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ORIGINAL CONTRIBUTION

Tariffs under Globalization 3.0

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Abstract— The aim of this study is to examine the role that tariffs could possibly play beyond an infant industry argument, by considering three scenarios on how a technological competition can evolve, an approach that is built on the principle of fairness. At Davos, World Economic Forum (2019) characterized globalization as evolving from the old silk road (Globalization 1.0) to now possibly entering a phase of Globalization 4.0. The possibility of the new phase of globalization is partially triggered by a de-globalization movement grounded on populist sentiment and a promotion of "me-first" rather than a "win-win", moving away from the neoclassical framework of international trade based on the balance of current account and capital account, the principle by which Globalization 3.0 has operated for many years. Some country leaders blatantly ignored standard textbook framework on international trade, advocating fair trade principle based on zero current account balance as the ideal. The threat of raising tariffs as a policy tool can escalate into an excuse for a revival of Keynesian economics applied globally, resulting in "lose-lose" rather than "win-win" outcome that neoclassical economics advocates. Can tariffs be rationalized beyond an attempt to pursue Keynesian economics? With a game-theoretical perspective heuristically explained in a neoclassical framework of international trade, this study further evaluates the possible consequences of tariffs under Globalization 3.0 and speculate on its effectiveness in promoting new concepts for Globalization 4.0. This study advocates that if a neoclassical approach to international trade will ever be revisited, an appropriate framework for discussing future policy must be used. It concludes that tariffs are ineffective in helping to facilitate the rules of a game that can determine the winner of a technological race under a Rawlsian veil of ignorance, which is not the whole part but nevertheless an important aspect of globalization 4.0.

Index Terms— Tarrifs, Globalization 3.0, Globalization 4.0

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Introduction

In 2019 World Trade Forum at Davos, Vanham (2019) provided a useful characterization of various phases of globalization. In an essay entitled "A Brief History of Globalization", Jan. 17, 2019, the author established a framework for discussion. The characterization is useful as a backdrop for putting the recent tariff policy discussions in perspective for this note.

The use of tariffs to achieve economic results, under neoclassical economics, is only justifiable as a transient policy tool, typically explained as part of an infant industry argument. The argument is that for emerging countries that open up free trade, they may not stand the chance of competing with advanced countries that have better technologies with an equal footing. Emerging countries are thus not being given sufficient opportunities to build up their own respective competitive edges that will engage them with advanced countries for "fair trade".

According to a narration in Wikipedia (n.d.), "the argument was first fully articulated by Alexander Hamilton in his 1790 Report on Manufactures, ... systematically developed by Daniel Raymond, and was later picked up by Friedrich List in his 1841 work The National System of Political Economy...".

Tariffs have been traditionally explained in this context as the appropriate policy instrument for maintaining some type of a world trade order, even though from the economic efficiency perspective, zero tariffs would achieve the highest total welfare for the world economy.

In recent years, events in the world suggested a different paradigm is being used, sometimes justifying tariffs as a tax revenue generating method for a government's budget. Although government taxes ultimately would be returned to the economy via government spending, it is well understood that reliance on federal finance for an economy can lead to many welfare losses. Tariffs, like all forms of tax, are grounded on the assumption that governments know of better ways to spend money than private individuals. Individual spending could be affected by various psychological factors, most notably uncertainties and a herd mentality of animal spirit that, during the Great Depression of 1930 in the USA, have led to the popularity of Keynesian economics. The philosophy was designed for countries in despair, rather than countries in prosperity.

A revival of Keynesian economics to manage our 21st century economy is dangerous. A verdict on Keynesian vs. classical economics has long

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been noted, with many declaring and warning Keynesian economics being a "tragic failure" (e.g., words used by the Institute of Economic Affairs in 2009) (Kates, 2009). Even though in recent years, one can no longer deny the possibility that governments can sometimes serve as enablers for growth, domestically in a country as well as worldwide, relying on governments of the world to manage international trade in terms of what to buy and what not to buy is an outright disrespect of the neoclassical economics principles. In this age of technological advances, with geopolitics of the world being in flux, it is timely to review the wisdom of tariffs in light of economic rationality. Rationality can be defined simply as a wealth maximizing postulate, or being defined tactically merely as a game-theoretical strategy. Evaluated either way, it can be reasoned in a framework of maximizing total welfare, which is consistent with the neoclassical economics approach used by most economists.

