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ABSTRACT

*This paper addresses the effect of anticompetitive market distortions (ACMDs) on global markets using case studies which show how measures such as a range of behind the border barriers and market distortions affect the efficiency of markets and impose welfare losses on these markets. Here, we mainly focus on how such measures may influence costs for distorted producers compared to non-distorted producers and how these cost differences affect market access, as well as consumer welfare within markets. This paper builds on "Enhancing Welfare by Attacking Anticompetitive Market Distortions"1 * and lays out key issues describing global markets in a largely theoretical and partly empirical way thus allowing us to elaborate the key theme of ACMDs for future research. The paper will also evaluate the impact of ACMDs on welfare in the country itself.*

I. Introduction

1. In the last sixty years, there has been a marked decrease in trade barriers between countries as measured in the form of tariffs and certain non-tariff barriers to trade. It is only in the last fifteen to twenty years that this architecture has been marked by domestic competition agencies whose function is to promote competitive markets.

2. The last twenty years or so have also given us a very interesting experiment which has played itself out in a number of countries. After the fall of the Berlin Wall, many commentators assumed that the history of the 20th century which was seen as a Manichaean struggle between capitalism and communism, was now over. History had ended,[1] and capitalism had won. However, there was an implicit assumption in the manner in which the transitions from communism to markets was handled. Nor was this assumption confined only to the former Soviet countries. Countries emerging from import substitution such as Latin America and India went through the same process and had the same economic underpinnings. The assumption was that the elimination of border and trade barriers which shielded these economies from competition would lead automatically to competition inside the border. However, far from leading to greater competition, the gains of trade were merely pocketed by the economic gatekeepers in their economies (mid-level government bureaucrats in the former Soviet countries and rent-seekers in Latin America). The entrenched elites grew even more entrenched and competition became less rather than more. With this new power elites secured for themselves regulatory protection where once they sheltered behind high tariff walls. This protection was generally distortionary and as well as having a trade effect on new market entry also had a negative effect on competition in the market, imposing welfare losses that contracted the economy.

3. The assumption that reduced trade barriers would automatically increase competition proved flawed and overly simplistic since the economic gatekeepers were able to pocket the gains from trade and continue to distort the market. Despite that, trade liberalization has made considerable progress in the last twenty years, as can be seen from *figure 1*. But behind the border trade barriers and domestic distortions have recently come to the forefront of the trade debate as global supply chain inefficiencies continue to disrupt global production and distribution, and as ACMDs also act as trade barriers. Therefore, new research must endeavor to determine how lowered ACMDs can increase welfare, increase trade flow, streamline the supply chain, and overcome the power of entrenched elites profiting off distorted trade. Coming up with a metric that shows what the losses to economies are as a result of ACMDs would help policymakers overcome their domestic constituencies who benefit from them at the expense of consumers.

* A. F. Abbott and S. A. Singham, Enhancing Welfare by Attacking Anticompetitive Market Distortions (December 1, 2011), Concurrences no 4-2011.

1 F. Fukuyama, *The End of History and the Last Man*, New York: Free Press, 1992. Print.

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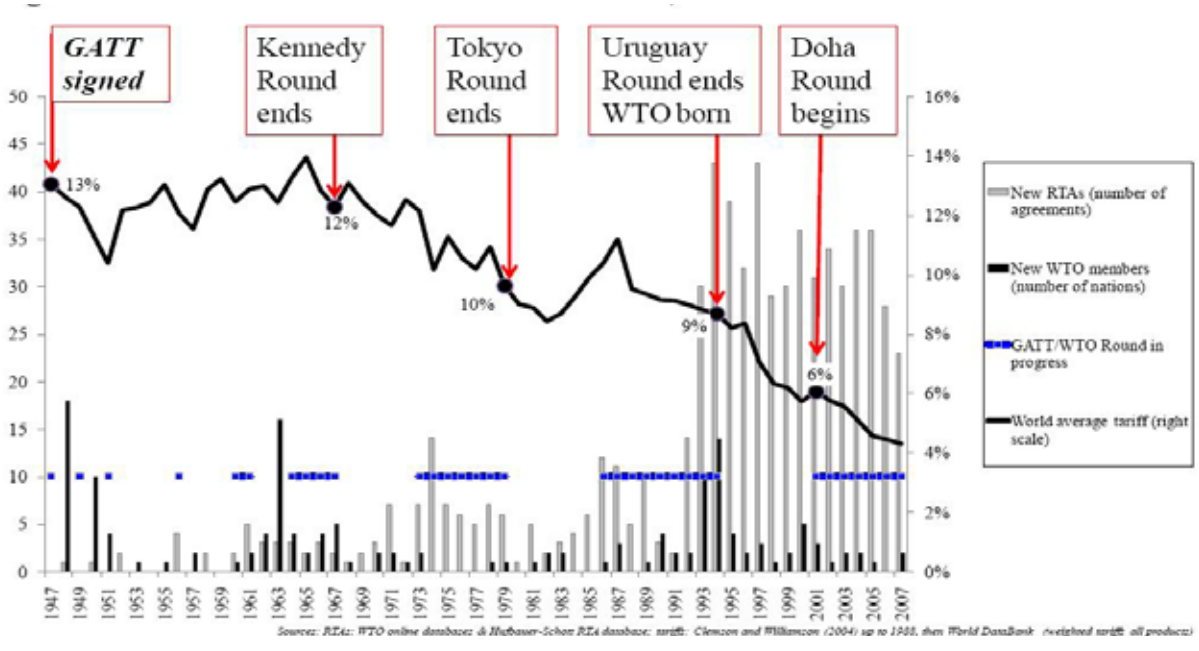
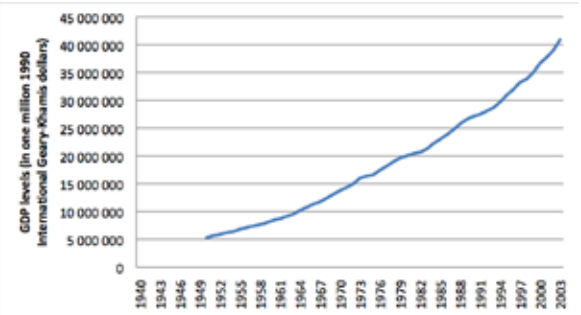
4. Since 1947, the General Agreement on Tariffs and Trade (GATT) Member States—now totaling 159 countries—have reduced tariffs and other non-tariff barriers. The World Trade Organization (WTO) grew out of the GATT's Uruguay Round from 1986 to 1994, expanding the definition of trade liberalization beyond solely trade in physical goods to also include trade in both intellectual property and services. By reducing import tariffs, import quotas, import licenses, and other border measures, barriers to exports are reduced greatly increasing global trade. Countries can also allow competitive forces to lower price and increase productivity, which raises total efficiency as well as producer surplus, thereby encouraging production and further competition. *Figure 1* shows the decrease in the world average tariff rate since 1947 (on the right vertical axis) as well as the number of new WTO members, new Regional Trade Agreements (RTAs) and when GATT rounds were in progress.[2] This highlights the impact that various trade initiatives have had in reducing global tariffs.

Figure 1. World average tariff rate and WTO membership over time



5. Global GDP has seen a rapid increase since 1947 as global trade expanded exponentially. *Figure 2*[3] demonstrates the rate at which GDP increased from 1950 to 2003—more than doubling in the first thirty years. The expansion of international trade and reduction of tariffs is directly tied to this increase in GDP; freer, more competitive trade encourages efficient production and increases both producer and consumer welfare.

Figure 2. World total GDP from 1950-2003



6. While tariff measures have been studied, the impact on regulatory distortions has not had the same degree of intense research. We have a good sense of the scale of the benefits of liberalization and the disadvantages of protection, but we do not have an equivalent sense of scale of the cost of distortion from a welfare standpoint. However, there are some specific country studies that shed some light on this. For example, in 2005, the Australian Productivity Commission examined the effects of reducing ACMDs on productivity and, ultimately, on overall GDP. The resulting reforms increased GDP by 7.5%—a conservative estimate, but one that solidifies the positive correlation between productivity and competition. These reductions in ACMDs led to drastically increased productivity, causing Australia to go from one of the least productive members of the OECD to one of the highest performers during the implementation of the Productivity Commission's reforms.[4] The Australian study looked at the benefits of competition, but did not inventory all distortions in

2 New Trade Rules for the Evolving World Economy, Conversable Economist (28 Dec. 2011, Web 21 Aug. 2014): http://conversableeconomist.blogspot.com.

3 New Trade Rules for the Evolving World Economy, 2011.

4 OECD (2014). Product Market Competition and Economic Performance in Australia, OECD Publishing: http://www.oecd-ilibrary.org/economics/product-market-competition-and-economic-performance-in-australia_018570574720.

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the Australian market and is therefore likely to be an underestimate.

