3)
\[ \Pr(\text{support} = 1) = F(\beta_0 + \sum_{j=1}^{J} \beta_j \text{skill}_j + \sum_{i=1}^{I} \alpha_i \text{ind}_i + X_\gamma) \]  

(3)

Beaulieu uses data from a 1988 Canadian National Election Survey, which was taken immediately before and after the 1988 Canadian general election. He asserts that the only major issue in the election was politicians’ position on the potential U.S.-Canada Free Trade Agreement, making the election effectively a referendum on free trade (Beaulieu 2002, 101). The survey data includes socioeconomic information as well as past voting behavior and political attitudes. Beaulieu notes that the CNES does not contain specific industry of employment, but does include occupation data. It is from this occupation data that he groups the individuals into industries (Beaulieu 2002, 108). To ensure the accuracy of this grouping, Beaulieu compares the distribution of individuals in industries in the survey to data on the same subject from the Canadian Census (Beaulieu 2002, 109). He finds that the two distributions are extremely close to one another (with a correlation of .92) (Beaulieu 2002, 109). Factor ownership is based on skill level, with two different measures of skill level used: level of education (less than high school, full high school, some technical/college, and some university) and skill level of the occupation (unskilled, low skilled, semi-skilled, high skilled) (Beaulieu 2002, 112).

In his empirical test of the model in which factors are mobile, Beaulieu finds that “those employed in industries that were predicted to be adversely affected by the agreement were more likely to oppose the FTA than those employed in industries predicted to gain,” which is directly in line with the theoretical prediction of the model of factor immobility (Beaulieu 2002, 118). He also finds that factors of production (in this
case, skill level) affected voter preference on the FTA in that skilled workers were more likely to support the FTA (Beaulieu 2002, 124), which is in line with the predictions of the model of factor mobility. Therefore, these results suggest that factors of production are partially mobile between industries, and therefore trade policy preferences can form along both factor endowment and industry lines (Beaulieu, 2002, pp. 125–128). These results are relevant to my hypothesis in that they provide evidence that factor endowment and industry of employment may both affect a voter’s preferences on trade policy, and therefore both should be considered in any empirical analysis of my theoretical model.

3.7 Alesina, Cohen, and Roubini (1993)
Alesina et. al empirically investigate data from 18 industrial democracies in the period of 1960-1987 to determine if there is evidence that governments manipulate fiscal or monetary policy prior to elections to encourage short-term economic expansion and thereby increase their chances of reelection. They also examine if governments will call elections early during times of economic growth to take advantage of favorable electoral conditions. Since I am examining a theoretical model in which elections are exogenously fixed (which is the case in the United States, but not in many parliamentary democracies), I will only discuss Alesina et. al’s findings in regards to the manipulation of economic policy, not election timing (Alesina, Cohen, & Roubini, 1993, p. 4).

Alesina et. al run separate regressions to empirically test several different political business cycle theorems from the roughly 18 years preceding their paper since the beginning of the literature on the subject with Nordhaus (1975). Nordhaus’ theory states that a politician will manipulate monetary policy prior to elections in order to create a spike in employment and economic growth rate, which is seen favorably by myopic
constituents and therefore increases the politician’s chances of reelection (Alesina et al., 1993, pp. 4–5). They also examine the more recent theoretical literature on political business cycles, which takes into account more rational assumptions about the voter (assuming them to be less myopic), and assumes that the politician has little ability to manipulate large-scale economic indicators such as GDP growth and unemployment (Alesina et al., 1993, p. 5). These new rational political business cycle models predict that politicians will still attempt to alter the economy before elections, but their ability to succeed at this is greatly reduced and it will be mostly based on small, short term changes in fiscal and monetary policy (Alesina et al., 1993, p. 7).

They observe that, in order to produce an increase in economic activity, a manipulation of fiscal policy must result from either an increase in spending or a decrease in taxes, resulting in a fiscal deficit before elections. Therefore, the dependent variable is the fiscal deficit \( d(\_it) \), which they measure as a change in the debt-GDP ratio. The independent variables that they examine include the lagged deficit \( d(b\_i,t-1) \), the change in the unemployment rate \( d(U\_it) \), the change in the GDP growth rate \( d(y\_it) \), the change in the real interest rate minus the growth rate multiplied by the lagged debt-GDP ratio \( b\_i,t-1 * d(r\_t - n\_t) \), political instability \( pol\_it \), an electoral dummy \( ele\_it \), a dummy to identify left-wing governments \( left\_it \), and an interaction term between the electoral and left-wing variables \( left\_it * ele\_it \) (Alesina et al., 1993, p. 16). They employ a panel regression to empirically test these variables. They estimate the following equation (1)

\[
d(\_it) = \delta_0 + \delta_1 * d(b\_i,t-1) + \delta_2 * d(U\_it) + \delta_3 * d(y\_it) + \delta_4 * b\_i,t-1 * d(r\_t - n\_t) + \delta_5 * pol\_it + \delta_6 * ele\_it + \delta_7 * left\_it + \delta_8 * left\_it * ele\_it + \nu\_it
\]
They run this regression using quarterly economic data on 18 different industrialized democracies (including the United States, U.K., and Canada) from 1958-1987, obtained from the IMF International Financial Statistics library and the OECD.

