Article

The Role of Competition Reforms in Unlocking International Trade: Evidence from Africa's Proposed Tripartite Free Trade Area

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Abstract

This study applies an econometric approach to estimate the impact of competition reform adoption and tightening on international trade, using Africa's envisaged Tripartite Free Trade Area (TFTA) as a case study. An index measuring the extent to which competition regimes have been tightened and enforced between 2001 and 2016 in the TFTA countries is constructed. A gravity model of international trade, based on generalized method of moments, is then estimated to establish how exports are influenced by this competition index measure after controlling for other traditional gravity model variables. The results show that increasing competition reforms by 1% is associated with an increase in bilateral exports into the TFTA by 0.16%. However, if competition reforms in the importing country increase by 1%, then an approximate decline in bilateral exports of 0.46% would result. This underlines the role of competition enforcement in enhancing national competitiveness.

Introduction

Background

The wave and lobbying by development partners and competition practitioners, which was aimed at the developing world to embrace competition reforms, was very noticeable beginning in the 1990s to the early 2000s.[1] However, the momentum is waning now, as it appears to have borne fruit, based on

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1. *See* Pradeep S. Mehta & Simon J. Evenett, *Promoting Competition Around the World: A Diversity of Rationales and Approaches, in* Competition Regimes in the World—A Civil Society Report xvii, xxiii (Pradeep S. Mehta ed., 2006);

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the increase in the number of countries that have adopted competition reforms in developing countries. There is a noticeable increase in the number of countries that have competition laws in the world, from only about twenty in 1990[2] to about 130 by 2016.[3] This means that only a third of the world had not embraced some measure of competition enforcement[4] by 2016. The same increasing trend is also noticeable in Africa; in 2000, only thirteen countries had competition laws,[5] but the number had increased to thirty by 2017.[6] This means just above half of the continent had competition laws in 2017,[7] though this also means that the competition law adoption ratio is lower in Africa compared to the world. The high number of countries without competition laws could reflect that technocrats in different countries are still characterized by some ideological differences or lack of consensus concerning the benefits from competition enforcement. There is, therefore, reason to expect that the expected benefits from competition policy and its enforcement are not being fully realized in Africa.

There has been a lot of momentum in Africa with respect to regional and continental integration. This means that the integration has been taking place at a time when countries are at different stages with respect to competition policy enforcement. The discussions on trade cooperation in Africa have since moved beyond regional economic cooperation (REC) arrangements and now include a trade cooperation involving a merger of three RECs and a continental integration initiative. The Tripartite Free Trade Area (TFTA) involves a merger of the Common Market for Eastern and Southern Africa (COMESA), the East African Community (EAC), and the Southern Africa Development Community (SADC). The origin of the TFTA dates back to October 2008 in Kampala, Uganda, when the first summit of the TFTA summit was held.[8] This was strengthened in June 2015 when twenty-six members[9] met in Egypt and initiated the process of ensuring that the TFTA comes into force. The TFTA Agreement would come into force if it is signed and ratified by at least fourteen member states. Membership in the TFTA has since increased from the original twenty-six to twenty-nine, with South Sudan joining the EAC while Tunisia and Somalia have also joined COMESA.[10] However, although there were twenty-two countries that had signed the TFTA Agreement in April 2020, there were only eight[11] that had ratified it, meaning that there were still six more needed to have the Agreement

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Dina I. Waked, *Adoption of Antitrust Laws in Developing Countries: Reasons and Challenges*, 12 J.L. Econ. & Pol'y. 193, 207–210 (2016); Michal S. Gal & Eleanor M. Fox, *Drafting Competition Law for Developing Jurisdictions: Learning from Experience, in* Economic Characteristics of Developing Jurisdictions: Their Implications for Competition Law 296-356 (Michal S. Gal et al., eds., 2015).

2. OECD, International co-operation in competition law enforcement, OECD. Doc.C/MIN(2014)17 (2014), https://www.oecd.org/mcm/C-MIN(2014)17-ENG.pdf (last visited Nov. 2, 2020).

3. Aydin Umut & Tim Büthe, *Competition Law & Policy in Developing Countries: Explaining Variations in Outcomes; Exploring Possibilities and Limits*, 79 Law & Contemp. Probs. J. 1, 1 (2016).