Will transient tariffs achieve what the world economy ultimately considers to be a win-win, i.e., zero tariffs? This seems to be a more appropriate question to ask, rather than dwelling on a war-tactic type of question, defining winning to be "the other party losing more". It is definitely not the way to formulate meaningful globalization framework. With Brexit up in the air, CETA, BRICS, and various emerging trade blocs in discussion, globalization does not seem to be going into a direction as one had once expected (Chang, 2016).

Methodology

The framework to be discussed in this paper will revisit the conventional neoclassical framework being used. For purpose of looking forward to newer versions of globalization, we should be reminded not to "throw the baby out with the bathwater". In other words, there are conventional tools that can be used for analyzing things for the new phases of globalization. We begin with the various phases of globalization.

Literature Review

Globalization 3.0

Trading across nations originated probably as far back as there were nations. Peter Vanham's history of globalization tells the story succinctly in the figure below:

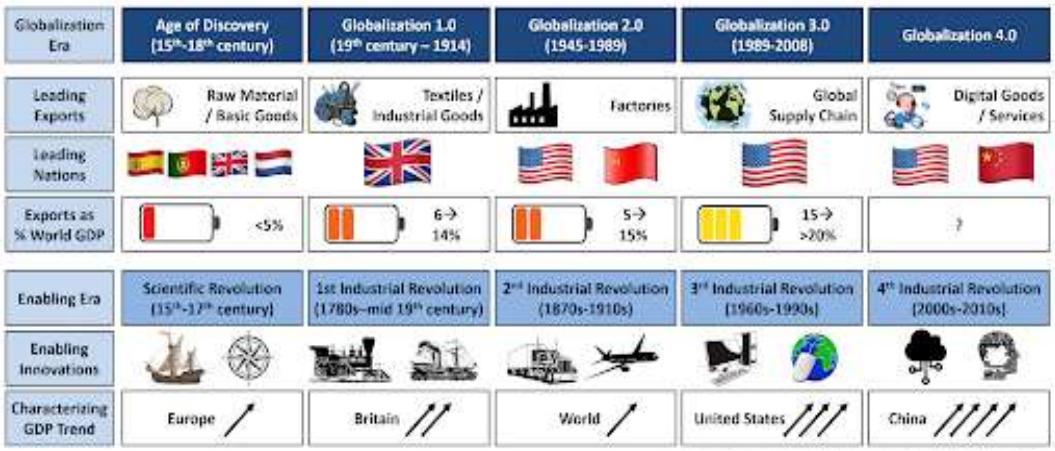

Fig. 1. *Source: Vanham (2019): The brief history of globalization*

Notice globalization 3.0 has been characterized by the period of 1989-2008, when the leading nation contributing to the concept was United States of America. Actually, the time duration of this is debatable. The wake-up of the giant America to Japanese cars and TV came around 1985, and the sentiment of regional populist sentiment did not surface until the USA 2016 presidential election. Thus, the framework governing Globalization 3.0 has certainly been around for a good 30 years. Certainly, economic textbooks on international trade during this era have been well supported by this doctrine.

Although trade talks are happening everywhere, the US-China trade talk clearly is at the front stage. Evolving from the phase of Globalization 3.0 where USA was designated as the leader, Globalization 4.0 is characterized in Vanham (2019) table as driven by USA and China. Crowded into this discussion is a concern for industrial espionage, cybersecurity, IP thefts, all in one degree or another, has something to do with technological competition between countries. If governments are good enablers, such discussion should be phrased within a rational framework not only for the negotiators of country representatives, but also for the academic and business community to evaluate the type of new world order that we are heading. Complexity is no excuse for vagueness and elusiveness, and in that sense, staging for theatrical appearances and making the issues opaque with propositions not backed by good economic reasoning is counter-productive to formulating a new world order.

