

Loss Aversion and Protectionism

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Abstract: The concept of “loss aversion” in behavior economics was proposed by Kahneman and Tversky in 1979 with the famous prospect theory. Loss aversion is a cognitive bias suggesting that an avoidance of loss is preferred by people than an equivalent gain. The impact of loss aversion is profound in multiple areas of human life, including economics, society, politics, media, etc. This study aims to investigate the relation between loss aversion and trade policies, in particular, the implementation of protectionist trade policies. Literatures in the area of political economics about trade policy are reviewed. The Grossman-Helpman model, which predicts a set of determinants of trade policy, is discussed. Three empirical studies – the U.S. steel industry, the U.S. Section 301 proceedings, and the Chinese cotton industry – as well as the influence of loss aversion in each case, are analyzed and discussed in detail. Overall, the study draws its conclusion based on previous literatures and empirical studies, and it further confirms that loss aversion would lead to a risk-averse behavior of policy makers by reviewing empirical cases.

Keywords: loss aversion, cognitive bias, protectionism, trade policy, the Grossman-Helpman model

1. Introduction

Although protectionism is usually opposed by most modern economists, it is still widely used by governments as a barrier against foreign competition and support domestic industries, particularly as a tool to get through financial crisis. After the stock market crashed in 2018, the United States increased the amount of tariff from 2.6% to 16.6%, and as many as 12043 imported products were affected by the tariff changes, covering \$303 billions in total (Fajgelbaum, 2020). The importance of and heterogeneous impacts generated by protectionism caught attention of scholars and literatures which investigate the determinants of protection gradually developed. While loss aversion is not taken into account in a perfectly rational economic world, it plays a significant role in real-life trade policies and provides an alternative explanation for protectionism from a psychological perspective.

The Grossman and Helpman (GH) model made significant contributions in the area of political economics. By modeling the interactions between government and industries, it derives “a set of predictions about the determinants of protection” (Tovar, 2004). Although some puzzles remained unsolved, the GH model laid the foundation for a number of later researches. This article will look at three empirical studies which are based on the GH model, and discuss how government protection in each case is affected by or related to individual loss aversion. Section 2 will clarify the definitions of some important terms appeared in this article and reviewed literature of predecessors. Section 3 will

provide a brief overview of the Grossman-Helpman model. Section 4 will discuss three empirical studies – U.S. steel industry, section 301 disputes, and Chinese cotton – respectively, based on the usage of the GH model. Finally, section 5 will build a conclusion for the entire article.

2. Literature Review

2.1. The Anti-Trade Bias

As mentioned above, modern economics promote free trade and discourage any kind of protectionism. Researchers, however, have shown that trade policies in reality are “typically biased in favor of import-competing sectors and is consequently trade restricting rather than trade promoting” (Limão, 2002). Previous literatures derived several possible explanations for the anti-trade bias. According to Rodrik and Fernandez, “tariffs were initially imposed for revenue reasons”, and governments do not like free-trade because it will lead to a loss in government revenue (Tovar, 2004). Moreover, Rodrik and Fernandez showed that anti-trade attitude could be caused by another cognitive bias toward the status quo, meaning that people typically want to avoid reforms such as trade liberalization, especially in cases that “the winners and losers cannot be identified *ex ante*” (Fernandez, 1991). Besides, Corden also proposed that the anti-trade bias is related to status quo bias by suggesting that “politicians place a larger weight on reduction than on increases in income” (Corden, 1974).

Another possible explanation by Limão and Panagariya was that “if government’s objective reflects a concern for inequality or diminishing political support from factor owners, then trade policy exhibits an anti-trade bias” (Tovar, 2004). They argued that if there’s a shock in market, the import factor of an economy would suffer more severe loss and greater pain than the export side, and tariff offsets part of the loss by protecting the interests of the import factor (Limão, 2002).

2.2. Loss Aversion

The term “loss aversion”, proposed by Kahneman and Tversky in 1979 with the prospect theory, suggests that “people place greater value on losses than on comparable nominal gains, being more prone to seek risk to avoid a certain loss, but risk averse for possible gains” (Kahneman, 1979). Specifically, they proposed that “value or utility is determined by changes in wealth”, and the change in assets, whether it increases or decreases, is more important than the specific final amount of assets (Tovar, 2004). For example, the utility or happiness of obtaining certain amount of wealth is less than the ‘disutility’ in losing same amount. Moreover, Kahneman and Tversky also provided evidence for “diminishing sensitivity”, that is, “the marginal value of both gains and losses decreases with their size” (Tovar, 2004).