Like most empirical research before them, Alesina et al. did not find support for the political business cycle proposed by Nordhaus (1975), seeing no relationship between electoral cycles and GDP or unemployment (the two variables that, according to Nordhaus, can be manipulated by politicians through monetary policy) (Alesina et al., 1993, pp. 20–21). However, they do find support for the rational political business cycles model, finding a statistically significant relationship between electoral cycles and fiscal policy instruments in the form of increased real fiscal deficits in the year before an election (Alesina et al., 1993, p. 18). This suggests that politicians still adopt semi-expansionary policies when closer to an election, even if they aren’t very effective at raising the GDP growth rate or lowering the unemployment rate. These findings are relevant to my thesis in that they suggest that there may be some electoral cycle to government policy decisions, especially in the area of fiscal policy. Since I will be empirically testing the relationship between trade policy decisions and electoral cycles, it is relevant to note that a relationship between elections and government action has been found in another area of policy.

3.8 Conclusion
Conconi et al. (2014), Dutt and Mitra (2002), Goldberg and Maggi (1999), Baldwin and Magee (2000), and Beaulieu (2002) all focused on the political economy determinants of trade policy. Alesina et. al (1993) showed that there is a relationship
between public policy decision making and political time horizon. The articles took several different approaches in their analyses, with the unit of analysis varying from the country, to the industry, to the individual. This is relevant to the work of this paper in that I analyzed the role of the individual voter and the constituency as a whole in my theoretical model, and I will take a similarly broad-based approach in my empirical work.

Based on the results of these empirical articles, relevant variables for my empirical model include: the inequality in factor endowment within the politician’s constituency, the impact of special interest groups, the effect of factor endowments and industry of employment on voter’s trade policy preferences, and the time relationship between elections and trade policy decisions. I will not, however, include all of these in my empirical results in the exact form that the above researchers used them. Rather, as I explain in the next section, I will use a series of proxy variables to represent each of the relevant concepts, focusing on the make-up of the politician’s constituency, the ideology of the politician, and the time to reelection.

4. Methodology and Data

4.1 Hypothesis

Based on the causal relationships established in my theoretical analysis and the findings of my literature review, I hypothesize that, as a politician approaches reelection, he will favor more protectionist policies, because the politician’s utility is based on votes garnered and such policies are favored by a group of voters in his constituency who have a stronger incentive to vote based only on their trade policy preferences. However, since voters have a short memory regarding the politician’s past trade policy decisions, when
not faced with imminent reelection the politician will vote for the policy that is most economically beneficial to their broader constituency.

4.2 Empirical Model
To test my hypothesis, I will estimate a model of the politician’s decision that accounts for the impact of the makeup of his constituency (expressed by capital/labor ratio and goods/services employment), his ideology (expressed by party identification), and his electoral incentives (expressed by inside/outside of two years from an election and also whether he is retiring). I will use a probit model, since the dependent variable is a yes/no dummy, and it is therefore advantageous to have the outcomes of my regression bounded within 0 and 1. The model is as follows:

\[
\text{Prob}(Vote_{ist}) = \Phi(\beta_0 + \beta_1 \text{CapitalLabor}_{st} + \beta_2 \text{GoodsServices}_{st} + \beta_3 \text{Democrat}_{st} \\
+ \beta_4 \text{Election}_{st} + \beta_5 \text{Retired}_{st} + \varepsilon_{st})
\]

\(1\)

\(Vote_{ist}\) is a dummy variable representing the vote of senator \(s\) on bill \(i\) in year \(t\) (1 = yea, 0 = nay). \(\text{CapitalLabor}_{st}\) represents the capital/labor ratio of the state of senator \(s\) in year \(t\), while \(\text{GoodsServices}\) represents the ratio of goods producing to service providing laborers of senator \(s\) in year \(t\), \(\text{Democrat}\) represents the Party identification of senator \(s\) in year \(t\) (a dummy variable where 1 = Democrat and 0 = Republican, with independents classified by the party of their caucus), \(\text{Election}\) is a dummy variable (1 = within two years of an election, 0 otherwise), and \(\text{Retired}\) is a control for if the senator decided not to run in the following election (1 if did not run, 0 otherwise). 
Based on my theoretical analysis and literature review, it is possible to hypothesize expected signs for each of these variables. These signs are in found in table (1). Note that a positive sign means an increased likelihood of approving a free trade bill.

### Table 1. Expected Signs

<table>
<thead>
<tr>
<th>Variable</th>
<th>Expected Sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>CapitalLabor</td>
<td>(+)</td>
</tr>
<tr>
<td>GoodsServices</td>
<td>(-)</td>
</tr>
<tr>
<td>Democrat</td>
<td>(-)</td>
</tr>
<tr>
<td>Election</td>
<td>(-)</td>
</tr>
<tr>
<td>Retired</td>
<td>(+)</td>
</tr>
</tbody>
</table>