The role of governments as enabler of economic prosperity is to provide a rational framework for the market to follow. It is one thing to say that tariffs is a negotiation tactic, it is quite another to say that promoting the end result of a zero current account balance should be the end game. In addition, there are no reasons, economically, psychologically, and socially, that tariffs as a negotiating threat can reduce current account trade deficit to zero. Thus, the slogan of achieving zero trade deficit cannot be treated as a serious ideal; for example, there is a saturation point to the number of hamburgers a country can eat, the number of trips for Disneyland, or viewing Hollywood movies. Relying on governments to promote consumption or industrial large quantity purchase is dictatorial and susceptible to corruptions.

Thus, within a framework of rational discussion, tariffs can only be treated as a tactic which do not meant to be achievable as an ideal. What, then, is the proper framework to interpret the tactics? Would such tactics result eventually in a win-win outcome? What could be more essential elements for consideration looking beyond negotiation tactics? Lacking a rational framework to evaluate policy discussions, policies emphasizing tactics could generate unintended consequences; and in the limiting case, define a new order that would be self-destructive.

What can be more problematic is that by choosing the wrong frame-

work not based on rational reasonings, attempts to rally support between countries as well as for the public becomes a non-economic exercise of forming a circle of influence based purely on opinions. In soliciting support, campaigns are driven by carrots-and-sticks; and likewise, other countries' actions in response to a campaign would be perceived purely as taking sides, resembling children playing in sandbox.

Trade negotiations would be macro or micro in nature. Macro considerations would draw upon balance of payment problems, while micro policies address to industries and specific products. For micro policies, it is sometimes believed that tactics are needed to drive a new order of technological competition. That proposition requires a rational support too. In many countries, competition policies are determined by their Antitrust laws. There are frameworks used by Antitrust law reasonings that enable fair and rational decisions being made. Furthermore, there is no basis to believe that certain tactics would lead to an appropriate framework recognizable under any particular Antitrust framework. Negotiating without proper framework is dangerous, especially if concepts on technology are evolving and cloudy.

Tariffs Under Globalization 3.0

In this section, we explore from a game theoretical perspective, heuristically explained, on how tariffs could (or could not) be used for designing a new vision for World Trade for the 21st century. At the outset, we note that the use of tariff, in the mainstream economic literature, is primarily for the protection of infant industries of developing countries (United Nations, 2001), although we note also that tariffs may be the outcome of internal rent-seeking of political interest groups in a country (Dwi & Renny, 2017; Krueger, 1974; Tullock, 1967; Tindaon & Rahman, 2018).

Tariff as a bargaining chip in trade negotiations has surfaced recently as an alternative explanation for tariff. Scholarly articles making that type of argument is rare, with Chan (2018), rationalizing it as gradualism in The General Agreement on Tariffs and Trade (GATT) negotiation, and not so much on formulating a new vision concept. Nevertheless, a game-theoretical approach may still be useful in understanding the role of tariffs in the current shaping of trade talk between USA and China. We adopt a heuristic approach in describing game-theoretical bargaining, rather than a rigorous modeling approach, emphasizing the use of tariff as a method to drive outcomes. To set aside issues addressing to political economics and the internal dynamics in a country, we shall assume US and China as two rational entities seeking a mutually beneficial outcome, and that tariff is only a bargaining chip in achieving the outcome. We use traditional game-theoretical approach to anticipate what that outcome may be.

We shall start with a completely idealistic, non-cynical and zero transaction costs world where resources are diverted to their most valuable uses, utilizing all emerging technologies and producing products at the least costly way, no matter where they are produced. The consumer and producer surpluses in this world are also assumed to split in a fair and equitable way without any welfare losses. This is the way to set the benchmark for the 1st best equilibrium. This equilibrium should have a zero tariff, as it is the outcome that maximizes total welfare. The question is: What will be the outcome if tariffs are used as tools to reach this equilibrium?