3. The Grossman-Helpman Model

This section will briefly review the Grossman-Helpman model by summarizing and restating analytical models mentioned in former literatures and researches, including papers from Goldberg & Maggi (1999), Freund & Özden (2008), Patricia (2004), Ederington & Minier (2008), etc.

The Grossman-Helpman model (1994) started from some basic theoretical assumptions. Individuals are assumed to have identical preferences, which are given by

$$U = c_0 + \sum_{i=1}^n u_i(c_i) \quad (1)$$

where c_i and c_0 denote consumption of good i and numeraire goods respectively, and u_i is a function of consumption. Besides, let the demand function be $d_i(p_i)$ with respect to price p_i , and d is the inverse of u'_i .

On the supply side, assume that wage is equal to one. Returns to a specific factor of production i is denoted by $\pi_i(p_i)$, which is a function purely depending on price p_i .

Under protectionism, the government set a trade tax that is in form of a wedge between local prices and international prices. That is, $p_i = p_i^* + t_i^s$. In this case, p_i^* is the international price, and t_i^s represents a specific amount of tariff on imported goods.

The aggregate welfare of society is given by the sum of indirect utilities of all consumers, as well as the aggregate labour income, returns to factors of production, and tariff revenue collected by government. Therefore, the aggregate welfare is

$$W = 1 + \sum_{i=1}^n \pi_i + \sum_{i=1}^n t_i^s M_i + \sum_{i=1}^n s_i \quad (2)$$

where $M_i = d_i - y_i$, s is a function of price p denoted by $s(p) = u(d(p)) - pd(p)$.

The next step is to incorporate the political structure into the model. Suppose people who owns some specific factors constitute a lobby, and α_i is the fraction of people who own factor i . Lobby i 's aggregate well-being is given by indirect utilities of all members in lobby i , which is:

$$W_i = \pi_i + \alpha_i \left(1 + \sum_{j=1}^n t_j^s M_j + \sum_{j=1}^n s_j \right) \quad (3)$$

Lobby i 's objective is $W_i - C_i$, where C_i is the contribution paid to the government.

For government to maximize both welfare and contributions:

$$U^G = \beta W + (1 - \beta) \sum_{i \in L} C_i \quad (4)$$

where $\beta \in [0,1]$ measures the weight of welfare in the government's objective.

According to Goldberg and Maggi, in the original formulation, "Grossman and Helpman assume that the interaction between government and lobbies takes the form of a 'menu auction'" (Goldberg, 1999). Instead, Goldberg and Maggi assumed a simpler mechanism that is a Nash bargaining game, and found the Nash bargaining solution. At the Nash equilibrium, "trade policies are selected to maximize the joint surplus of all parties involved" (Goldberg, 1999). And the joint surplus is given by

$$\Omega = \beta W + (1 - \beta) \sum_{j \in L} W_j \quad (5)$$

To find the equilibrium trade policies, Ω can be rewrite as

$$\Omega = \beta + (1 - \beta) \alpha_L + \sum_{i=1}^n [\beta + (1 - \beta) I_i] \pi_i + \sum_{i=1}^n [\beta + (1 - \beta) \alpha_L] (t_i^s M_i + s_i) \quad (6)$$

Take the first derivative with respect to tariff, t_i^s :

$$\frac{\partial \Omega}{\partial t_i^s} = \frac{\partial \Omega}{\partial p_i} = [\beta + (1 - \beta) I_i] X_i + [\beta + (1 - \beta) \alpha_L] [-d_i + t_i^s M'_i(p_i) + M_i] = 0 \quad (7)$$

Therefore,

$$t_i^s = \frac{I_i - \alpha_L}{\beta + \alpha_L} \cdot \frac{X_i}{-M'_i} \quad (8)$$

where X_i is amount of good i produced by domestic firms.