The expected sign of the first independent variable, *CapitalLabor*, is positive because my empirical analysis takes place in the U.S., which is capital abundant relative to labor (Rassekh & Thompson, 2002, p. 239). Therefore, according to the H-O theorem, the U.S. is an exporter of capital-intensive goods and an importer of labor-intensive goods. This means that the more capital-abundant a constituency, the more export-oriented they will be, and therefore the more they will stand to benefit from free trade. The expected sign of the second symbol, *GoodsServices*, is negative based on the theoretical assumption that goods are more labor-intensive than services, and therefore, in the capital abundant U.S., a constituency that is more employed in goods-producing industries (such as manufacturing) will be against free trade to protect themselves from import competition. The expected sign of the third variable, *Democrat*, is negative based on the long-standing tradition of the Democratic party opposing trade agreements on the argument that they will harm American import-competing industries (Conconi et al.,
2014, p. 113). The expected sign of the fourth variable, Election, is negative based on the theoretical conclusion established in Chapter 2, which states that a politician will vote against the more economically efficient free trade agreement if they are within two years of an election, because it would cost them the votes of the extremely trade averse (but forgetful) portion of their population. The expected sign of the fifth variable, retired, is positive based on the idea that a retiring politician no longer has an electoral incentive to favor protectionism, and therefore may vote for the overall economically beneficial free trade agreement.
4.3 Data

To test my empirical model, I constructed a unique data set of 18 votes on trade-related bills in the U.S. Senate from 1993 to 2013. These bills consist of the granting of fast-track negotiation authority to the President, the approval of free trade agreements, and the granting of most favored nation status to China. A complete list of the bills can be found in table A1 in the appendix. For each bill, I used Congressional records\(^6\) to record the vote (yea, nay, or abstain) and party of each senator, then looked at the senator’s electoral history to determine if they were within two years (and one year) of an election at the time of the vote. To create the capital/labor ratio for each state, I used estimates of the capital stock of U.S. states from Yamarik (2013) for 1990, 2000, and 2013, and divided them by yearly Bureau of Labor Statistics data on the total labor force size of each state.\(^7\) The goods/services ratio takes yearly BLS data on the total employment in goods-producing industries of each state and divides it by the total employment in services-providing industries of that state.\(^8\) For the retirement variable, I counted retiring as willfully not running for reelection. Resignations and deaths were not counted as retirement, because they did not represent willful departure from the office and therefore would imply that the elected official was still considering electoral incentives at the time of the vote.

There are several limitations to consider in my data set. First, the capital estimates for each state are not exact figures and, depending on the bill, may be as many as 5 years away from the estimate itself. Therefore, there is a chance that the actual capital-labor ratio of the states I examined could be different than the numbers I have

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\(^6\) Available from a number of sources, I drew mine from govtrack.us.
\(^7\) [http://www.bls.gov/lau/staadata.txt](http://www.bls.gov/lau/staadata.txt)
\(^8\) [http://www.bls.gov/iag/home.htm](http://www.bls.gov/iag/home.htm)
used. Second, my justification for using the goods/services ratio is that the U.S. has been a net importer of goods and a net exporter of services for the last 30 years, allowing employment in a goods-producing industry to represent import-competing employment, while working in a services-providing industry to represent export-competing employment. This is likely an over-simplification, as there may be specific goods that the U.S. exports, or services that the U.S. imports. Third, I have chosen not to include interest group campaign donations in my empirical analysis, despite the findings of Goldberg and Maggi (1999) and Baldwin and Magee (2000) that they have a significant correlation with votes on trade bills. I chose to exclude campaign donations because I feel that these may be endogenously determined, that the politician is given a donation because they already support/oppose trade, not in exchange for supporting/exchanging trade. This is supported by the work of Rocca and Gordon (2010), who suggest that politicians signal potential donors with non-committal public speech (i.e. non-roll call position taking), and thereby receive donations based on their signaled political beliefs, not in exchange for a particular vote (Rocca & Gordon, 2010). Furthermore, I feel that party identification does an adequate job of approximating the ideology that would lead to a senator supporting/opposing free trade, and therefore accounts for the same factors that would be represented by campaign donations.

An overall picture of the data can be seen in table (2), which shows the summary statistics of the data set. As we can see, excluding abstentions, we have a total of 1,748 dependent variable data points to analyze, a more than adequate sample size. There are many interesting observations to be made from the mean values. We see that the mean vote is .74, indicating that the overwhelming majority of votes are in the “yea” category.
In fact, all of the bills examined here passed (not by design, it just seems that the bills likely enjoyed majority support even before they went to a vote). The mean goods/services ratio is .21, and the max is .45, indicating that the overwhelming majority of jobs in every state in America are in the services sector. We can also see that there is a large disparity in the capital per laborer between states, with a minimum value of $18,000 and a maximum of $138,000. The data set appears to be reasonably distributed on all counts, so we will begin our analysis of the empirical results.

