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# **Repercussions of International Trade on the Market Power of Firms in Different Market Structures.**

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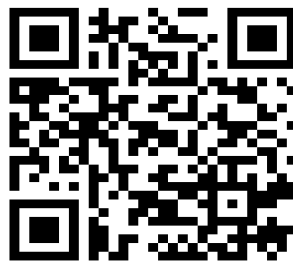
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### Abstract

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The purpose of this paper is to provide an introduction of market power in different market structures and how this market power diminishes because of international trade and the effects on welfare. A review of relevant literature from Pugel (2012), McConnell Bruce and Flynn (2012) and Bernheim and Winston (2014) provides the effects of international trade on the market power conditions in different market structures and the effects on welfare. Asprilla, Berman, Cadot and Jaud (2016), Devereux and Lee (2001) and Krugman (1994) serve to provide further evidence through PTM literature, bilateral exchange rate shocks and protectionism.

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*Key Words:* Market Power, Market Structures, International Trade and Policy.

## **Repercussions of International Trade on the Market Power of Firms in Different Market Structures.**

### **Introduction**

A firm can use its market power to set the domestic price in accordance with the prevailing market structure to maximize its profit. A firm with a position that gives it significant market power would loathe to part with it even though when the firm exercises market power, it can cause a reduction in countries welfare. According to Asprilla (et.al 2016), “The argument that trade policy affects competition is a not new one” (p.1). Hence, for such a firm international trade and policy can prove to a be a long-term problem that requires constant strategic focus. Furthermore, this problem stays true for firms in other market structures such as oligopoly, monopolistic competition and not only for a firm that maintains a pure monopoly position.

Firms in monopolistic competition and oligopoly also experience the effects of an open macro economy and international trade and policy. In the short run these effects can be disastrous if there exists no macroeconomic policy coordination. If there does exist coordination between the firm, the state and the international community then in the long run the firms may develop the resources to compete in open macroeconomic conditions if incentives exist and the loss of aggregate surplus is not of significant concern. This paper examines the relevant literature pertaining to market power, market structures, international trade and shows how international trade reduces market power and the effects of trade on consumer surplus, producer surplus and welfare.

## Literature Review

### Market Power Conditions in Different Market Structures

Most firms in business have inherent market power. According to Bernheim and Winston (2014), “A firm enjoys market power when it can profitably charge a price that is above its marginal cost”. (P. 590) or  $P > MC$ . This definition serves as an anchor because any adverse conditions affecting price or marginal cost will cause its market power to change. One of the major reasons for market power is the availability of substitutes. The availability of substitutes makes the product more elastic and the firm is at risk of losing market share. Opening of trade to allow substitutes in a country is a definite way to reduce a monopolist’s market power. Two of the main market structures where market power is most prevalent is in monopoly and oligopoly markets.

**Market Power in Monopoly.** A firm that has monopoly power in a domestic market stands to lose the most from open macroeconomic conditions and international trade. According to McConnell, Bruce and Flynn (2012) the key distinguishing features of a pure monopoly are, “being a single seller, no close substitutes, price maker, blocked entry and non-price competition.”. (p 195). The profit maximization condition for a pure monopoly is when  $P = MR = MC$  and the market power of the pure monopolist allows it to charge the price and produce and sell at that quantity. The welfare effects of the price maximization lead to a reduction in aggregate surplus.

**Market Power in an Oligopoly.** If a monopoly firm loses market power and hence the conditions that make it a pure monopoly are not valid the firm may suddenly find itself in an oligopolistic market structure. This may happen because of international trade and open macroeconomic conditions as firms are now able to enter the market. According to McConnell,

Bruce and Flynn (2012) an oligopoly, “is a market dominated by a few large producers of a homogeneous or differentiated product. Because of their fewness they have considerable control over their prices” (p.223). The welfare effects of oligopoly pricing are a lower aggregate surplus although less than a monopoly.

Firms in an oligopoly market are still a “price maker” like the monopolist and can set their own prices and output to maximize profit. Although unlike a pure monopoly which has no rivals in an oligopoly the firm must take into consideration the reaction of its rivals in the market when planning to change its price, if it sets it higher it is not able to sell if it sets it lower then there is fear of undercutting. Hence, the oligopolistic markets are characterized by “strategic behavior and mutual interdependence”. Even in an oligopoly, firms face pressure on their market power position due to international trade. If due to international trade the number of firms grows larger than according to Bernheim and Winston (2014), “As the number of firms in a Cournot oligopoly grows larger the price falls, approaching marginal cost when the number grows very large.” (703).