7. In order to express welfare changes as a result of ACMDs in concrete numerical values, we will analyze a standard partial equilibrium model where the ACMD itself acts as an external shock and the reduction in consumer welfare occasioned by this shock is measured. The estimate would not need to be exact—it could be stated as a rough estimate, plus or minus a certain percentage (error tolerance). Such an approach could add credibility by recognizing imperfections in estimation and limitations on knowledge, while at the same time highlighting the real harm to domestic interests flowing from the ACMD. More generally, by highlighting the aggregate deleterious effects of ACMDs on the domestic public at large, broad adoption of this metric might marginally weaken *ex ante* private and public incentives to adopt new ACMDs in the first place.[5]

8. The International Competition Network just released Recommended Practices (RPs), its highest level of authority noting how competition agencies should engage in competition assessments of legislation and regulation based on the impact of such legislation and regulation on economic welfare.[6]

9. This paper is intended to fill this gap and contribute to the study of domestic ACMDs, both in terms of their welfare effects and their impact on trade. We identify distortions that have particularly impactful trade effects in the sugar and cotton sectors. These industries were chosen because the ACMDs that apply to them are extreme and clear. In the case of sugar, ACMDs have a very significant and easily definable trade effect which can be compared with their welfare effect.

10. Much has been written on the impact of trade barriers and distortions in the sugar and cotton sectors. For example, forty percent of global sugar production is sold in domestic markets at prices 50 to 400 percent higher than the world market price, which is itself reduced by overproduction caused by ACMDs.[7] In the United States, tariff-rate quotas and price supports are used to encourage domestic, uncompetitive sugar production over imported, inexpensive sugar. However, often the analysis of the impact of the trade barriers which assuredly exist in these sectors does not consider the equivalent or even more egregious impact of domestic market distortions in many countries. In the cotton sector, for example, much is made of the impact of US barriers on West African cotton farmers. However, little is written about the state-owned enterprise (SOE) as monopsony buyer and monopoly seller which puts the West African farmer in a classic price squeeze. Certainly if these domestic restrictions were removed, then the full impact of US barriers would be felt, but as long as they are in place, it is they and not the US barriers that create the primary problem for West African farmers.

11. In this paper, we will try to address the question of how distortions in domestic markets could be measured in robust economic terms.[8]

12. We focus on the impact of ACMDs in single product markets as another step toward analyzing the impact of ACMDs through the global supply chain. Without understanding the effect of distortions on a single market, it will not be possible to extend the analysis to the supply chain as a whole.

II. Distortions in single product markets

13. Many ACMDs not only adversely affect consumer welfare and other measures of economic welfare domestically, but also have an impact on trade.

14. We now classify distortions created by domestic competition related policy decisions by governments. It allows us to show the various ways such policies distort competition and thus negatively impact the efficiency of global supply chains. This section will also set the stage for delineating the dimensions of efficiency—consumer and producer welfare. This will be largely a theoretical, but very important, section with some anecdotal evidence to support the ideas and will be drawn from past research.[9,10,11] Broadly, we can classify domestic competition related distortions into six types. Each is listed and described below.

15. Type 1 distortions are government laws, regulations, or practices that eliminate competition completely. Examples might include a local content regulation that eliminates foreign production from competition, or a capital adequacy regulation set so high that some banks are forced to exit the market. This would represent a

5 A. F. Abbott and S. A. Singham, Enhancing Welfare by Attacking Anticompetitive Market Distortions (December 1, 2011), *Concurrences* n° 4-2011.

6 Recommended Practices on Competition Assessment, International Competition Network (1 April 2014): http://www.internationalcompetitionnetwork.org/uploads/library/doc978.pdf.

7 S. Gawali, Distortions in World Sugar Trade, *Economic and Political Weekly*, Vol. 38, No. 43 (Oct. 25-31, 2003), pp. 4513-4515.

8 These impacts become more complex when traced through the global supply chain. Subsequent research will attempt to describe and quantify the way in which ACMDs affect the efficiency of the global supply chain.

9 S. A. Singham, *General Theory of Trade and Competition: Trade Liberalisation and Competitive Markets*, London: Cameron May, 2007. Print.

10 S. A. Singham, Freeing the Global Market: How to Boost the Economy by Curbing Regulatory Distortions, Council on Foreign Relations. Council on Foreign Relations, 1 Oct. 2012, Web. 29 Aug. 2014.

11 A. F. Abbott and S. A. Singham, Enhancing Welfare by Attacking Anticompetitive Market Distortions (December 1, 2011). *Concurrences* n° 4-2011.

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monopoly or oligopoly situation, the demand curve would remain constant, supply would hence decrease. This distortion would have a large impact on the market as it blocks certain competitors entirely, giving complete access to others. An example of this would be a rule that states that banks must have a specific level of local currency reserves in order to operate in a market, or a rule that makes a particular technology illegal, such as a VOIP. Such a rule negates competition entirely by removing competitors such as VOIP companies from the market for the provision of telecom services This will have a direct impact on the number of competitors. One can therefore determine, based on a pre-distortion and a post-distortion analysis, the impact on competition of such a rule. By evaluating the producer and consumer surplus losses as well as the deadweight losses, we can estimate wealth destruction.

16. Type 2 distortions are government laws, regulations, or practices that lessen competition. These are laws, regulations or practices that make markets less competitive, but do not necessarily foreclose competitors from the market entirely. They simply elevate the costs of certain companies. However by elevating the cost curve, and moving the supply curve back up the demand curve, this leads to an increase in price and a reduction in output and a deadweight loss in the economy. Examples of these include distribution laws that increase costs for certain supplier (by imposing costs on termination of dealers), distortion creating tax measures, and price ceiling or floor measures. The effect would thus be a decrease in supply and an increase in price. This would still have a high impact, however slightly less than an entire market restriction. Examples of this might include local content or local working requirements that increase costs of firms, or capacity licensing rules. Since local content or local working requirements change the economic calculus of investors as they invest, and increase the costs of foreign investors disproportionately over the costs of local companies, they also have a significant impact on competition.

17. Type 2a distortions exist when the government imposes ACMDs that lower the costs of production in order to make the good more globally competitive. By driving down the cost of domestic production, producers in the distorted market can benefit. However, foreign producers cannot compete in the distorted market and also become less competitive internationally, which diminishes their overall welfare. Any situation in which the government artificially reduces the cost of capital—usually in the form of land, water, or electricity—thereby reducing the costs local producers encounter and giving them an advantage over foreign producers in both global and local markets.

18. Type 2b distortions are ACMDs imposed by the government that create barriers to entry and reduce international competition. This type of distortion would protect producers in the distorted economy while making it harder for foreign producers to export into that economy, reducing their welfare. Additionally, all consumers—both in and outside of the distorted economy—experience a reduction in their welfare. A common example of this kind of distortion includes occupational licensing, which prevents foreign countries from gaining market access.

19. Type 2c distortions are not necessarily trade-related but rather domestic ACMDs that artificially raise the cost of production, hindering global competitiveness of local producers. These producers experience a welfare loss, while foreign producers could potentially gain. Domestic consumers and global consumers tend to lose out. For example, any extreme health and safety requirement or environmental regulation would incur extra costs to local producers not faced by producers abroad.

20. Type 3 distortions are regulatory distortions that apply different rules to different firms. These are laws or regulations that are applied differently among firms, or regulatory exemptions given to some firms. Examples include exemptions to compliance rules for certain firms (usually small business exemptions) in the areas of health and safety, and environmental rules. A typical example of this would be the small business set asides and tax exemptions that act as a disincentive for firms to scale up. Small scale industry exemptions and preferences are especially prevalent in many countries such as India and the Philippines. By preventing the attainment of economies of scale, these distortions increase cost of supply and thus introduce distortions into downstream actors' activities as well as raise prices for consumers. Both have adverse supply chain effects. This type of intervention is especially bad for firms that compete in the international market. The distortion effects could be large in some industries. Many of these measures are introduced in an attempt to build up small businesses which is a laudable aim. However small businesses do not need these kinds of set asides, they need a legal, economic and regulatory environment which is not skewed towards incumbent companies.

21. Type 4 distortions are largely caused by state-owned enterprises (SOEs) favored by many countries. These distortions could be further subclassified into three subcategories (4a, 4b, and 4c) as below.

22. Type 4a distortions relate to government privileges in licensing. These rules relate to privileges in licensing for a SOE. The reason these are not all included in type 3 distortions above is that such a licensing privilege operates differently in the market when applied to an SOE as opposed to a private firm. Generally, because the SOE is often expected to maximize revenue (instead of profit as in the case of private firms), licensing privileges have much deeper anticompetitive effects than similar measures applied to private firms. Supply would decrease as competition is inhibited. This would have a larger impact on the market as the SOE is under different restrictions and is tied to the bodies creating the jurisdictions. An example of this would be where the government allows only the SOE postal company to deliver letter mail. The government effectively favors its own SOE by making any competing firms illegal. This forestalls the development of a competitive sector and curbs any innovation in the sector because innovation in the sector is unnecessary.

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23. Type 4b distortions relate to pricing practices of SOEs. As firms that seek to maximize revenue (not profit), SOEs are able to price at levels that, while not strictly predatory by antitrust standards, might lead to forcing competitor firms to exit the market because low pricing can be sustained over periods of time that would be impossible in the case of a private firm. This would lead to the supply increasing, therefore causing the price to decrease. This has the potential to have a large effect on the market; however, it depends on the variable scale of the impact to determine its effect. An example would be the practices of certain Chinese SOEs in global markets that are able to price at very low levels because of a network of subsidies and privileges which they receive from their government. Because the SOE is a revenue maximizer at best, and can sustain low pricing for long periods of time, it can knock out any private sector rivals using strategies that would fail a private sector firm (which would go bankrupt if it pursued such a strategy).