Fig. 2 titled "Framework for Future Technology Competition" can be used to illustrate the nature of the problem. The black lines denote a country's domestic supply and demand of importable goods without trade. A red line, labelled as I, denotes an existing foreign supply condition, meaning that domestic production has a lower marginal cost only up to an output matching the foreign costs. Beyond that output, the goods should be imported on efficiency ground.

The dotted line denotes domestic price in this country without trade. Thus, comparing the price without trade with the price with imported goods (red line at level I), importing goods will be preferred. The drawback of this open door competition, from the domestic country's perspective, is that a substantial "would-be" production will be replaced by foreign imports, which in turn has led to many Import Substitution Industrial (ISI) policies being adopted in emerging economies, typical during 1930-1960 in Latin American economies. This is the traditional infant industry argument (Melitz, 2005).

We can expand on the precondition for foreign imports by considering two additional scenarios. There are two additional red lines in addition to the existing foreign cost supply condition I, denoting therefore three scenarios of foreign production costs relative to domestic production cost condition of the blackline. (We abstract transportation and transaction costs from this discussion).

A meaningful framework for policy discussion anticipating the FUTURE should concentrate on the three red lines, I, II, III, (denoting three alternative outcomes (scenarios) of future foreign production costs). Global competition of domestic relative to foreign production costs on policy matter should be discussed in terms of the possible positions of the red lines relative to the black lines. Fig. 2 can thus be considered as a framework built upon Rawls (1971) veil of ignorance, i.e., it favors neither negotiating parties a *priori*, the basis by which negotiation based on justice and fairness can proceed.

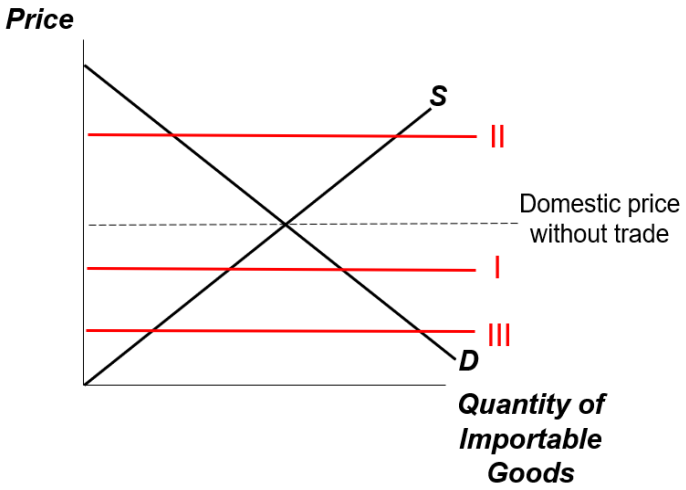

Fig. 2. *Framework for future technology competition*

We can restate the significance of the red and the black lines in Fig. 2.

- Scenario I is an assumed existing situation where some goods are domestically produced and some are imported. This is the tariff exposition that is commonly found in textbooks and on the internet.
- Scenario II is a possible future situation where domestic industries totally out compete foreign costs of production.
- Scenario III is the alternative future where foreign costs of production is seen out competing domestic costs of production more and more.

All three scenarios can be the future outcome of competition; but from economic efficiency perspective, it will always have to be the lowest costs that will be chosen, as it will be the equilibrium that will maximize total welfare of a country.

An important point to note is that in this framework, a tariff imposed affects only the quantity demanded of the importable goods. It has no effects on the supply curve if goods are competitively supplied, i.e. perfectly elastic. A tariff is treated as a tax, raising whatever the relevant marginal costs of production are, which will in turn increase the price the demanders of importable goods have to pay. The magnitude of the decrease in quantity demanded will depend on the elasticity of demand. The suppliers in this framework is not affected because of the assumption of perfect elasticity, as they will supply to someplace else, or move their manufacturing base elsewhere. It is only the final demand price that will be affected, and thus the only response will be a reduction in the quantity demanded. While this will result in a quantity supplied being reduced also, it is quite different to consider that as a shift in supply, particularly for the types envisioned in scenarios I, II, and III.