**Table 2. Summary Statistics**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Observations</th>
<th>Mean</th>
<th>Std. dev.</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vote</td>
<td>1748</td>
<td>.7397025</td>
<td>.4389224</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Election</td>
<td>1748</td>
<td>.3323799</td>
<td>.4712011</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>ElectionYear</td>
<td>1748</td>
<td>.256865</td>
<td>.4370293</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Democrat</td>
<td>1748</td>
<td>.4971396</td>
<td>.5001349</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Capital</td>
<td>1748</td>
<td>2.18e+11</td>
<td>2.78e+11</td>
<td>1.66e+10</td>
<td>1.69e+12</td>
</tr>
<tr>
<td>Labor</td>
<td>1748</td>
<td>2,906,205</td>
<td>3,123,638</td>
<td>242,599</td>
<td>1.84e+07</td>
</tr>
<tr>
<td>CapitalLabor</td>
<td>1748</td>
<td>70,018.09</td>
<td>14,742.25</td>
<td>18,852.6</td>
<td>138,071.3</td>
</tr>
<tr>
<td>Goods</td>
<td>1748</td>
<td>449,259</td>
<td>449,681.5</td>
<td>30,300</td>
<td>2,698,100</td>
</tr>
<tr>
<td>Services</td>
<td>1748</td>
<td>2,122,683</td>
<td>2,258,849</td>
<td>170,700</td>
<td>1.30e+07</td>
</tr>
<tr>
<td>GoodsServices</td>
<td>1748</td>
<td>.2186391</td>
<td>.0657557</td>
<td>.076365</td>
<td>.4489149</td>
</tr>
<tr>
<td>Retired</td>
<td>1748</td>
<td>.0709382</td>
<td>.2567951</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
5. Results

To test my hypothesis, I ran a probit regression based on the empirical model in section 4. The results of this regression can be seen in table (3), with the marginal effects in table (4).

Table 3. Probit Regression

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Election</td>
<td>-0.160*</td>
</tr>
<tr>
<td></td>
<td>(-2.09)</td>
</tr>
<tr>
<td>Democrat</td>
<td>-1.056***</td>
</tr>
<tr>
<td></td>
<td>(-14.38)</td>
</tr>
<tr>
<td>CapitalLabor</td>
<td>0.00000976***</td>
</tr>
<tr>
<td></td>
<td>(3.50)</td>
</tr>
<tr>
<td>GoodsServices</td>
<td>-0.101</td>
</tr>
<tr>
<td></td>
<td>(-0.19)</td>
</tr>
<tr>
<td>Retired</td>
<td>0.462**</td>
</tr>
<tr>
<td></td>
<td>(3.14)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.627*</td>
</tr>
<tr>
<td></td>
<td>(2.32)</td>
</tr>
<tr>
<td>Observations</td>
<td>1748</td>
</tr>
<tr>
<td>Pseudo $R^2$</td>
<td>0.123</td>
</tr>
</tbody>
</table>

* z statistics in parentheses
* * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4. Marginal Effects of Probit Regression

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Election</td>
<td>-0.049*</td>
</tr>
<tr>
<td></td>
<td>(0.02405)</td>
</tr>
<tr>
<td>Democrat</td>
<td>-0.314***</td>
</tr>
<tr>
<td></td>
<td>(0.02013)</td>
</tr>
<tr>
<td>CapitalLabor</td>
<td>0.00000296***</td>
</tr>
<tr>
<td></td>
<td>(0.00000)</td>
</tr>
<tr>
<td>GoodsServices</td>
<td>-0.031</td>
</tr>
<tr>
<td></td>
<td>(0.16514)</td>
</tr>
<tr>
<td>Retired</td>
<td>0.118**</td>
</tr>
<tr>
<td></td>
<td>(0.03073)</td>
</tr>
</tbody>
</table>

* Standard errors in parentheses
* * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The regression yields a number of interesting results. First, the ideology variable, Democrat, is significant and in the expected direction, indicating that a Democratic
senator, holding all other independent variables constant, is 31% less likely to vote for a free trade agreement than a Republican senator. Second, the $CapitalLabor$ variable is significant and in the expected direction, showing that a one unit increase in the capital/labor ratio is only associated with a .000003% increase in the likelihood that a senator will vote in favor of a free trade agreement. This impact may seem small, but our capital measurements were only in dollars, so this is the impact of just a $1 increase in capital. Third, the variable $Election$ is significant at the 5% level and in the expected direction. This result indicates that, ceteris paribus, being within two years of an election reduces the likelihood that a politician will vote for a free trade agreement by 5%. The variable $Retired$ is significant in the expected direction, indicating that a retiring politician is, ceteris paribus, 12% more likely to vote for a free trade agreement. The only insignificant variable, $GoodsServices$, is still theoretically relevant, so I will leave it in the model. In addition, despite its statistical insignificance, its sign is still in the expected negative direction.

To demonstrate a hypothesis test, we will examine the variable $Election$. The probit model uses the normal curve for hypothesis testing, so we will perform a one-sided $z$-test. First, let us construct our null and alternative hypotheses:

\[ H_0: \beta_4 \leq 0 \]

\[ H_a: \beta_4 > 0 \]
The calculated z-statistic is -2.09 (-.1600/.0765 = -2.09), while the p-value for this z-statistic is .037. Since p < .05, we reject the null hypothesis and conclude that there is support for our alternative hypothesis that $\beta_4 > 0$.

To determine if the impact of time to reelection extended to the politician’s consideration of the capital-labor ratio, I interacted Election with CapitalLabor and ran an new probit regression including the interaction term. The coefficient of the interaction term was insignificant, so I have relegated the results of this regression to the Appendix in Table A2.

To test for multicollinearity, let us first look at a correlation matrix of the variables in table (5). We see that none of the variables used here are significantly correlated (except for Election and ElectionYear, which I do not regress together).