24. Type 4c distortions relate to abuse of regulatory process. By operating both as a regulated firm and as a regulator of the market, the SOE can distort the regulatory process. These regulatory advantages, like other ACMDs, can be quantified. Supply would increase in this scenario. The quantifiable justification could be made by analyzing the decrease in deadweight loss, as well as surplus losses. An example is where the state is both regulator and market participant in energy and telecom markets (see Dominican Republic electricity sector, Mexican telecom sectors, Romania Telecom.[12]

25. Type 5 distortions are largely due to action or inaction by competition agencies. Many countries have competition agencies but their effectiveness varies across countries and across time. These distortions can be subclassified into two subcategories.

26. Type 5a distortions refer to those created by actions of competition agencies, that is, acts of commission. While competition agencies' function is to ensure that markets are more competitive by reference to economic welfare, sometimes competition agencies' decisions actually impede the competitive process. This is particularly true when agencies favor competitors rather than the process of competition as occurred in the US in the 1930s and 1940s. Such activity is itself an ACMD even if it is produced by the very agency charged with tackling ACMDs. Supply would decrease due to the favoritism in the specific agency, thus prices would increase. This could have a large impact on the market as aiding competitors even for a short amount of time could lead to larger scale effects such as the competitive advantage to kill competitors. One example is the blocking of the Von's Grocery merger in the 1950s by the FTC despite the combined market share after merger being ten per cent. In China, many queried the economic basis for the blocking of the attempted acquisition by Coca Cola of the Huiyan Juice Company, once the Chinese blogosphere had lit up claiming this would be a foreign takeover of a favorite Chinese brand. These actions make companies pull their competitive punches, and leads to less competition. It therefore leads to output restriction and price increases.

27. Type 5b distortions are caused by inactions of competition agencies, that is, acts of omission. Sometimes, lack of enforcement of competition laws by a competition agency of an ongoing ACMD produced by private activity could itself be an ACMD, as government toleration of private anticompetitive activity. Supply would decrease as competition decreases and price thus increases. Depending on the scale of the private anticompetitive activity, this could have a medium to large scale distortion effect on the market. Many competition agencies do not intervene in government regulation that is anticompetitive because of political fears.

28. Type 6 distortions are caused by anticompetitive state aid or support. Many governments give firms subsidies and other subventions that may or may not be anticompetitive. The EU, for example, has provisions that prevent state aids that distort markets in Europe. There can of course be exemptions as there are in Europe for Services in the General Economic Interest (SGEI), although what precisely constitutes a SGEI must be carefully determined. One example is the aid given to the German Post Office, Deutsche Post in Europe.[13] The European Commission recently found that these state aids were illegal because they were anticompetitive and distorted the market. DP sought to use the defense that they were providing SGEI. The Commission found that the amounts of money transferred allegedly to cover SGEI were in fact greater than those needed to provide SGEI and the overage was a state aid. Ultimately on appeal, the Commission's original calculation of how to determine the overage as an illegal state aid survived (the general court had used a different methodology which was rejected by the Court of Appeals). The case is important as a matter of European law because it stands for the proposition that SGEI is not an automatic exemption from ordinary competitive forces.

29. Most ACMDs can be readily divided into these different categories. This division enables us to consider the impact of different classes of ACMDs on the market and make some useful generalizations about their overall impact on the market. By doing this, we will be in a better position to predict what similar contemplated legislation, regulation or practice might have in the future. Depending on the extent of which these anticompetitive actions regulate trade, the impact will thus be of a greater or less magnitude. Generally speaking, supply will decrease if state aids are provided.

12 R. Gönenç, M. Maher and G. Nicoletti, The Implementation and the Effects of Regulatory Reform: Past Experience and Current Issues, *Economic* Studies, OECD, 1 Jan. 2001, Web, 29 Aug. 2014: http://www.oecd.org/eco/reform/2731922.pdf.

13 *Deutsche Post* Cases, European Commission, 16 Apr. 2012, Web. 29 Aug. 2014: http://ec.europa.eu/competition/sectors/postal_services/cases.html.

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30. Having introduced the various ways domestic competition can be distorted, we move next to the model we will be using to analyze the case studies—sugar and cotton at the primary products level, as well as more contemporary examples.

III. The model

31. Section II described the types of domestic policies that may have a distortionary impact on a market. Each type of distortion either increases or decreases costs for local producers or for foreign producers looking to export to the distorted country. These changes in costs may reduce foreign producers' access to local markets and/or international markets, reduce local producers' ability to access foreign markets or supply the local market, or may increase access for either local or foreign producers to local and/or foreign markets. In this section we will detail three ways in which ACMDs affect costs of local or foreign producers and describe the impact this has on market access for other producers. The three ways ACMDs affect market access are:

– Reducing costs for local producers, which increases local producers' domestic and global market share while reducing foreign producers' share of local and global markets.

– Increasing costs and/or barriers to entry into local market for foreign producers, reducing local market share of foreign producers while increasing local market share of domestic producers.

– Increasing costs for local producers, which decrease local and global market shares of domestic producers and increases local and global market shares of foreign producers.

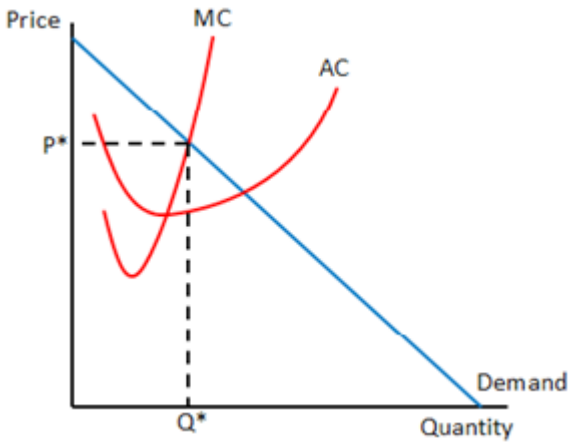
32. The description of type 2 distortions matches these market access effects directly. Also, by applying these effects to greater degrees or to specific firms, the other five types of ACMDs can be thought of in terms of affecting market access in one of these three ways. Type 1 distortions eliminate local market access by foreign firms, which is an extreme example of the second market access effect, or by particular local firms, which is an extreme example of the second market access effect applied only to some local firms. Type 3 distortions can have the same impact on market access as each of the three types of market access effects listed above, but type 3 distortions are applied to particular domestic firms instead of foreign firms or all local firms. Type 4 distortions are cost reductions that apply only to state-owned enterprises and, therefore, are similar to types 1 and 2 market access effects applied only to SOEs. Type 5 distortions will have the same three potential market access effects with the only difference being that competition agencies are the source of the change in costs for producers. Finally, type 6 distortions are equivalent to cost reductions for local producers and, therefore, have the same effect on market access as the first type of market access affect.

33. Next, we show how each of these market access effects plays out in a global context. We will model the general impact of changing costs on market access and describe each of the three market access effects as resulting from changes to the costs of all local producers or all foreign producers. Remember, however, that each of the three market access effects can be used to describe the impact of each type of ACMD simply by changing the source of the distortion, the target of the distortion, or both.

1. Reducing costs of local producers

34. Assume there are two firms—one domestic and one foreign—and that the firm with a cost disadvantage chooses to produce where price equals marginal cost (i.e. competitively). The assumption of competitive pricing by the disadvantaged firm enables us to show how welfare is affected when one firm has a competitive advantage over the other. In *figure 3A*, we illustrate how the competitive price and output are determined. Assume also that each firm has the same marginal costs, and that transaction costs are zero (no shipping costs, tariffs, etc.). Equilibrium price and output will be a function of marginal cost (note: in *figure 3A* we have illustrated price as being equal to marginal cost because it makes the illustration simpler and less cluttered. In reality, it is possible for price to be above marginal cost for various reasons. The illustrations would look different if we chose to illustrate price as being greater than marginal cost, but the overall point would be the same). Here, the marginal cost curve is equivalent to the supply curve and so equilibrium price and output are where the marginal cost curve intersects the demand curve. The average cost curve is also shown in *figure 3A*. It is important to note that the marginal cost curve always crosses the average cost curve at its minimum point.