4. Assuming that there are about 195 countries in the world.

5. World Bank, Breaking Down Barriers: Unlocking Africa's Potential through Vigorous Competition Policy (2016).

6. Lipimile George, Competition Law for the Tripartite Free Trade Area and the Africa Continental Free Trade Area (Fourteenth Meeting of The Tripartite Committee Of Senior Officials and Fifteenth Meeting Of The Tripartite Trade Negotiation Forum (TTNF), June 14–16, 2018).

7. Assuming there are fifty-five African countries.

8. Andrew Mold & Rodgers Mukwaya, *The Effects of the Tripartite Free Trade Area: Towards a New Economic Geography in Southern, Eastern and Northern Africa?* (Credit Research Paper No. 15/04, 2015).

9. Angola, Botswana, Democratic Republic of the Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia, Zimbabwe, Burundi, Kenya, Rwanda, Uganda, Comoros, Djibouti, Egypt, Eritrea, Ethiopia, Libya, and Sudan.

10. Common Market for Eastern and Southern Africa (COMESA), *More Countries Ratify Tripartite Free Trade Area Agreement* (Jan. 2020), https://www.comesa.int/more-countries-ratify-tripartite-free-trade-area-agreement/ (last visited Nov. 2, 2020).

11. Egypt, Kenya, South Africa, Rwanda, Uganda, Burundi, Botswana, and Namibia.

entering into force.[12] What is critical to note, however, is that the Agreement underlines the importance of fair competition determining cooperation among the partners, hence inclusion of the need for negotiating protocols on competition policy, among others.[13]

In addition to the TFTA, the African Continental Free Trade Area (AfCFTA) has gathered pace, as it came into force on May 30, 2019.[14] Although discussions had been going on for a long time, the AfCFTA Agreement had been produced in 2018, following the 2018 African Union Heads of State meeting in Kigali, Rwanda.[15] About thirty countries had ratified the AfCFTA Agreement by May 2020, with Eritrea being the only exception of all the fifty-five countries to sign the Agreement.[16] However, similar to the TFTA, the Agreement also point at the need to develop rules that will govern competition policy.[17]

The implication is that at both the TFTA and the AfCFTA level, there is already an acknowledgment of the role that competition policy is likely to play in helping to unlock the anticipated benefits from regional and continental integration. This brings out the need to understand whether the differences in the adoption of competition reforms in the continent is likely to influence the manner in which trade benefits are likely to be shared among the participating countries. In general, the fair competition principle that is a core theme under both TFTA and the AfCFTA levels will not arise naturally, but only from the efforts of individual countries in ensuring that competition outcomes in markets develop. This makes the adoption of competition reforms critical.

In this study, competition reforms are defined to mean the adoption of competition laws, policies, or both. Competition policy can be defined as a set of policy tools aimed at creating more competition in markets at the national level.[18] While it is possible that the competition orientation can be pronounced in industrial, trade, investment, or other policies, it is only when there is a stand-alone policy cutting across all the other objectives will it be expected to be more effective. Thus, in this study, it is only when a country has a strategic action plan or policy document spelling out the various steps government is going to take to create and sustain fair competition will the country be considered to have a competition policy. While a policy is a critical aspect with respect to a competition regime, it is not enforceable in isolation. Thus, it is the presence of a competition law which is normally given a larger weight when competition reforms are being assessed.

A competition law is a legislation that is introduced on the observation that players in the market will not necessarily act in the interest of consumers or smaller businesses in pursuit of self-interests. Thus, a competition law regulates the conduct of firms in the market as a way of ensuring that they are forced to behave in manners that enhance competition.[19] The enforcement of competition law is intended to correct the harm in terms of producer and consumer welfare that could result when firms

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12. Bilaterals.org, *SADC Takes Over Tripartite Economic Group Leadership* (Apr. 23, 2020), https://www.bilaterals.org/?sadc-takes-over-tripartite (last visited Nov. 2, 2020).

13. COMESA, EAC AND SADC, AGREEMENT ESTABLISHING A TRIPARTITE FREE TRADE AREA AMONG THE COMMON MARKET FOR EASTERN AND SOUTHERN AFRICA, THE EAST AFRICAN COMMUNITY AND THE SOUTHERN AFRICAN DEVELOPMENT COMMUNITY (2015).

14. Vellah Kedogo Kigwiru, *The Cooperation on Competition Policy under the African Continental Free Trade Area*, 17 MANCH. J. INT. ECON. LAW 98-121 (2020).