**Table 5. Correlation Matrix**

<table>
<thead>
<tr>
<th></th>
<th>Election</th>
<th>ElectionYear</th>
<th>Democrat</th>
<th>CapitalLabor</th>
<th>GoodsServices</th>
<th>Retired</th>
</tr>
</thead>
<tbody>
<tr>
<td>Election</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ElectionYear</td>
<td>0.8332</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Democrat</td>
<td>0.0368</td>
<td>0.0256</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CapitalLabor</td>
<td>0.0287</td>
<td>0.0649</td>
<td>0.0345</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GoodsServices</td>
<td>0.0335</td>
<td>-0.0905</td>
<td>-0.1875</td>
<td>-0.3405</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Retired</td>
<td>0.3443</td>
<td>0.2456</td>
<td>0.0729</td>
<td>0.0145</td>
<td>-0.0308</td>
<td>1</td>
</tr>
</tbody>
</table>
Just to be safe, let’s also look at the Variance Inflation Factors of the model in Table (6). We see that none of the VIF values are remotely close to the rule-of-thumb value of 5, further suggesting a lack of multicollinearity.

**Table 6. Variance Inflation Factors Election**

<table>
<thead>
<tr>
<th>Variable</th>
<th>VIF</th>
<th>1/VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>GoodsServices</td>
<td>1.17</td>
<td>0.852816</td>
</tr>
<tr>
<td>Retired</td>
<td>1.14</td>
<td>0.877751</td>
</tr>
<tr>
<td>Election</td>
<td>1.14</td>
<td>0.880568</td>
</tr>
<tr>
<td>CapitalLabor</td>
<td>1.13</td>
<td>0.882864</td>
</tr>
<tr>
<td>Democrat</td>
<td>1.04</td>
<td>0.959289</td>
</tr>
<tr>
<td>Mean VIF</td>
<td>1.12</td>
<td></td>
</tr>
</tbody>
</table>

Now, let us test for heteroskedasticity. First, we will examine plots of the residuals and each independent variable. All of these plots can be found in the appendix, but here we will more closely examine the variables *CapitalLabor* (capital/labor ratio) and *GoodsServices* (goods/services jobs ratio), since they appear to show the highest probability of a lack of constant variance in the distribution of the standard errors. These plots can be seen in figures (7) and (8) below.
Both plots appear relatively homoscedastic, with a lack of any distinct funnel shape to the residuals. If we are very sensitive, we may see a small indication of
heteroskedasticity in the *GoodsServices* plot, showing non-constant variance in the
distribution of errors. There is some disagreement on the effectiveness of currently
available corrections for heteroskedasticity in the probit model. The most readily
available method is the hetprobit model in Stata, which uses a standard probit model with
robust standard errors. Since there is no well agreed upon way of testing for and
correcting heteroskedasticity in a probit model, I have chosen to assume
homoscedasticity and proceed with my analysis. For the sake of thoroughness, I have
included tables and discussion of the results of the hetprobit model in the appendix under
tables A7-A8.

The results found in the regression in tables (3) and (4) are all consistent with my
theory, except for the insignificance of the goods/services ratio. This insignificance may
be the result of the limitations of the variable itself, as it is an imperfect representation of
import/export competing industries. There are likely many goods-producing industries
that are net exporters, and some services-providing industries may be net importers.
Also, while the variables insignificance is inconsistent with my theory, its sign is in the
expected negative direction.

The piece of literature which most closely mirrors my own, Conconi et al. (2014),
found a number of comparable results. First, they also found that being within two years
of an election has a significant protectionist impact on the voting of senators, albeit the
magnitude of their observation was slightly larger (~7%) (Conconi et al., 2014, p. 112).
They also find that retirement and being in the Democratic party have a significant
positive impact on the likelihood that a politician will vote in favor of a free trade
agreement. Interestingly, despite a much more specific methodology for identifying the
import/export composition of senator’s constituencies, they too found that this variable is insignificant (Conconi et al., 2014, p. 112).

In contrast to the findings of Conconi, and the results of the regression detailed above, I found that being even closer to an election (within one year instead of two), does not increase the protectionist impact of the electoral incentives, but rather eliminates them. It is interesting that the effect of electoral incentives seems to disappear within one year of an election, seen by the insignificance of the variable $ElectionYear^9$ in tables (9) and (10). It should also be noted that 10 of the 18 bills analyzed were within one year of an election, allowing for a significantly large sample.

**Table 9. Probit Regression with ElectionYear**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ElectionYear</td>
<td>-0.0654</td>
</tr>
<tr>
<td></td>
<td>(-0.80)</td>
</tr>
<tr>
<td>Democrat</td>
<td>-1.055***</td>
</tr>
<tr>
<td></td>
<td>(-14.38)</td>
</tr>
<tr>
<td>CapitalLabor</td>
<td>0.00000973***</td>
</tr>
<tr>
<td></td>
<td>(3.49)</td>
</tr>
<tr>
<td>GoodsServices</td>
<td>-0.0978</td>
</tr>
<tr>
<td></td>
<td>(-0.18)</td>
</tr>
<tr>
<td>Retired</td>
<td>0.391**</td>
</tr>
<tr>
<td></td>
<td>(2.72)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.595*</td>
</tr>
<tr>
<td></td>
<td>(2.20)</td>
</tr>
<tr>
<td>Observations</td>
<td>1748</td>
</tr>
<tr>
<td>Pseudo $R^2$</td>
<td>0.121</td>
</tr>
</tbody>
</table>