Figure 3A. Firms have same marginal and average costs



35. *Figure 3B* shows the maximum and minimum prices for these marginal cost curves, average cost curves and demand curves. The minimum price refers to the price equal to the minimum average cost—which is also where marginal cost equals average costs. This is the minimum price for these firms because at this point profit will equal zero. As noted above, when firms are pricing at marginal

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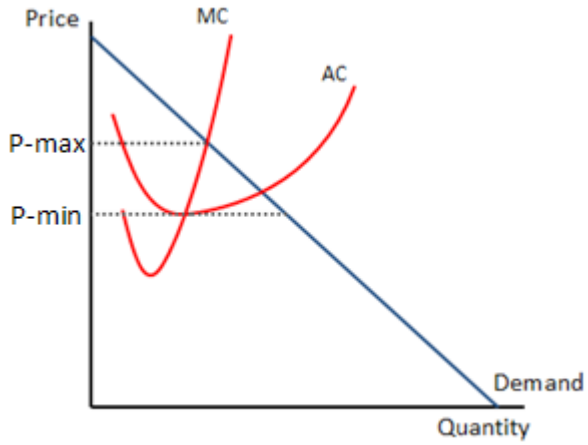
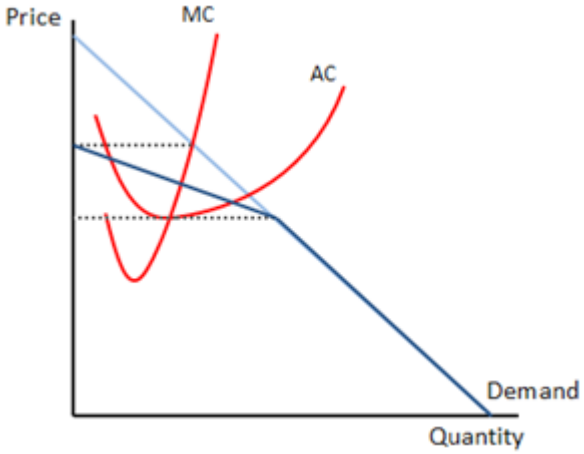
cost, the marginal cost curve is the supply curve. When price equals average cost, profits equal zero because price times quantity produced is total revenue, average costs times quantity produced is total costs and total revenue minus total costs equal profit. Therefore, the minimum price that could exist with these marginal and average cost curves is where price equals marginal costs equals average costs because any price below this would result in negative profit. The maximum price refers to the fact that, given these demand and marginal cost curves, the highest price we expect to see is where supply equals demand because this is a competitive market: pricing above marginal cost by one or both firms leaves demand uncaptured and gives producers an incentive to increase production at a lower price.

Figure 3B. Maximum & minimum price



36. In *figure 3C*, we begin to imagine what happens when the marginal costs of one firm are reduced. Imagine an ACMD is implemented which lowers costs for domestic producers. If the foreign firm's costs do not change, then their marginal and average cost curves will remain the same. We know from *figure 3B* what the maximum and minimum prices a firm with these costs will be. We also know that if another firm has lower costs it can charge less for the same product. Therefore, the high cost firm—the one with the original marginal and average cost curves—will only be able to compete in the market if the price the low cost firm charges is within the maximum-minimum range described in *figure 3B*. The faint blue portion of the demand curve in Panel C is part of the original demand curve, while the dark blue, kinked portion of the demand curve represents the residual demand curve available for the high cost firm. The residual demand curve of the high cost firm captures the potential price range for high cost producers and shows the quantity that would be produced by the high cost firm alone at each price.

Figure 3C.Potential residual demand for high cost firm



37. Figure 3D adds the marginal revenue curve for this residual demand curve. This curve is important because the domestic firm will have an advantage over the foreign firm because of the difference in costs, which means the foreign firm will have to react to what the domestic firm chooses to do. The domestic firm is aware of this dynamic and, therefore, makes its own output and pricing decision based on the fact that the foreign firm will respond to its output. *Figure 3E* adds the marginal and average cost curves for the domestic firm. Because the domestic firm has a competitive advantage over the foreign firm, it can make its output decision to maximize its profit given the fact that the foreign firm will respond. Therefore, the domestic firm will produce where its marginal cost is equal to the marginal revenue of the foreign firm's residual demand. In this way it is accounting for the foreign firm's response while making its own output decision. The price is determined by finding the price (along the residual demand curve) consumers are willing to pay for the output of the low cost firm. *Figure 3F* illustrates the output and price decision for the domestic firm.

Figure 3D. Marginal revenue for residual demand

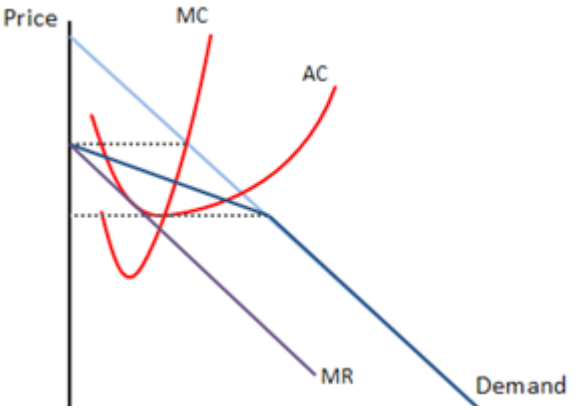


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Figure 3E. Marginal and average costs for high and low cost firms

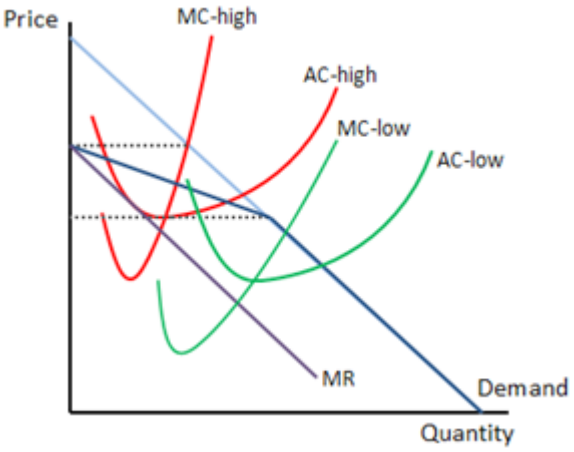
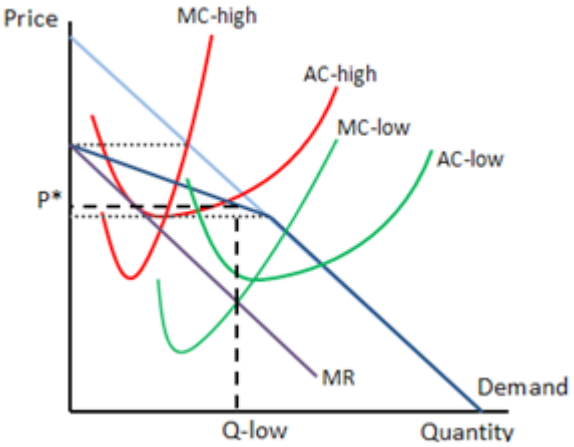
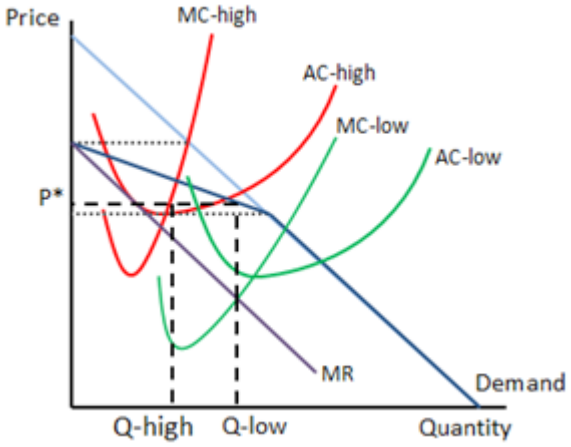


Figure 3F. Price and output by low cost firm



38. The foreign firm will price at the same point as the domestic firm because at a price higher than this, consumers will choose not to buy from the foreign firm (assuming efficient rationing: consumers with the greatest willingness to pay make purchases first, so anyone willing to pay more than the price the domestic firm is charging will have already purchased from the domestic firm), and at a lower price the foreign firm will have an incentive to raise its price. So, the foreign firm will charge the same price as the domestic firm and will produce the quantity where this price is equal to its marginal cost. This is illustrated in Figure 3G.

Figure 3G. Price and output by both firms



39. The domestic firm is maximizing its profits given the fact that the foreign firm will react to its output. It must be better off than it was when its costs were equal to the foreign firm's because it could choose to produce the same quantity of goods for the same price as it did originally, but chooses not to. The foreign firm is producing in response to the domestic firm and, compared to *figure 3A* where the firms had the same costs, it is producing fewer goods at a lower price. Clearly the foreign firm is worse off. Thus, a policy which reduces costs for one firm (or the firms within one country) compared to another firm (or firms within other countries) will give an advantage to the firm(s) with reduced costs and will harm the firm(s) with no change in costs. In the description of the process, we assumed that the high cost firm would produce where price equals marginal cost. In reality, two firms may compete differently (i.e. more strategically), but in the case of global supply chains, there are often many competitive firms within each country as well as many competing countries. Therefore, the above description and conclusions will apply to the global supply chain because, all else equal, the firms and countries not benefitting from an ACMD will behave competitively. Also, the presentation of competition as between domestic and foreign firms allows us to describe the welfare effects of ACMDs without having to describe strategic behavior between individual firms. Forthcoming empirical analysis will account for strategic behavior.

40. We did not specify which consumers were represented by the demand curve in *figure 3*. However, the description can be applied to domestic consumers, global consumers, or both. We assumed that the only difference in costs between the domestic and foreign producers was the difference caused by the ACMD, so the domestic producer has a cost advantage whether it is producing for local consumption or foreign consumption, which means it can lower price for local consumers and foreign consumers. This means that all consumers are better off because they can all purchase more of the goods for a lower price.