Lastly, as proposed by Goldberg and Maggi, “the same formula can be expressed in terms of import elasticity and import-penetration ratio” (Goldberg, 1999):

$$\frac{t_i}{1+t_i} = \frac{I_i - \alpha_L}{\frac{\beta}{1-\beta} + \alpha_L} \cdot \frac{z_i}{e_i} \quad (9)$$

where t_i is tariff on good i , e_i is the import-demand elasticity on good i , and $z_i = \frac{X_i}{M_i}$.

According to Goldberg and Maggi, the model predicts free trade as the solution that maximize the government’s objective function. Firstly, if government doesn’t care about revenue collected from tariff ($\beta = 1$), “intuitively it has no incentive to impose trade barriers” (Goldberg, 1999). Secondly, “if all industries are organized ($I_i = 1$ for all i) and each citizen is represented by some lobby ($\alpha_L = 1$)”, then the joint surplus of all lobbies and the well-being of society would both be largest. Hence, the equilibrium outcome of the market is intuitively the free trade.

4. Empirical Studies

4.1. The U.S. Steel Industry

In 2008, Freund and Özden published a paper which investigates the relation between protection and loss aversion using the U.S. steel industry data. The U.S. steel industry is ideal for this analysis due to the fact that “import penetration is significant and firms have lobbied aggressively for protectionist policies” (Freund & Özden, 2008). Data for the analysis were from World Steel Dynamics (WSD) which is a steel information service. The data were three-month average of prices, i.e. quarterly data. The European export price quote was used as the world prices.

Firstly, an average world price for hot-rolled steel was identified, which is \$290/ton. Secondly, three periods that world prices were below this reference point were identified: 1982-1987, 1991-1994, and 1998-2002. During these periods, the steel industry in US suffered losses – net income was negative. When world prices experienced a sharp fall, there is evidence of protection trade policies, creating an effective price floor which keeps steel price above \$350/ton until 1997.

The US steel industry consists of “high-cost integrated firms” and “low-cost mini-mills” (Freund & Özden, 2008). Throughout the 1980s and 1990s, while all firms was challenged by a low world price, the integrated sector actively supported antidumping proposals, but the minimill sector – “where technology was improving and production was growing” – was still profitable during this period and remained silent at first (Freund & Özden, 2008). However, the minimills quickly called for protection due to a concern of potential loss, despite that being profitable initially. Nucor, the first and largest minimill in the U.S., was “vocally pro-trade” even when the world price fall dramatically. While Nucor obviously understood and enjoyed the benefits associated with international trades, it still signed a petition for protection in 1999, and more petitions on “hot-rolled, cold-rolled, and structural steel beams against more than 45 countries” within two years, being risk-averse to potential losses (Freund & Özden, 2008). In the winter of the industry, even though the minimills did not suffer as much as the integrated sectors did, they became risk-averse and acted to avoid a loss in profit, even at a cost of giving up certain benefits they have already embraced.

4.2. The Section 301 Cases

Section 301 of the Trade Act of 1974 was a key mechanism used in the United States to “protect existing trade agreements” and “opening new market for exports” (Berejikian, 2013). It was designed to restrict practices of US products and services, and initiate investigation once an unfair practice is

identified. According to scholars, some cases that Section 301 investigated were preventive while others had a promotive objective (Berejikian, 2013). Promotive foreign policies are gains seeking and to “secure new benefits above and beyond the status quo”, including “territorial expansion, undermining the position of rivals, and opening new markets for export” (Berejikian, 2013). Preventive foreign policies, in contrast, are loss avoiding and usually “mitigate an erosion of current assets”, including “protecting existing territorial holdings, preventing the loss of alliance partners, and supporting existing legal agreements” (Berejikian, 2013). While policy makers may have either preventive or promotive objectives, “the targets of Section 301 would almost always view their response in preventive terms”, which means that loss aversion indeed made policy makers more difficult to accept losses in a dispute than people expected previously. These policy makers showed greater resolve and devote more resources to preventive policies than promotive ones.