$z$ statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

$^9$ $ElectionYear = 1$ if a vote is within 12 months of an election. $Election = 1$ if a vote is within 24 months of an election.
Table 10. Marginal Effects of Probit Regression with ElectionYear

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ElectionYear</td>
<td>-0.020</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.02534)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Democrat</td>
<td>-.314***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.02013)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CapitalLabor</td>
<td>0.00000295***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.00000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GoodsServices</td>
<td>-0.0297</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.166)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retired</td>
<td>0.103**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.03207)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001

The insignificance of the ElectionYear variable suggests that, while politicians may oppose trade liberalization more within 1-2 years of an election, this effect may fade when election draws even closer. It is possible that other considerations drown out the salience of trade policy within one year of an election, eliminating the protectionist impact of the increased scrutiny of an electoral cycle. It is also possible that I may be experiencing omitted variable bias, as I have not included campaign donations in my empirical model because I assumed they were endogenously determined.

The results of my empirical tests largely support the predictions of my theoretical model, suggesting that time to reelection may have a significant impact on the trade policy decisions of a politician. It is also notable that the variable CapitalLabor was significant and in the expected direction in all specifications, indicating that the capital-labor ratio of a constituency has a significant impact on trade policy formation. My results are roughly in line with those of Conconi et al (2014) (aside from the insignificance of the ElectionYear variable, which they did not consider), further strengthening my theoretical model.
6. Conclusion

I hypothesized that, as a politician approaches reelection, she will favor more protectionist policies, because the politician’s utility is based on votes garnered and such policies are favored by a group of voters in his constituency who have a stronger incentive to vote based on their trade policy preferences. My empirical analysis supports my hypothesis and the conclusions of my theoretical model, showing that a U.S. senator is 5% less likely to vote for a free trade agreement if he is within two years of an election. Furthermore, my findings suggest that planning to retire eliminates this negative bias against free trade agreements when approaching election. Other variables that have a significant impact on the likelihood of supporting free trade agreements include the party of the senator and the capital/labor ratio of the politician’s constituency.

While my theoretical model is entirely unique, the empirical research of Conconi et al. (2014) is very similar to my own. However, there are several important differences between their empirical methods and my own. First, while there is some overlap, we analyzed different sets of trade bills. I analyze 4 bills since 2005, where Conconi et al.’s analysis stops. Second, my capital/labor ratio and goods/services variables are unique, and were not analyzed by Conconi et al. Third, my finding that moving within one year of an election eliminates the statistical significance of election proximity, suggesting that further analysis of this issue, using other trade-related issues (e.g. subsidies), may be necessary.

In terms of the overall literature, my analysis contributes to the substantial field on the determinants of trade policy, but adds a new section to the much smaller amount of literature on the impact of election proximity on legislative decision making. As
suggested by Conconi et al. (2014), further research in this area may focus on the impact of election proximity in more broadly salient legislative issues, such as spending on national defense or social welfare programs (Conconi et al., 2014, p. 116).

The limitations of my work include the relatively narrow applications of my theoretical conclusion, which is based on several difficult-to-prove assumptions (such as a perfect 50-50 split between service workers and shoe producers). Further theoretical work must be done to expand this theory to allow for more real-world application. My empirical analysis is limited by its examination of only the U.S. Senate. Future research within the field of political time horizon and trade policy formation may wish to focus on other countries to see if the empirical results attained by Conconi et al. (2014) and myself are robust to changes in electoral systems. It would also be useful to see if the impact of elections on trade policy holds for other trade-related issues (e.g. subsidies).

The legislative impact of electoral incentives is often discussed but seldom proved. Anecdotal examples abound, but there is little empirical research done to back them up. This study is a step in that direction, seeking to theoretically and empirically support the idea that elected politicians are not completely selfless, and that their desire for reelection can lead to less than optimal outcomes for their constituents. If citizens in a democracy want their representatives to vote in their constituents’ interests rather than their own, it is important to first identify the causal relationship between election proximity and legislative decision making, so that steps may be taken to alleviate its negative impacts. This study is an attempt at such an identification, but to collect a meaningful and noticeable body of literature in the area more work must be done.
### 6.1 Literature Review Organizational Table