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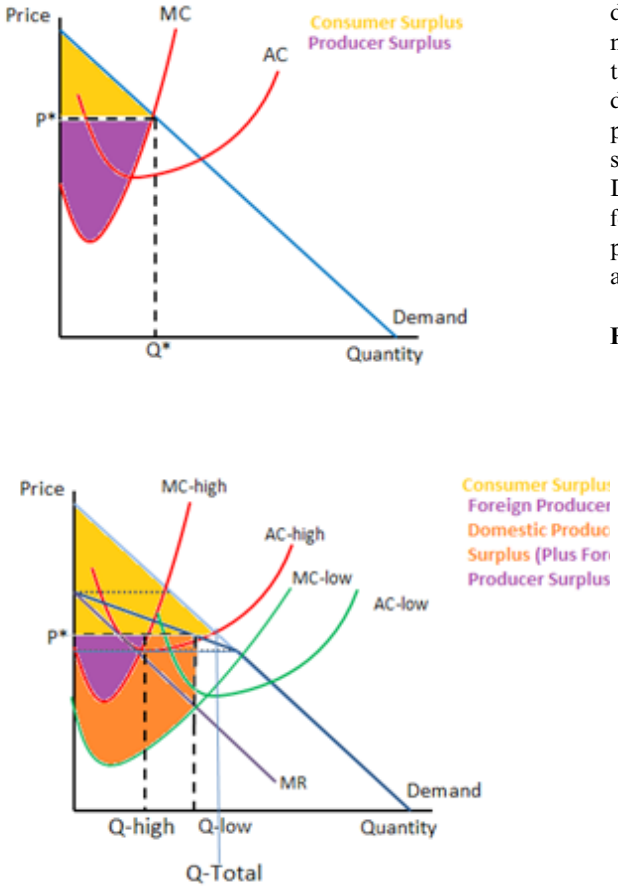
41. Our primary concern with ACMDs is the total effect on welfare. We use the sum of consumer and producer surplus (the area under the demand curve but above price and the area below the price but above the supply curve, respectively) to measure total social welfare. Each ACMD has an effect on social welfare through its effect on market equilibrium. *Figure 3H* shows the effect on consumer and producer surplus from a reduction in production costs for domestic firms. The yellow area is consumer surplus, the purple area initially represents producer surplus for both firms and then represents producer surplus for foreign firms, and the total area of the orange and purple areas represents producer surplus for domestic firms. In the short run, consumer surplus expands, foreign producer surplus shrinks, and domestic producer surplus expands. In the long run, there is an incentive for foreign policymakers to implement their own ACMDs and there may be an incentive for domestic firms to practice predatory pricing in an attempt to monopolize the market. These incentives will reduce consumer surplus in the long run because they will move the market away from the optimal competitive equilibrium.

Figure 3H. Consumer and producer surplus before and after ACMD (Costs Decrease)



2. Increasing local costs or barriers to entry for foreign producers

42. If we amend the description above slightly, we can capture the effect increasing local costs or barriers of entry for foreign firms on market access. Now, the demand curve represented in the diagram refers only to domestic consumers. The high cost curves still represent the foreign producer and the low cost curves still represent the domestic producer. The change in costs now happens slightly differently: The cost curves of the domestic producer do not change, while the cost curves of the foreign producer increase.

43. Figure 4 shows this process but skips the details describing the residual demand curve and the movements of the cost curves because the process is analogous to the one presented in *figure 3*. *Figure 4A* shows the initial equilibrium; *figure 4B* shows the difference in costs between the domestic and foreign producers, as well as the output and pricing decision of the domestic producer; and *figure 4C* shows the output and pricing decision of both the domestic and foreign producers. Here, the final impact of the shifting curves is the same: The domestic producer has market power while the foreign producer must react to the pricing and output decision of the domestic producer. In the domestic market, the foreign producer has lost market share due to the imposition of greater costs and/or trade barriers. The domestic producer is now producing at a quantity where price is above its marginal costs, which indicates it has some variety of market power and is maximizing profits. Domestic consumers are now paying a higher price for a reduced quantity. The end result is that domestic producers are better off, foreign producers are worse off, and domestic consumers are worse off.

Figure 4A. Firms have same costs

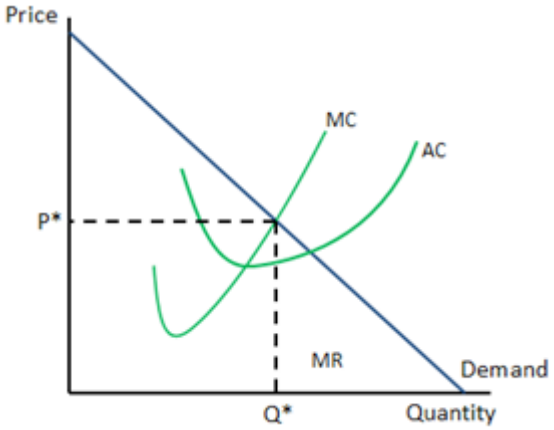


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Figure 4B. Price and output by low cost firm

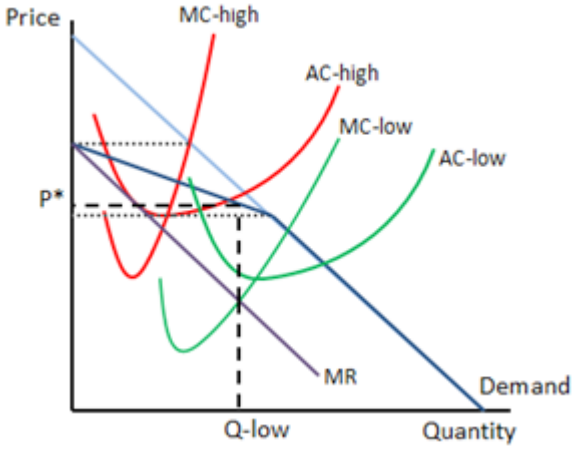
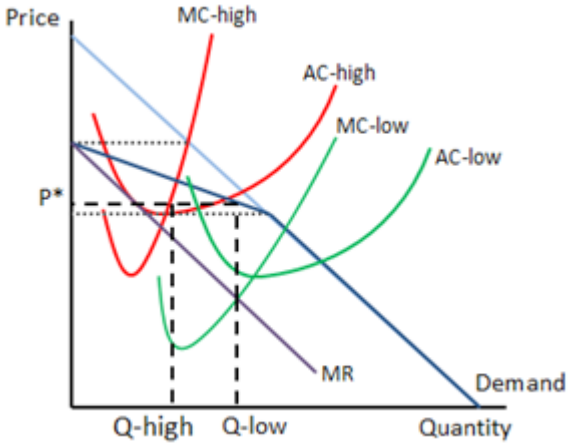


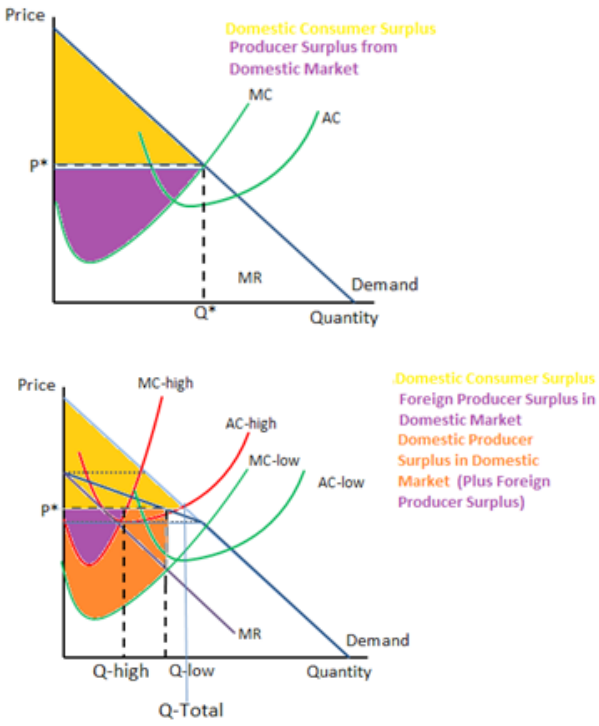
Figure 4C. Price and output by both firms



44. This change is only true for the domestic market. If costs are only higher for the goods foreign producers are attempting to sell in the domestic market (that is, the distortion in the domestic market does not affect the production costs of foreign or domestic producers in global markets), then the global market will be unaffected. Domestic producers will sell the same amount globally as they did before the ACMD was implemented, foreign producers will sell the same amount globally as they did before the ACMD was implemented, and global consumers will purchase the same amount at the same price as they did before the ACMD was implemented. Overall, domestic producers are better off, domestic consumers and foreign producers are worse off, and consumers outside the domestic market are unaffected.

45. Figure 4D shows the change in producer surplus due to implementation of the ACMD. In this case, consumer surplus falls in the short run. Foreign producer surplus also falls in the short run. Domestic producers benefit in the short run. In the long run, domestic consumers and producers will suffer even more due to the anticompetitive incentives (counteracting ACMDs, monopolization attempts, etc.) that generated. The change in welfare is measurable and determining its relative value will be one of the goals of future research.

Figure 4D. Consumer and producer surplus before and after ACMD (Costs Increase)



3. Increasing domestic producer costs

46. If an ACMD increases costs for domestic producers, then the graphical representation will be identical to *figure 4* except the high cost producer will be the domestic producer, the low cost producer will be the foreign producer, and the demand curve will represent domestic demand, global demand, or both. Domestic producers will lose market share locally and globally while the foreign producer will gain in both markets. The price consumers pay will increase and the quantity consumed will decrease. The result here is domestic producers will be worse off, all consumers will be worse off, and foreign producers will be better off.