15. AFRICAN UNION, AGREEMENT ESTABLISHING THE AFRICAN CONTINENTAL FREE TRADE AREA (2018).

16. TRALAC, AfCFTA: TOWARDS THE AFRICAN CONTINENTAL FREE TRADE AREA (Tralac AfCFTA Ratification Barometer 2020).

17. The preamble to the African Continental Free Trade Area Agreement.

18. *See* UNCTAD, THE ROLE OF COMPETITION POLICY IN PROMOTING ECONOMIC DEVELOPMENT: THE APPROPRIATE DESIGN AND EFFECTIVENESS OF COMPETITION LAW AND POLICY, UNCTAD, TD/RBP/CONF.7/3 (2010); CUTS, COMPETITION POLICY & LAW MADE EASY: MONOGRAPHS ON INVESTMENT AND COMPETITION POLICY (2001).

19. *Id.*

Box 1. The Three Categories of Anticompetitive Practices.

Agreements or arrangements between firms in the market whose intent and effect is to cause unreasonable restraints on the level of competition prevailing in the market are known as anticompetitive agreements. Such kind of agreements can be classified into two; horizontal and vertical depending on the nature of firms that are parties to the agreement. When parties to the agreement are in an actual or potential supplier–customer relationship, these become vertical agreements. The main fear with vertical agreements is market foreclosure; competitors of one party to such an agreement (in both upstream and downstream markets) will have limited access to markets as the agreement ties a supplier or customer to their rival. This means that a traditional supplier of raw materials or a traditional buyer will have to serve the party to the agreement first and only consider those that are not party to the agreement as a residual market. Because such agreements can be necessary for efficiencies induced by vertical integration, competition laws are flexible in handling vertical agreements, as some are actually pro-competition

Agreements made by competing firms that operate at the same level in the relevant market aimed at reducing competition are known as horizontal agreements. The agreements generally focus on coordinating the trading terms so as to escape from the effects of competition, which would otherwise generally reduce profits. Falling into this category are what are normally referred to as cartels; which include agreements to fix prices at high levels, to restrict output so as to increase prices, to share markets so as to avoid competing against each other, and to rig tenders. In most competition laws, these types of agreements are treated as prohibited per se, as they are considered harmful to competition

A firm that enjoys market power, with the ability to have control over its own prices, is often referred to as a dominant firm. Dominance on its own is not considered a problem under competition laws, as some firms can become dominant due to their own efficiencies. However, a dominant firm can put in place strategies to exploit its customers (consumers and downstream firms) or its rivals, and if that happens, this is known as abuse of dominance

Firms can also be engaged in anticompetitive practices through mergers and acquisitions that are intended to stifle competition in the market. It is mainly mergers involved in an actual or potential supplier–customer relationship (vertical mergers) and those involving competitors (horizontal mergers) that are considered harmful to competition. If firms are in unrelated business ventures (conglomerate mergers), competition authorities rarely investigate them. Vertical mergers can result in market efficiencies, with the only concern being similar to that of vertical agreements, as markets can be foreclosed. Horizontal mergers directly reduce the number of players in the market and thus result in market concentration; hence are given more attention by competition authorities

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Source: CUTS, COMPETITION POLICY & LAW MADE EASY: MONOGRAPHS ON INVESTMENT AND COMPETITION POLICY (2001); WORLD BANK AND OECD, A FRAMEWORK FOR THE DESIGN AND IMPLEMENTATION OF COMPETITION LAW AND POLICY (1999).

with market power exercise that power over the manner in which their products are distributed.[20] The conduct that is punished by competition laws can be classified into three: abuse of dominance, agreements that harm competition, and mergers that reduce competition in the market. Box 1 gives some brief description of anticompetitive practices that are regulated by competition laws.

In the competition policy discourse, the debate has largely been confided to the role that competition reforms can play in enhancing firm productivity and hence economic growth. However, it is also important for the strides in continental integration that are taking place to also be accompanied by detailed studies showcasing critical issues which are likely to matter in influencing how associated benefits can accrue to the member states. Specifically, the extent to which the differences in competition reforms and their enforcement among African countries can also result in differences in the manner in which the international trade benefits can be shared among the countries is critical. This

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20. David A. Peters, *The Interaction of Competition Policy And International Trade In New Zealand*, SRRN ELECTRONIC JOURNAL (2006), https://ssrn.com/abstract=1865567 or http://dx.doi.org/10.2139/ssrn.1865567 (last visited Nov. 3, 2020).

generally defines the context under which this study is being prepared. It is intended to contribute to the competition policy discourse as well as to the TFTA discussions by arguing that the quality of competition reforms and their enforcement will matter in influencing the gains from regional and continental integration, as measured by exports.