Jeffrey Berejikian and Bryan Early analyzed the effect of loss aversion with 100 cases of U.S. Section 301 from 1975 to 1999. Then, “the dispute outcomes are coded dichotomously in terms of whether the United States backed down or achieved important concessions” (Berejikian, 2013). Based on their model, the results suggest that the United States is significantly (at 99% confidence level) more likely to let the dispute persisting than backing down in preventive cases, such as breached trade agreements, than promotive cases, such as opening up new markets (Berejikian, 2013). Particularly, with a preventive case, the probability of the United States persisting is 6.6 times higher than the probability of backing down. Besides, preventive cases tend to be more protracted than promotive ones (Berejikian, 2013). The results are consistent with Berejikian and Early’s hypothesis that “U.S. policy makers are more resolute in holding out in preventive cases than they are in promotive ones”, and evidence shows that “loss-averse negotiators were willing to make substantial commitments of resources to avoid accepting losses in their trade negotiations” (Berejikian, 2013).

An empirical study of cases that Section 301 resolved illustrates that securely anchored cognitive mechanisms may have important impact on foreign policy. The United States does not want to give up cases that “prevent partners from violating existing agreements” or “involve breached trade agreements” because they can hold out more easily and convince their targets to make concessions (Berejikian, 2013). In contrast, they will choose to back down in disputes with promotive objective, if the case does not “make headway after several years” (Berejikian, 2013). According to the researchers, loss aversion plays an important role in such a puzzling distinction in the degree of resolve.

4.3. The Cotton Industry in China

The cotton sector, especially those in Xinjiang, plays an important role in Chinese economy. Apart from the fact that cotton itself was significant to Chinese agriculture – it accounts for one third of Chinese total agricultural sector in 2013 – it is also a politically sensitive product for China based on its geographical location of production (Yan, 2022). A large proportion of cotton is produced in Xinjiang, where 60% of its total population are minorities (Uyghur) and a great number of residences are Muslim. In 2018, the average amount of cotton yield in Xinjiang per mu was 10% above the national level, and the production of cotton in Xinjiang makes up 76% of the entire market in 2019 (Yan, 2022). In addition, Xinjiang is bordered on eight neighboring countries – “Mongolia, Russia, Kazakhstan, Kyrgyzstan, Tajikistan, Afghanistan, Pakistan and India” (Yan, 2022). The fact that Xinjiang is “located in the far Northwest of China” and “transportation links to the east through the central area of mainland are weak” also makes Xinjiang a political sensitive area. That is, shocks on the cotton industry would potentially lead to a greater loss on the social level.

Yan and Huang investigated the effect of loss aversion on the protection set by Chinese government on cotton industry. Being “the largest cotton consumer and importer of the world”, China has long implemented protectionist policies to manage import flows and support local cotton industry

(Yan, 2022). Generally, the Sliding Scale Duty system is used to control import volume by setting regular import quotas: “If the import exceeds the sum of the regular quota and additional quota, the tariff is taken to the highest level of 40%” (Yan, 2022). By analyzing the level of protection, as well as the world domestic prices of cotton from year 2005 to 2015, it is discovered that when the world price falls below domestic cotton price, there will usually be greater protection.

Comparing cotton and other 10 agricultural products, Yan and Huang discovered that trade protection for cotton is higher than other products since 2006. Specifically, a model is built based on the theoretical model provided by Freund and Özden in 2008, but with “spatial dimensions of interest group politics”, and it “replaces the monetary contribution component of Freund and Özden with the political support from the politically sensitive groups” (Yan, 2022). It is worth noticing that trade policies which concern export or profitability of agricultural products in China do not show an obvious distinction among different crops, and the special attention paid to cotton industry is only about protection and avoiding losses. The fact that cotton receive more trade protection explains that policy makers behave in a risk averse way to avoid a potentially greater loss.

5. Conclusion

This article investigated the effect of loss aversion on trade policies and on policy makers based on empirical studies conducted by previous scholars. The Grossman and Helpman (GH) model, which is the first theoretical model that derives a set of determinants of trade protection, was reviewed. Three empirical studies were discussed: the steel industry in United States, the Section 301 cases in the Trade Act, and the cotton industry in China. Although these cases happened in different geographical locations and the studies were conducted in different time, they all illustrated the importance of loss aversion on the policy-making process, and concluded that policy makers tend to behave in a more risk-averse way in order to mitigate losses or avoid potential failure.

The findings of this analysis could be helpful to future analysis of economies and international trades, and it can also provide reference for other cognitive biases in behavioral economics. In conclusion, understanding why the cognitive biases may have an influence on decision-making and how these biases may affect people’s behavior would be beneficial not only to economists but also to ordinary people in making decisions.

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