47. The three general cost changes and resulting market effects presented above were described in terms of one domestic producer and one foreign producer. It was assumed that each producer had enough market share to influence price and that the producer with the highest costs reacted to the pricing and output decision of the low cost producer. This model can also describe the case where there are many identical domestic producers and many identical foreign producers. The results would be the same. In future research, we will reexamine the model in terms of heterogeneous domestic and/or foreign producers.

48. The three general cost changes and resulting market effects described above can also be extended to describe the case where costs are lowered or raised by so much that firms are forced out of the market or prevented from entering. The result is greater gains for the winners and greater losses for the losers of given cost changes. The model

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can also be changed to only affect certain domestic producers, which will change the results presented above for domestic producers to be the same for these particular firms while the other domestic producers will be affected the same way as foreign firms were here.

49. The degree to which producers and consumers benefit or are harmed by ACMDs depends on the magnitude of the cost changes, the amount by which trade is restricted, and the response by other policymakers to ACMDs in other countries. To capture the true cost of ACMDs, we think of the effect of ACMDs in terms of welfare. Thus, analyzing the effect of ACMDs on supply and demand in a market allows us to think about the effect of ACMDs on welfare. Next, we discuss some real world examples of ACMDs and the effect of these distortions on producer and consumer welfare both within the distorted country and abroad.

IV. ACMDs in sugar, cotton, and other markets

50. We have analyzed the sugar and cotton cases in order to evaluate the impact of barriers of various sorts on the global market. Some of these barriers are classified as ACMDs, and some are more conventional trade barriers. Our focus is on those barriers that are ACMDs.

1. Sugar

51. We have looked at European sugar production to illustrate these themes. The data on European sugar shows that the imposition of the CAP sugar program contained the following key elements:

– production levies;

– export subsidies;

– tariffs and quotas.

52. Production levies and quotas were imposed on sugar processors rather than farmers, so sugar processors had to bear the costs of levies and allocation requirements of quotas. Farmers enjoyed relatively higher incomes due to the fact that they did not have to share this burden with processors. Production quotas stipulated that sugar satisfying domestic consumption (82% of allocated sugar) fell under quota A, a buffer for unexpected production variation (18 % of allocated sugar) fell under quota B and was allowed to be exported, while any amount of sugar exceeding A and B fell under quota C. This C sugar had to be sold on the world market without any export benefits, while only A and B sugar could be sold within the European Union.[14]

53. Export subsidies based on the minimum intervention price set by the European Commission were provided for sugar exporters. The Commission would pay farmers the difference between the minimum intervention price and the world price for any sugar that was within the production quota and was exported. These export refunds were paid for by the production levies mentioned above. A constant levy would be placed on the intervention price of A and B sugar and then a variable levy of up to 37.5% of the intervention price could be added in addition to the basic levy to cover the cost of refunds.[15] The fact that exports were subsidized and the production levies were placed on processing encouraged the over-production of sugar by farmers.

54. In addition, imports of foreign sugar were restricted. The European Community set a minimum import price equal to the sum of the intervention price plus 5%, the storage levy, and transportation costs from the area of greatest sugar surplus to the area of the greatest deficit.[16] A variable import levy equal to the difference between the costs of insurance and freight and this minimum import price was also charged. Access to European markets by foreign competitors was then further restricted by preferential import agreements made with colonies, which also were not required to pay the import levy. These measures eliminated a great deal of foreign competition in the European sugar market.

55. The CAP sugar program greatly reduced competition in the European sugar market, subsidized exports, and protected incomes of sugar farmers. All of these things combined to encourage greater sugar production by farmers. However, the fact that sugar processors had to pay a production levy and had the additional burden of allocating sugar appropriately caused sugar prices to rise. Sugar farmers benefitted from the rising prices, but processors were only charging higher prices to cover costs and consumers were forced to pay more for sugar. So, processors and consumers were harmed. The lack of foreign competition allowed these high prices to persist. Also, the sugar being produced in Europe came from sugar beet, which is itself more expensive to produce than the cane sugar that could have been imported.

56. Between 1977 and 1979, these individual elements had a very significant distortionary effect. The data shows that these distortions led to a sharp increase in production, exports and domestic price, while demand remained constant on average (see *figure 5*). Typically, an increase in production combined with constant demand is accompanied by a fall in price, but the opposite happened here. This implies there is some sort of distortion affecting the behavior of the market. The distortion may stem from the 1977 enforcement of isoglucose quotas, which reduced the availability of sugar substitutes.[17] With fewer

14 A. Elbehri, J. Umstaetter and D. Kelch, *The EU Sugar Policy Regime and Implications of Reform*, ERR-59 (Washington, D.C.: U.S. Dept. of Agr., Econ. Res. Serv., 2008).

15 Elbehri, Umstaetter and Kelch, 2008.

16 M. Van Der Linde, V. Minne, A. Wooning and F. Van Der Zee. *Evaluation of the Common Organization of the Markets in the Sugar Sector* (Rotterdam: Netherlands Economic Institute, 2000).

17 Elbehri, Umstaetter, and Kelch, 2008.

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substitutes, demand for sugar should increase and price should increase as well. Price does increase. The lack of demand response may be caused by the already inflated sugar price increasing further, causing quantity demanded to remain unchanged because consumers cannot afford to increase consumption at these very inflated prices.

57. Figure 5 and *figure 6* show that European sugar production and exports remain fairly constant until they drop sharply in the mid-2000s. This sudden drop in production, demand, and exports reflects the impact of the *Brazil WTO case* against the EU that led to the elimination of C sugar (C sugar was the sugar that benefited from the export subsidy and therefore was "dumped" onto world markets at artificially low prices). The case outlawed the export subsidy and therefore cut the amount of C sugar produced to zero. This caused a reduction in exports and production, but no immediate, significant reduction in price. This shows the impact of a reduction in ACMDs on output effects (see *figure 6*). The excess production in Europe can be seen in the production curves, and caused, until the elimination of C sugar, a sharp drop in the global sugar price which damaged sugar farmers in developing countries in particular.

Figure 5. EU sugar production, price, imports, exports and demand from 1960-2011: Imposition of CAP sugar program, 1977

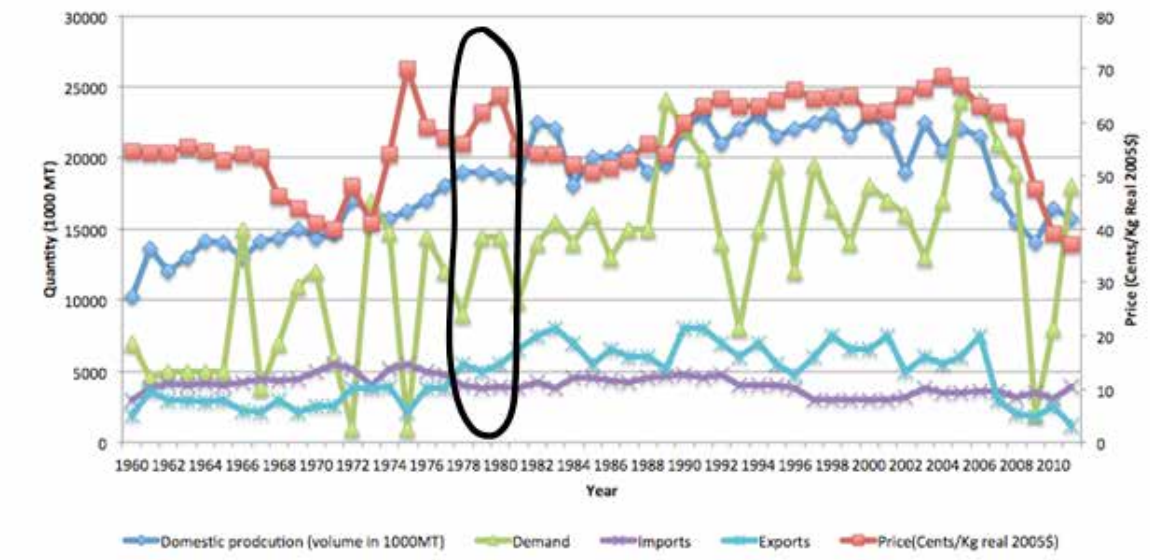
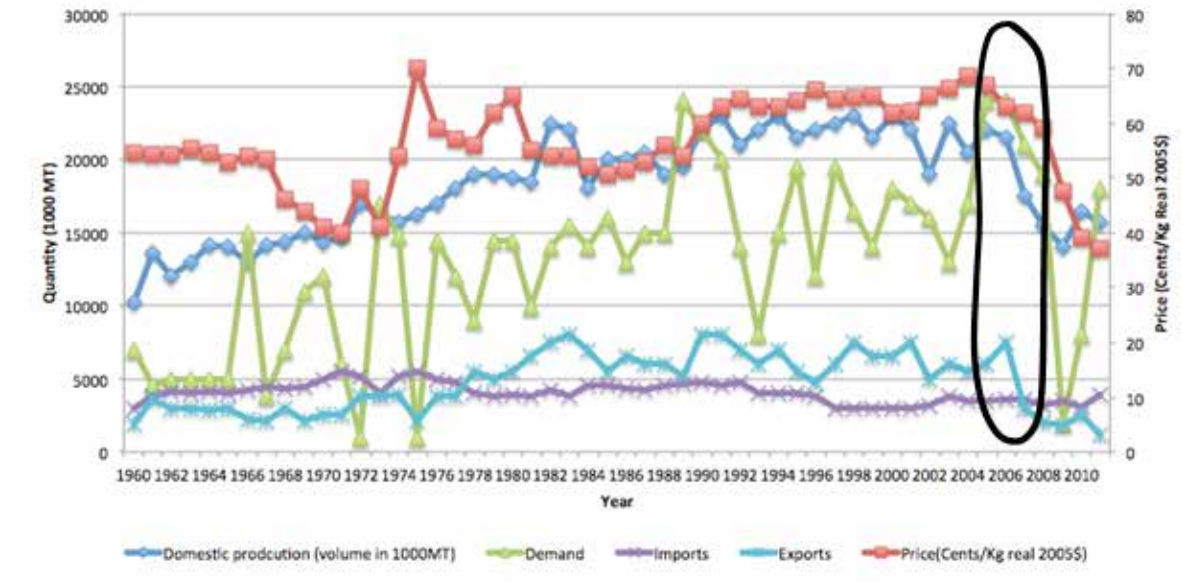