If the new world order is to be decided by technologies in terms of new methods of producing products. The three scenarios in Fig. 2 should be the crux of discussion. There is no presumption, nor can there be a presumption, that which scenario is more likely to be the outcome. It is as likely for a country to lose a technology competition than to win it. The crux of the matter should be that whatever competitive outcome evolves, the least costly production method will be used. It is important to point out again in this context, a tariff itself will not shift the supply of production, i.e. it will not influence which scenario, I, II, III, is going to be more likely to happen. Even if revenues from tariff will be "fairly" distributed, there is no assurance that scenario II, i.e., domestic production costs winning foreign competition, will prevail by imposing an import tariff.

A question can be asked in terms of a revenue-maximizing tariff to set in this context. The answer to that will depend on the outcome of which scenario will happen, i.e. the actual supply curve (marginal costs of production) as a result of competition. For this problem, generally, it requires the country to set a tariff as determined by the marginal revenue (derived from the demand of importable goods) and the relevant marginal cost of production. The government of a country is elated when tariff revenues are collected; but that is not sufficient if the collection of a maximum revenue is the objective, as the revenues would be even higher if the rate is appropriately set according to demand elasticities. Note, however, for scenario II, there is no reasons for the setting of a tariff, because domestic productions have totally outcompeted foreign productions without tariff. Even if a tariff is set, there will not be any revenues to be collected. The optimal tariff of zero is attained.

For the setting of a revenue-maximizing tariff, the possibility of a scenario III would suggest that tariffs will increase, as the relevant marginal cost of foreign production under scenario III is much lower than the existing production costs of partially domestic and partially imported. Thus, a revenue-maximizing tariff will either drop to zero (completely yielding to foreign inputs), or continue to increase. To be sure, the motivation of setting a revenue-maximizing tariff revenue by a government would not be openly declared, as the government that pursues that type of policy would be considered dictatorial (a classic case of monopoly pricing). Thus, the government practicing it will not admit it even if accused of doing so.

A revenue-maximizing tariff, even if "fairly" distributed, domestically or as compensatory side-payments to affected foreign countries, serving only to give an outcompeted industry a slim chance of ever catching up, is not an infant industry argument anymore. It is basically just a form of raising revenues through taxation, which in this case, also erroneously thinking that the revenues are raised from "foreigners". The welfare loss implied is typical in any monopoly pricing model. It is despotic in spirit, and Keynesian as an idealized justification. Most importantly, it provides no room for policy discussion on how to manage the outcome of the three scenarios of technology competition. The setting of a tariff must therefore be found on other reasonings.

Broadly speaking, there are two ways to view tariffs as a bargaining tool: First, a tariff imposed on a rival will impose a pain on the rival, even though the country imposing the tariff will bear some pain too. However, as long as the pain imposed to the rival is greater than the pain to the country initiating it, the country imposing the tariff will eventually win, and the country suffers the most will surrender. This presumption treats tariff not that different from the dropping of a bomb. As long as a bomb inflicts more damage than it costs to make it, the dropping of a bomb will see results. Tariff becomes a tool to "teach a lesson" if all it will do is to impose pains on the suppliers. However, if supply is perfectly elastic, there will not be pain imposed.

A second way to view a tariff is that it is a method to predetermine the gain to be distributed to a party, that a tariff will generate revenues for the government, which if distributed back to the citizens, will be a "gain" to the citizens of that country also. What appears to be a gain, however, must be put in quotation, as it will not be a gain because the revenues so collected will not be greater than the consumer surplus lost by the tax, thus resulting in a net loss called by economists "the welfare triangle". Accepting tariffs are "gains" (even though not true), the presumption is that whatever tariff revenues generated, it will be distributed domestically only. Without side-payments, the game to be played is simply a duopoly game, with USA and China acting as firm A and firm B.