**Market Power in Monopolistic Competition.** As we can see that opening up of trade can completely change the market structure the firm operates in. As trade liberalization occurs more and more firms will enter the market if there is an incentive to do so. More firms lead to the market structure changing to one of monopolistic competition, which is characterized by further limited market power and onwards to pure competition with zero profit in the long-run. One of the most important of analysis of monopolistic competition was conducted by Edward Chamberlain and expanded upon by Paul Krugman a Nobel Laureate.

Pugel, provides an explanation of Krugman “monopolistic competition describes an industry with three characteristics that include “product differentiation, internal economies of

scale and easy entry and exit.” (96). It is evident that international trade can make the firm focus its recourses towards product differentiation to maintain its market power, although the firm can realize internal economies of scale the market structure is still one which allows easy entry and exit.

### **Effects of International Trade and Policy on Market Power and Market Structures.**

As introduced earlier the opening of international trade can have a drastic effect on a firm’s market power. Pugel provides us with an excellent case study that uses Ford as an example of a pure monopoly that in turn ends up into a pure competition with close to zero profits in the long run and this is termed as, “From No Trade to Free Trade”, Asprilla (et.al) provides evidence of changes in market power and structures through a study of bilateral exchange rate shocks, Devereux and Lee (2001) discuss both the gains and losses on international trade and a resulting increase or reduction of market power and Krugman (1994) uses Bhagwati’s model to determine the effects of protectionism and market power.

**Trade Policy and Market Power: Firm-Level Evidence.** Asprilla (et.al) provide a novel approach to the argument that competition is affected by trade. Aware of the complication that arise when measuring market power, oligopoly and game theory, “We identify market power by observing how exporting firms price discriminate across markets in reaction to variations in bilateral exchange rates.” (p. 1). Their findings conclude that, “More importantly we provide robust evidence trade policy deeply affects market structure. In accordance with theory and intuition, exporters faced with tariffs on their destination markets to significantly less PTM, revealing a loss of market power consistent with rent-shifting effects.” (p. 24). (See Appendix III for technical data). Hence, the study proves to be an excellent example that shows that trade policy can significantly affect market power depending on what policy instruments are used.

**Gains, International Trade and Market Power.** The evidence of domestic market power being present leads to two inefficiencies. Devereux and Lee (2001), “First, the excess of price over marginal cost will bias down the steady-state capital stock; ... Second, because firms interact strategically with one another, the industry markup will depend on the size of the market leading to high-entry”. This generates an inefficient level of entry into each industry.” (P. 240). Since imperfect competition causes inefficiency as well as additional welfare loss, the government may find it prudent to open its border to international trade to reduce the level of inefficiency and increase welfare. The model shows that international trade can induce welfare gains by facilitating international competition. (See Appendix II for technical data). The analysis is built on the premise that international trade reduces the market power of domestic firm. According to Devereux and Lee (2001), “Markusen (1981), trade tends to increase competition and reduce monopoly price-setting in economies where domestic firms have monopoly power” (p.239).

**Protection and Domestic Market Power.** From the many literature reviews and studies done on the subject matter, many economists have concluded that international trade decreases market power of domestic firms and that protection increases the market power of firms. The Bhagwati Model reviewed by Krugman (1994) examines this relationship using a graphical analysis. (See Appendix I for the graph and technical descriptions). The Bhagwati Model shows that the monopolist cannot charge a price higher than the world price. Hence, the profit maximizing strategy for the monopolist is to set the marginal cost equal to the world price. In this case the monopolist has no market power. Furthermore, the monopolist can exercise its market power if a quota is imposed but not when a tariff is imposed.



## Discussion

### Scope of the Study.

The scope of the study although not exhaustive covers sufficient ground to give us a grasp of the effects of international trade on market power. There is a review of the market power positions in different market structures and we follow our intuition to the logical conclusion that as a country opens itself to international trade, it becomes harder and harder for the monopolist to hold on to its market power. Furthermore, three independent studies provide us with the same conclusion using different methods. Aprilla (et.al) provides an analysis of market power through bilateral exchange rate shocks. Devereux and Lee (2001) measure the gains in welfare occurring from international trade and reduction in market power and Kruger (1994), uses Bhagwati's model to show the limitation that the monopolist faces in changing price levels and the effects on market power of tariffs and quotas.