Figure 6. EU sugar production, price, imports, exports and demand from 1960-2011: Elimination of CAP sugar program, 2004



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2. Cotton

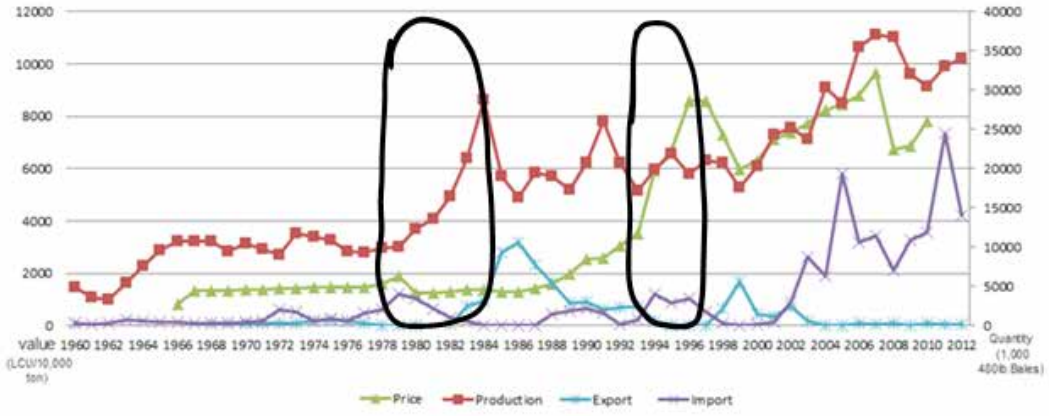
58. In the case of cotton, we have looked specifically at Chinese cotton production over a 52-year period. *Figure 7* presents the price, production, import, and export of Chinese cotton. The first anomalous feature to notice in *figure 8* is the stability of price during the sharp increase in production that began in the late 1970s and continued through the mid-1980s. Production more than doubles during this period yet price remains virtually constant. For this situation to occur either supply and demand have to shift by the same proportion or there has to be some sort of price fixing policy regime. In China's case, prices were not allowed to adjust by more than 15% until 1983 when the adjustment allowance was raised to 50%.[18] However, even at a 50% adjustment, level prices are not flexible in the face of large demand or supply shifts. So, the lack of price response to rising production and the existence of this pricing policy imply a price-fixing distortion.

59. Such a price-fixing distortion could serve one of two purposes: to maintain a high price to protect domestic cotton producers' profits or to maintain a low price to protect the presence of Chinese cotton in the global market. Import and export levels can provide a clue as to which of these goals the Chinese government was trying to accomplish. If higher prices and the protection of the domestic market were the goals, then exports should decrease and imports increase as Chinese cotton becomes relatively expensive on the global market. If low prices and the protection of the global presence of Chinese cotton were the goals, then exports should increase and imports should decrease. Clearly, the latter situation is the case in *figure 7*. So, it is possible that the Chinese government was maintaining a low cotton price in order to protect the presence of Chinese cotton in the global market. In fact, prices do not really begin to rise until the late 1980s and they rise sharply from about 1993 through about 1996. In 1993, cotton futures trading begins in China.[19] This added a market force to the price of cotton that did not exist before. Also, more preferential loan rates, advanced payments to cotton farmers, and increases in procurements price began in 1993.[20] All of these combined can explain the rise in price and production.

60. It is important to note again that the situation from the late 1970s to the mid-1980s described above could also occur if the Chinese cotton supply was being increased by government policies and, simultaneously, the demand for Chinese cotton was rising. The policy would increase production levels while the combination of rising production and demand would stabilize the price. Further analysis of this market and other potentially distorted markets need to be more carefully examined to separate supply and demand effects.

61. There are other possible anomalous events evident in *figure 7*, but these events are at least as difficult to differentiate between distortion and expected market behavior. For example, prices were allowed to fluctuate 4% and 6% around the standard sales price in 1996 and 1997,[21] respectively, while they were not allowed to do so previously. Prices and production both fell during this period. It may be the case that prices were kept artificially high prior to this time which allowed some inefficient cotton producers to remain in the market until price began to fall toward the true market price, forcing these inefficient players out of the market. Or the fall of price and production may reflect an exogenous fall in demand which also forced some producers out of the market. The first scenario clearly describes a domestic distortion while the second scenario simply describes a market at work. While it is unlikely the Chinese cotton market was a perfectly competitive market during this time, it is still possible that the movements in price and production were due to market forces and had nothing to do with the lessening of distortionary policies. Again, further work needs to be done to separate the effect of policy from the behavior of the market.

Figure 7. Chinese cotton production, price, import and export from 1960-2012



18 UNCTAD Infocomm, United Nations Conference on Trade and Development, 28 Feb. 2011.

19 Other Futures Markets: China, *Cotton Exporter's Guide*, International Trade Centre, 2007.

20 UNCTAD Infocomm, 2011.

21 UNCTAD Infocomm, 2011.

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3. Recent examples

62. A more contemporary example of an ACMD in China is its differential application of antitrust law. Today, China is investigating potential antitrust violations by foreign firms such as Microsoft, Intel, and others.[22] Meanwhile, the Chinese government seems to be giving exemptions to antitrust regulations for its own SOEs.[23] This is an example of a type 5A ACMD. Regulators tasked with promoting competitive behavior in China have a responsibility to bring antitrust cases against any violators of antitrust laws and the decision to give exemptions to some competitors and not others is an act of commission. Those not required to play by the rules have a competitive advantage over those forced to stay within the parameters of the law.

63. Looking elsewhere, we can see some obvious ACMDs in India. Currently, India has a grain procurement program which allows the government to stockpile grain. The government purchases grain from Indian producers and adds to the stockpile until a certain quantity is reached. Any grain that exceeds this limit is then sold onto the global market.[24] The procurement of grain itself is a type 2A ACMD because it guarantees grain producers a certain price for their output, which lowers the cost of production. Procurement is also a type 6 distortion because it essentially subsidizes the production of grain. Dumping onto the world market is also a type 2A distortion because it reduces the price of Indian Grain relative to the rest of the world, which has the same effect as reducing production costs.

64. India also distorts the pharmaceutical drug market by fixing price below market value for "essential" drugs. This reduces the incentive for research into newer, more efficacious, and more expensive drugs. Though consumers have a short run benefit of lower prices, in the long run the disincentive for innovation reduces consumer welfare by restricting access to higher quality products. This is an example of a type 2B distortion as it prevents foreign competitors from supplying the Indian market.

V. Welfare effects of ACMDs

65. Although the exact magnitude of the shifts in supply and demand from ACMDs in sugar and cotton cannot be determined until a more careful empirical analysis is made, we can use the model presented in Section IV to describe the general pattern of welfare effects we expect to see as a result of the distortions presented in Section V.

1. Sugar

66. The CAP sugar program had two major goals: prevent the import of sugar into Europe and encourage the export of European sugar around the world. In other words, the EU was trying to reduce costs of local producers while increasing costs and barriers to entry of foreign producers.

67. As we detailed in section III-1, the reduction of costs for local producers will make local producers better off, foreign producers worse off, and all consumers better off in a static sense. In section III-2 we showed that increasing costs and barriers to entry for foreign firms will make local producers better off, foreign firms worse off, make local consumers worse off, and all other consumers will be unaffected at best. Combined, these measures clearly benefit local producers, harm foreign producers, damage European consumers and leave non-European consumers better off, at least on a temporary basis.

68. We cannot definitively say, using only the data presented here, how local European consumers fared,[25] but we believe they are worse off because European producers were producing sugar using the more expensive sugar beet. So, any reduction in costs from export subsidies was likely eliminated by the fact that beet sugar is so much more expensive than cane sugar in the first place. The additional costs placed on cane sugar producers looking to export to Europe meant that European sugar producers did not have to compete very much with cane sugar producers.