Regardless of which presumption is more relevant to the current trade talk between US and China, crucial to analyze for the two ways of viewing tariffs is the reaction function of the bargaining entity on the other side of the table, i.e., how one entity will react to the actions chosen by the other entity. We'll analyze the second viewpoint first, as it is an outcome more familiar in the game theoretical literature. For simplicity, we can assume the game will be either a Cournot or a Stackelberg.

An idealized Cournot equilibrium assumes equal bargaining power, simultaneous move, arriving at both countries setting their respective tariff rate less than the revenue-maximizing rate but greater than zero. This is the well-known Nash equilibrium, a prisoner dilemma in relation to the optimal tariff rate of zero, or the monopoly revenue-maximizing rate. The assumption of identical firm A and B is not crucial in driving this result. A reaction function based on rates or quantities set will yield this result too. The exact magnitude of this result is not important. It is more importantly to note that it is unlikely that this result can generate any implications concerning the new world order. Indeed, not everyone will agree that this should be the basis for the new world order because (1) viewing the outcome of the world economy as game playing is rather irreverent, and (2) viewing the world as determined by a duopoly could be too assertive a proposition as formulated in Vanham's version of Globalization 4.0.

For the sake of argument in figuring out the equilibrium between two prominent countries under consideration, US and China, the Stackelberg equilibrium can be viewed as more realistic, both in terms of bargaining power advantages of the two countries (if any) as well as the assumption of simultaneous setting of tariffs. The actual setting of tariffs is likely to

be sequential which, in the current trade talk between USA and China, begins with US setting a tariff first. If the motivation behind the setting of the tariff is to bring the opposing party to the negotiation table, USA has been successful in this regard, although it is still unclear that there exists a theory that tariffs can bring a bargaining party to a negotiation table.

Thus, as an analytical thinking exercise, we can only assume the tariffs to be a duopoly pricing exercise. In playing out this exercise, it is not clear that USA has evaluated the reaction function of China properly in its setting of the tariff. A Stackelberg equilibrium certainly would not imply that the optimal zero tariff rate will ultimately be set. Indeed, if it is intended to be an equilibrium, the Stackelberg equilibrium only guarantees the tariff revenues generated to be larger than the tariff revenues generated by the opposing party. A country successfully playing Stackelberg will set tariff rates lower than the Nash equilibrium, but gaining a bigger market shares of all tradable importable goods, which is not necessarily the intention of USA in the setting of the tariff in the first place. Moreover, Stackelberg equilibrium has no implication regarding the likelihood of scenario I, II, or III for the future. It has no useful implications for the shaping of the new world order.

Limitations and Future Research Directions

At the time of this writing, US and China has entered a Phase one trade deal that exhibited more features of a Keynesian approach rather than the neoclassical approach that this paper is advocating. The reasonings articulated in this paper is preconditioned upon a revisit of a neoclassical approach. If that is not adopted as trade negotiation proceeds, the method of reasonings will be irrelevant. Events happening around the world is ever changing. World Trade Forum 2020 seemed to have taken Globalization 4.0 into a hiatus. Regardless, looking back to Globalization 3.0 as the basis for improvement in Globalization 4.0, the infant industry argument as a rationale for the support of tariffs can no longer be applicable for the emerging leaders of the world.

Conclusion

This study advocates that if a neoclassical approach to international trade will ever be revisited, an appropriate framework for discussing future policy must be used. As we are entering the dawn of globalization 4.0, which could be led by China and the USA, this paper evaluates tariffs in the framework of globalization 3.0 as a basis for going forward. It argues that tariffs are ineffective in helping to facilitate the rules of a game that can determine the winner of a technological race under a Rawlsian veil of ignorance, which is not the whole part but nevertheless an important aspect of globalization 4.0.

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