<table>
<thead>
<tr>
<th>Authors</th>
<th>Unit of Analysis</th>
<th>Data Source</th>
<th>Dependent Variable</th>
<th>Independent Variables</th>
<th>Empirical Methodology</th>
<th>Conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conconi et al. (2014)</td>
<td>Individual politicians (U.S. Congress, both House and Senate)</td>
<td>Cross-sectional data on U.S. Congressional trade votes since 1972</td>
<td>Vote yes/no on a trade liberalization bill</td>
<td>1. Import/export composition of constituency, 2. business/labor group campaign contributions, 3. Ideology (party), 4. Education level of constituency, 5. Time to reelection (2 years/greater than 2 years)</td>
<td>Probit. Also use logit and linear regressions to test robustness of Probit results.</td>
<td>Being within two years of an election has significant protectionist impact on elected officials’ trade policy decisions.</td>
</tr>
<tr>
<td>Dutt and Mitra (2012)</td>
<td>Countries</td>
<td>Cross-sectional data on levels of trade barriers, physical capital endowment estimates from Nehru-Dhareshwar (1993), level of democracy estimates from Freedom House, all averaged across the 1980s</td>
<td>Magnitude of trade protection (various measures, see discussion in section 3.3.)</td>
<td>1. Inequality (defined as Gini coefficient or share of third quintile in national income) 2. Capital–labor ratio 3. Level of democracy 4. Educational Attainment</td>
<td>OLS regressions and Hausman test for endogeneity</td>
<td>An increase in inequality, holding constant the economy’s overall relative endowments, raises trade barriers in capital-abundant economies and lowers them in capital-scarce economies.</td>
</tr>
<tr>
<td>Goldberg and Maggi (1999)</td>
<td>Industries</td>
<td>1. Political organization data includes campaign contributions from 1982 and 1984 U.S. Congressional elections, unionization, industry employment size/unemployment rate, and industry growth</td>
<td>2. Import demand elasticity estimates from Clinton R. Shiells et al. (1986)</td>
<td>3. Import penetration ratio comes from the National Bureau of Economic Research Trade and Immigration data file</td>
<td>Level of trade protection (represented by non-tariff barriers, i.e. coverage ratios from 1983)</td>
<td>1. Political organization</td>
</tr>
</tbody>
</table>
2. Congressional voting data on NAFTA, GATT, and MFN for China taken from Congressional Quarterly Almanac  
3. Congressional district characteristics from Census and County Business Patterns, union data from Box-Steffenmeir, Arnold, and Zorn (1997)  
4. Data on representative’s ideology from AFL-CIO, ACU, etc. | Trade Policy Preference (yes/no vote on 3 trade liberalization bills) | 1. Special interest group contributions  
2. District characteristics (education, income, sector of employment, etc.)  
3. Representative’s ideology | Full Information Maximum Likelihood, (simultaneously estimates 3 separate equations) | Campaign donations have a significant impact on Congressional voting on trade policy. Donations from labor (business) groups are correlated with votes against (for) trade liberalization |
|------------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
2. Skill Endowments | 1. Maximum-likelihood logit models and Cox test | Industry of employment and skill endowment |
the 1988 Canadian federal election (Canadian National Election Survey) and cross-referenced with Canadian census data to determine industry affiliation

2. Skill endowment taken from CNES educational attainment data and implied skill level of occupation

3. Other control variables all from CNES data

election that was de facto referendum on free trade

3. Other control variables: region, age, union membership, party affiliation

both have expected impact on trade policy preference, suggestive of partial factor mobility

| Alesina et al. (1993) | Countries | Panel Data on elections and economic indicators on 18 industrialized democracies form 1960-1987 | Annual budget deficit (change in debt-GDP ratio) | 1. Lagged deficit 2. Change in the unemployment rate 3. Change in the GDP growth rate 4. Change in the real interest rate minus the growth rate, multiplied by the lagged debt-GDP ratio 4. Political instability 5. An electoral dummy | Panel Regression | There is a relationship between an imminent election and an increase in the budget deficit. This suggests that politicians may be subtly trying to use fiscal/monetary policy to expand the economy pre- |
| 6. A dummy to identify left-wing governments |
| 7. An interaction term between the electoral and left-wing variables |
| election in order to signal their competence to voters. This policy manipulation does not result in positive economic indicators like an increase in GDP or drop in unemployment, but it occurs nonetheless. |
### Table A1. List of Trade Liberalization Bills

<table>
<thead>
<tr>
<th>Bill Name</th>
<th>Date of Vote</th>
<th>Result (Y-N-DNV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993 Fast Track Authority</td>
<td>6/30/1993</td>
<td>Passed (76-16-8)</td>
</tr>
<tr>
<td>NAFTA</td>
<td>11/20/1993</td>
<td>Passed (61-38-1)</td>
</tr>
<tr>
<td>WTO</td>
<td>12/1/1994</td>
<td>Passed (76-24)</td>
</tr>
<tr>
<td>AGOA Passage</td>
<td>11/3/1999</td>
<td>Passed (76-19-4)</td>
</tr>
<tr>
<td>China PNTR</td>
<td>9/19/2000</td>
<td>Passed (83-15-2)</td>
</tr>
<tr>
<td>Fast Track Conference Report and Andean TPA</td>
<td>8/1/2002</td>
<td>Passed (64-34-2)</td>
</tr>
<tr>
<td>Chile FTA</td>
<td>7/31/2003</td>
<td>Passed (65-32-3)</td>
</tr>
<tr>
<td>Singapore FTA</td>
<td>7/31/2003</td>
<td>Passed (66-32-2)</td>
</tr>
<tr>
<td>Australia FTA</td>
<td>7/15/2004</td>
<td>Passed (80-16-4)</td>
</tr>
<tr>
<td>Morocco FTA</td>
<td>7/21/2004</td>
<td>Passed (85-13-2)</td>
</tr>
<tr>
<td>CAFTA</td>
<td>7/28/2005</td>
<td>Passed (55-45)</td>
</tr>
<tr>
<td>Oman FTA</td>
<td>6/29/2006</td>
<td>Passed (60-34-6)</td>
</tr>
<tr>
<td>Peru FTA</td>
<td>12/4/2007</td>
<td>Passed (77-18-5)</td>
</tr>
<tr>
<td>Panama FTA</td>
<td>10/12/2011</td>
<td>Passed (77-22-1)</td>
</tr>
<tr>
<td>Colombia FTA</td>
<td>10/12/2011</td>
<td>Passed (66-33-1)</td>
</tr>
<tr>
<td>Korea FTA</td>
<td>10/12/2011</td>
<td>Passed (83-15-2)</td>
</tr>
</tbody>
</table>
Table A2. Probit Regression with Interaction Term