2. Cotton

69. The goals of Chinese cotton policy are less clear than the European CAP sugar program, but they seem to be promoting exports in the early to mid-1980s and protecting domestic cotton producers in the early 1990s. The backdrop for this was also the anticipated elimination of the Multi-Fiber Agreement (textiles) which established production quotas for certain countries on global markets. Elimination of the MFA was expected to be a huge benefit for Chinese textiles. Export promotion would have been accomplished by reducing costs of producers and protection of domestic producers would have been accomplished by increasing costs and barriers to entry of foreign producers. The likelihood is that both of these motivations are occurring simultaneously but we will assume specific time periods when one or the other was the dominant force.

22 Trust busting in China. Unequal before the law? *The Economist*, 23 Aug 2014, Print.

23 China did appear to be on the verge of bringing an antitrust case against China Telecom, but nothing has come of it (source: X. Wang, *The Evolution of China's Anti-Monopoly Law*, Northampton, MA: Edward Elgar, 2014, Print).

24 Factbox - India's Food Stockpiling and WTO Stand-off, Reuters, p., 29 July 2014. Web. 04 Sept. 2014.

25 However, studies examining the impact of the CAP sugar program have determined that European consumers were, in fact, negatively impacted (source: D. G. Demekas, K. Bartholdy, S. Gupta, L. Lipschitz and T. Mayer, The Effects of the Common Agricultural Policy of the European Community: A Survey of the Literature, *Journal of Common Market Studies*, Vol. 27, No. 2, pp. 113-145).

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70. During the period of domestic producer cost reduction, under a static analysis all consumers were better off because cotton was being sold in China and around the world for a reduced price. Foreign cotton producers were worse off because Chinese cotton was being sold at a price below what true production costs would have dictated. Chinese cotton producers would have been better off as they enjoyed reduced costs, which would have made competing in the global marketplace easier. However, if Chinese policy did not also increase barriers to entry and/or costs for foreign producers, then other governments could have easily counteracted the Chinese export promotion program with a program of their own. Empirical analysis of Chinese cotton distortions will need to identify any programs implemented by other cotton producing countries to capture the true welfare effects of Chinese cotton policy.

71. The period of Chinese cotton producer protection in the early 1990s is evidenced by the high price of Chinese cotton (which falls when distortions are removed). This high price indicates that competition with Chinese cotton was restricted. Increasing costs or barriers to entry of foreign producers would accomplish this. In this situation, domestic producers would have been better off, foreign producers would have been worse off, domestic consumers would have been worse off, and global consumers would have been unaffected at best. Here, the Chinese government would have accomplished the goal of protecting domestic producers in the local market, but it would have come at the cost of domestic consumers. Foreign producers would have also suffered, but this would have been less of a concern than domestic consumer welfare for the government.

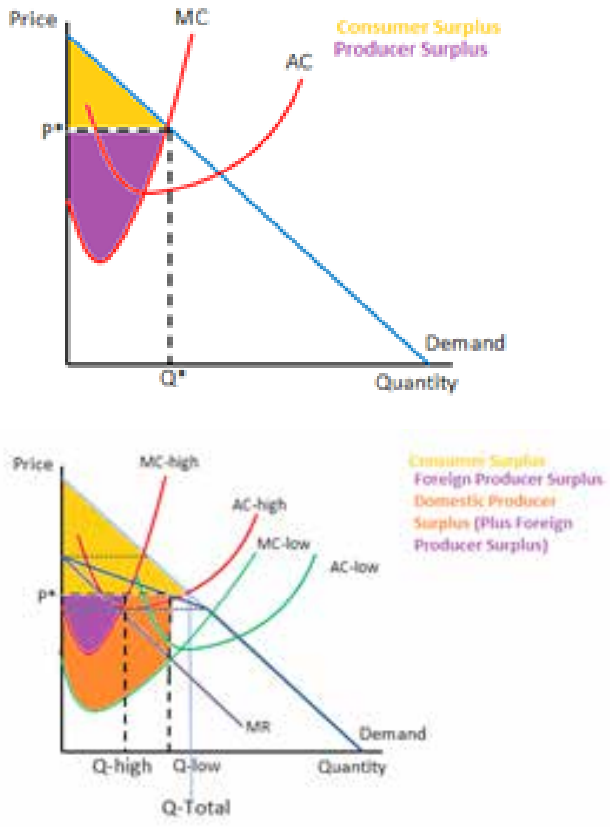
72. In the 1990s, the price actually paid for cotton was allowed to fluctuate, cotton futures were sold for the first time, preferential loan rates were given, and advanced payments were made to cotton farmers. Domestic producers benefit, all consumers benefit, and foreign producers are likely harmed in the short run.

73. It is interesting to note that each of the distortionary periods discussed here was identified through the removal of distortionary policies and the subsequent market reaction evident in the data. In the 1980s, the Chinese allowed the set price of cotton to adjust by a greater amount from one period to the next. This gave policymakers the opportunity to allow the price of cotton to move close in line with the market and the price of exports were less suppressed. This benefits foreign producers and harms all consumers immediately after the ACMD is removed.

74. It must be noted, however, that the short run loss to consumers (in the form of higher prices) will be more than offset in the long run. The removal of the ACMD will push the market closer to the competitive equilibrium—where consumer welfare is maximized. If the ACMD had persisted it would have been a barrier to entry for firms around the world (because market price would have been kept artificially low) and this would have increased China's market share over time. The greater the market power of Chinese cotton producers, the greater their ability to mark up the price (or reduce quality). That is, predatory pricing can create market power which increases market price and reduces consumer welfare. In other words, the long run dynamic efficiency losses from being off the competitive equilibrium outweigh any short run static gains to consumers from an artificially lower price. The model we present here looks only at the short run static gains in order to characterize the welfare effects of different ACMDs, but understanding the dynamic effects is crucial to truly understanding the impact of ACMDs. Future research will begin to characterize these dynamic effects by extending the single product model described here to the global supply chain.

75. To clarify this point a little more, we return to the two firm example used in Section III. Now, imagine the high cost firm leaves the market because the price the low cost firm charged was below minimum average cost for the high cost firm. The low cost firm is now a monopolist. *Figure 8* shows the change in welfare from the competitive equilibrium, to the short run effect of the ACMD, and to the long run monopolization of the market. Consumer welfare is lowest in the monopolized market. Differences in total welfare are difficult to distinguish in the *figure*, but in reality a more competitive market generates greater welfare, all else equal.

Figure 8. Long run welfare due to predatory pricing in short run



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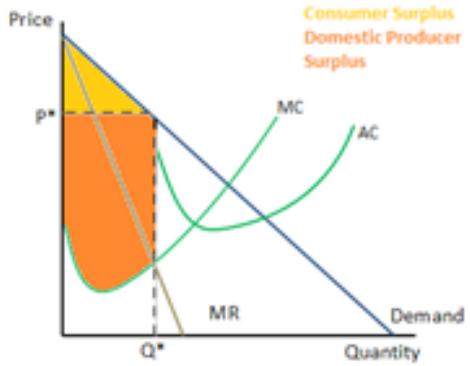

3. Recent examples

76. The approach of Chinese policymakers toward antitrust enforcement makes it more costly for foreign firms to operate in China relative to Chinese firms. This falls into the second category of market access effects. Foreign firms have the added burden of compliance while trying to remain competitive with Chinese firms. Because costs are lower for the Chinese firms, more efficient foreign firms will be less able to compete and more inefficient Chinese firms will be protected from competition. Chinese consumers are harmed in the long run and short run. Foreign producers are clearly worse off an Chinese producers clearly better off.

77. India's grain stockpiling and dumping policy fits into the first type of market access effect category. Costs for domestic producers are reduced and Indian grain is sold in the global market at a relatively low price. Global consumers benefit from the reduced price in the short run, but the deleterious effects on global competition will lead to long run losses for consumers. Indian producers will benefit from this policy while all other producers will suffer.

78. The pharmaceutical drug price fixing regime India has in place can be categorized as a barrier to entry for foreign firms, which is the second type of market access effect. Again, the reduction in foreign competition harms domestic consumers in the long run, benefits domestic producers, and harms foreign competitors.

VI. Conclusion

79. While there is extensive literature covering trade tariffs, and their impact on the economy, there is comparatively less literature on ACMDs and their impact on economies. This paper builds on the literature that does exist, by clarifying a typology of distortions, linking ACMDs with trade liberalizing efforts, and developing a methodology for understanding these based on their welfare effects. We have looked specifically at two single product cases, sugar and cotton, where the effect of ACMDs can be more easily seen. We have demonstrated that, in these two cases, the ACMDs as well as trade distortions have moved the overall equilibrium further away from a welfare enhancing one. We have assumed that such an equilibrium enhances long run consumer welfare in a dynamic sense, as well as maximizing total social welfare in both the short and long run. We conclude that even short run static consumer benefits that might arise from one type of ACMD (those that lower cost artificially), visit producer welfare losses in both the long and short run, as well as long run consumer welfare losses that swamp any static gains. We have identified where the losses would occur and we have given a sense of how these could be computed. Our next set of papers will look at how these single product ACMDs flow through into the global supply chain for these products, estimating these effects and will start to put metrics on the welfare effects of these distortions. ■

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