### International Trade, Strategic Management and Business and Public Policy.

There is considerable evidence to the fact that a firm's market power is diminished due to international trade. Since, maintaining a position on market power is a strong strategic focus, a firm who has held a domestic monopoly can use its resources to lobby for protectionism. If such lobbying is successful we may see measures such as tariffs which limit the imports and at the same time provide the government with revenue albeit inefficiently. In most cases the government favors a position that limits inefficiency and promotes international trade, but there are many examples where protectionism has been in place for a long period of time and imperfect competition exists. Pugel illustrates in a case study as to how sugar prices in the US are twice as much as that of world prices even though by letting the price equalize would only displace a limited amount of people in the US who could easily transition to other industries but

may lead to the increase of aggregate surplus on an international level. Although the country may consider the protection of sugar production as a strategic objective regarding self-sufficiency and public interest.

### **Conclusion**

We examine how international trade and policy diminish a firm's ability to retain its market power and bring about change in market structures themselves. There is also evidence to support the claim that the government may find it advantageous both to intervene to increase welfare either through protectionism or opening to international trade. Therefore, it would be advisable to conduct studies aimed in the direction of strategic management, international trade and business policy. Such studies may also determine how the strategic management focus of the firm changes and if sustainability of the business is possible in the long run. The advent of such studies and the data gathered will ensure better decision making both on the firm level, national level and in the international community. Macroeconomic policy coordination is prevalent in maintaining international EU economies as Pugel has introduced, hence the effects of these results if monitored for welfare and international trade may also provide additional insights on market power, international trade policy and strategic management.

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## Appendix I.

## Bhagwati's Model from Krugman (1994) – Rethinking International Trade.

Fig 14.3

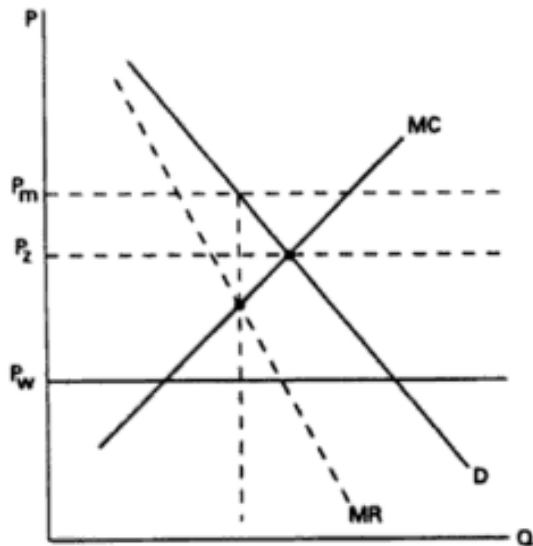


Figure D is domestic demand curve facing the monopolist. MC the monopolist's marginal cost curve.  $P_w$  is the world price, namely, the price at which imports are supplied to the domestic market.  $P_z$  is the price that it would obtain if all domestic demand were supplied by monopolist, but the monopolist were to behave as a price taker.  $P_m$  is the price the monopolist would charge if there were no import competition.

## Appendix II.

## Dynamic Gains from International Trade with Imperfect Competition and Market Power.

Devereux and Lee (2001)