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Election</td>
<td>-0.358</td>
</tr>
<tr>
<td></td>
<td>(-0.94)</td>
</tr>
<tr>
<td>Democrat</td>
<td>-1.056***</td>
</tr>
<tr>
<td></td>
<td>(-14.38)</td>
</tr>
<tr>
<td>CapitalLabor</td>
<td>0.00000875**</td>
</tr>
<tr>
<td></td>
<td>(2.61)</td>
</tr>
<tr>
<td>GoodsServices</td>
<td>-0.110</td>
</tr>
<tr>
<td></td>
<td>(-0.20)</td>
</tr>
<tr>
<td>Retired</td>
<td>0.463**</td>
</tr>
<tr>
<td></td>
<td>(3.14)</td>
</tr>
<tr>
<td>CapitalLabor x Election</td>
<td>0.00000287</td>
</tr>
<tr>
<td></td>
<td>(0.53)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.698*</td>
</tr>
<tr>
<td></td>
<td>(2.32)</td>
</tr>
<tr>
<td>Observations</td>
<td>1748</td>
</tr>
<tr>
<td>Pseudo $R^2$</td>
<td>0.123</td>
</tr>
</tbody>
</table>

* z statistics in parentheses
* * p < 0.05, ** p < 0.01, *** p < 0.001

Table A3. Marginal Effects of Probit Regression with Interaction Term

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Election</td>
<td>-0.113</td>
</tr>
<tr>
<td></td>
<td>(0.12488)</td>
</tr>
<tr>
<td>Democrat</td>
<td>-0.314***</td>
</tr>
<tr>
<td></td>
<td>(0.02013)</td>
</tr>
<tr>
<td>CapitalLabor</td>
<td>0.00000265**</td>
</tr>
<tr>
<td></td>
<td>(0.00000)</td>
</tr>
<tr>
<td>GoodsServices</td>
<td>-0.033</td>
</tr>
<tr>
<td></td>
<td>(0.1652)</td>
</tr>
<tr>
<td>Retired</td>
<td>0.119**</td>
</tr>
<tr>
<td></td>
<td>(0.03074)</td>
</tr>
<tr>
<td>CapitalLabor x Election</td>
<td>0.000000868</td>
</tr>
<tr>
<td></td>
<td>(0.00000)</td>
</tr>
</tbody>
</table>

* Standard errors in parentheses
* * p < 0.05, ** p < 0.01, *** p < 0.001
Figure A4: Plot of Residuals vs. Party

Figure A5: Plot of Residuals vs. Retired
Figure A6: Plot of Residuals vs. Election
Table A7. HetProbit Regression with Robust Standard Errors

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Election</td>
<td>-0.258*</td>
</tr>
<tr>
<td></td>
<td>(-2.04)</td>
</tr>
<tr>
<td>Democrat</td>
<td>-1.733***</td>
</tr>
<tr>
<td></td>
<td>(-4.60)</td>
</tr>
<tr>
<td>CapitalLabor</td>
<td>0.0000108**</td>
</tr>
<tr>
<td></td>
<td>(2.65)</td>
</tr>
<tr>
<td>Retired</td>
<td>0.722**</td>
</tr>
<tr>
<td></td>
<td>(2.58)</td>
</tr>
<tr>
<td>Constant</td>
<td>1.305**</td>
</tr>
<tr>
<td></td>
<td>(2.63)</td>
</tr>
<tr>
<td>Insignia2</td>
<td></td>
</tr>
<tr>
<td>GoodsServices</td>
<td>2.032*</td>
</tr>
<tr>
<td></td>
<td>(2.41)</td>
</tr>
<tr>
<td>Observations</td>
<td>1748</td>
</tr>
</tbody>
</table>

z statistics in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001

Table A8. Marginal Effects of HetProbit Regression with Robust Standard Errors

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Election</td>
<td>-0.051*</td>
</tr>
<tr>
<td></td>
<td>(0.02322)</td>
</tr>
<tr>
<td>Democrat</td>
<td>-0.328***</td>
</tr>
<tr>
<td></td>
<td>(0.02064)</td>
</tr>
<tr>
<td>CapitalLabor</td>
<td>0.00000209**</td>
</tr>
<tr>
<td></td>
<td>(0.00000)</td>
</tr>
<tr>
<td>Retired</td>
<td>0.118**</td>
</tr>
<tr>
<td></td>
<td>(0.03077)</td>
</tr>
<tr>
<td>Insignia2</td>
<td></td>
</tr>
<tr>
<td>GoodsServices</td>
<td>-0.458*</td>
</tr>
<tr>
<td></td>
<td>(0.18975)</td>
</tr>
</tbody>
</table>

Standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001

We see that correcting for the potential heteroskedasticity of GoodsServices brings the variable to statistical significance at the 5% level, while maintaining the significance of all other variables. While this may seem ideal, I believe (based on the observation of the residuals plot) that GoodsServices is homoscedastic and therefore correcting for heteroskedasticity with robust standard errors is resulting in a type 1 error, wherein we are incorrectly rejecting a true null hypothesis.
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