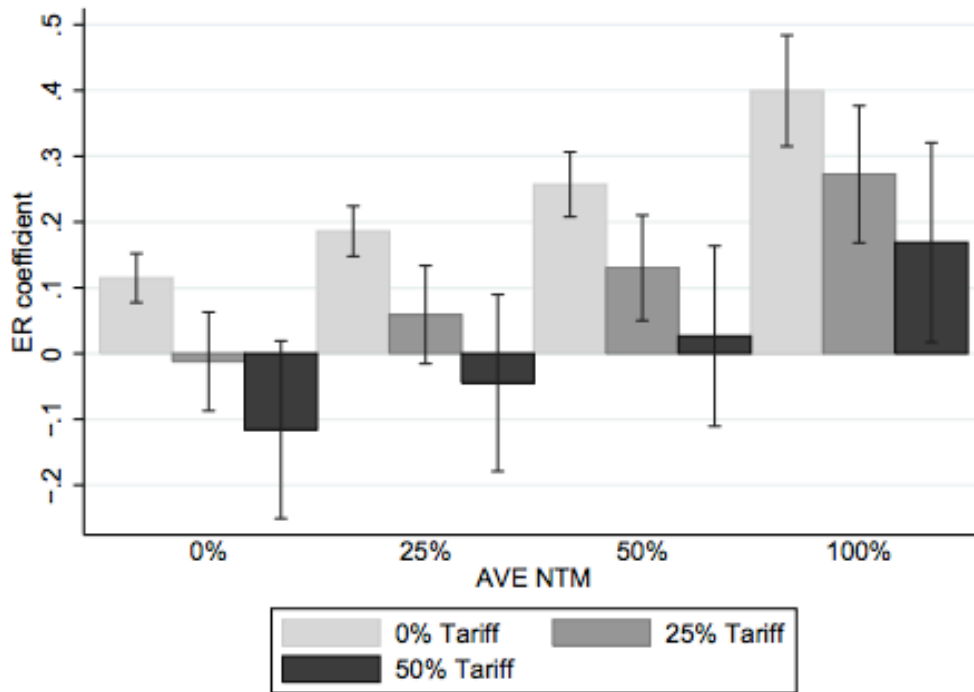
Table 1. Steady-State Welfare Gains from Trade

	Firm entry, $N$	Markup, $\mu$	Percentage increase in $K$	Percentage welfare gain (variety, efficiency)
<b>A. <math>M</math> (<math>\lambda = 8, g_s = 1.25</math>)</b>				
2	10 (11)	1.2030 (1.2571)	20.97	6.44 (55, 45)
5	9 (11)	1.1688 (1.2571)	48.19	14.33 (58, 42)
8	9 (11)	1.1590 (1.2571)	65.28	18.62 (59, 41)
17	9 (11)	1.1504 (1.2571)	94.40	25.54 (60, 40)
20	9 (11)	1.1492 (1.2571)	101.06	27.06 (60, 40)
<b>B. <math>g_1/G</math> (<math>\lambda = 8, M = 2</math>)</b>				
10%	2 (3)	1.2030 (1.7143)	163.23	34.24 (30, 70)
20%	4 (5)	1.2030 (1.4286)	77.16	19.02 (39, 61)
30%	6 (7)	1.2030 (1.3333)	46.98	12.73 (46, 54)
40%	8 (9)	1.2030 (1.2857)	31.07	9.01 (51, 49)
50%	11 (10)	1.2030 (1.2571)	20.97	6.44 (55, 45)
60%	12 (13)	1.2030 (1.2381)	13.85	4.51 (59, 41)
70%	14 (15)	1.2030 (1.2245)	8.48	2.97 (65, 35)
80%	16 (16)	1.2030 (1.2191)	7.30	2.02 (64, 36)
90%	18 (18)	1.2030 (1.2101)	3.30	0.99 (79, 21)
<b>C. <math>\lambda</math> (<math>g_s = 1.25, M = 2</math>)</b>				
4	20 (21)	1.3659 (1.4035)	47.52	14.45 (58, 42)
8	10 (11)	1.2030 (1.2571)	20.97	6.44 (55, 45)
16	7 (8)	1.1487 (1.2191)	17.29	4.48 (36, 64)
30	6 (8)	1.1285 (1.1823)	8.82	3.03 (28, 72)
$\infty$	5 (7)	1.1111 (1.1667)	7.28	2.41 (0, 100)

## Appendix III.

Trade Policy and Market Power: Firm Level Evidence. Asprilla, Berman, Cadot and Jaud (2016).

Figure 1: Trade policy and exchange rate pass-through



Exchange-rate pass-through (ERPT) is a measure of how responsive international prices are to changes in the exchange rates.

The results are shown in Figure 1. In market with low-impact NTMs (first three bars on the left), exchange rate pass-through is almost complete, except in tariff-free markets where it declines slightly to around 90% ( $1 - 0.1$ ). Pass-through becomes strongly incomplete and shrinks to as low as 60% ( $1 - 0.4$ ) in markets with zero tariffs but high-impact NTMs (last three bars on the right).