Study Objectives

The three main objectives of this study include:

- to assess whether the quality of competition reforms together with their enforcement matter in influencing intraregional trade patterns;
- to estimate the estimated impact that an improvement in the quality of the competition regime would unlock in terms of increased capacity to export; and
- to flag the policy implications arising from the results in terms of priorities under the TFTA and AfTFTA discourse.

Theoretical Framework: International Trade Theories

The theoretical framework for the study is located within the international trade theories, which date back as far as the seventeenth century. By reviewing both the founding and contemporary international trade theories, it is possible to build expectation around how competition reforms would be expected to have a role in influencing trade flow patterns. Among the oldest theories of international trade is mercantilism, which Adam Smith[21] identifies Thomas Mun as among its advocates. The central issue about mercantilism was a favorable trade balance, which had to be achieved through government efforts that encourage exports and discourage imports.[22] The mercantile system, as a result, was focused on promoting the merchants and manufacturers to be more competitive, by giving them incentives (bounties) while using tariffs to discourage imports. Such measures also saw the emergence of dominant firms or monopolies, as the main interest was to create conditions for the emergence of competitive firms in the export market rather than development of fair competition in the domestic market.[23] To the extent that there are still economies in the TFTA characterized by firms that are being spruced up to suit mercantilism, then there would be an inverse relationship between competition enforcement in the domestic market and international trade. This would mean that it would be expected that where competition laws are either absent or not enforced, then the emergence of such "national champions" would be the basis for increased exports.

The absolute advantage theory of international trade is mainly credited to Adam Smith, and it postulated that international trade can best be leveraged on if a country concentrates in producing the products for which it can produce cheaper, faster, or both.[24] In other words, a country would gain more from international trade by only concentrating on producing those products that it has an "absolute advantage" in producing, while getting those products which the country does not have such advantages through imports. Although competition reforms and competition policy were not discussed under the theory, embedded into the theory was the issue of fair competition. The model was built on a perfectly competitive model, which is what the enforcement of competition policy seeks to achieve. In other words, it was the interplay of forces of supply and demand which would reveal the advantages to

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21. ADAM SMITH, AN INQUIRY INTO THE NATURE AND CAUSES OF THE WEALTH OF NATIONS (1776).
22. THOMAS MUN, ENGLAND'S TREASURE BY FORRAIGN TRADE OR THE BALLANCE OF OUR FORRAIGN TRADE IS THE RULE OF OUR TREASURE (1664).
23. SMITH, *supra* note 21.
24. *Id.*

leverage on in international trade. There is also harm on the welfare of citizens which monopolies would cause; hence, the importance of ensuring that firms compete vigorously in producing the specialized product in the domestic market, resulting in surpluses to trade internationally.[25] Surpluses had to arise from technical and organizational efficiencies that would emanate from competition in the specialized products.[26] These are the same conditions which competition policy enforcement seek to create in the market so as to create the necessary production efficiencies.

The comparative advantage theory by David Ricardo in 1817 is also among the founding international trade theories that still continue to have relevance in the modern world.[27] Even though a country might not have absolute advantage in production of a product, it can still have relative productivity advantages in the same product compared to other products.[28] Thus, it is specializing in products where a country has comparative rather than absolute advantage, which would maximize gains from trade. However, competition principles were also embedded within the comparative advantage theory, as it is "competition of commerce" that was expected to determine the manner in which trade gains would be distributed among the firms in the domestic economy.[29] Thus, where commerce is allowed to compete more, then such relative trade gains would emerge, implying that competition enforcement can give rise to trade gains.

Also falling under the founding theories of international trade are the gains from trade theories, whose contributions include Augustin Cournot and Alfred Marshall, among others. Cournot demonstrates how international trade taking place between two countries based on different autarky market determined prices would affect national incomes in the two countries through the effects on prices in the two markets.[30] His main objective was to illustrate how the exporting country gains more compared to the importing country.[31] However, the relevance of competition in Cournot's model is quite apparent, as it is the extent to which competition conditions differ in the two countries, which would result in different equilibrium prices for the same products. The ability of supply and demand conditions to create price differentials would see products being exported to the country which has higher prices (which could be a reflection of low competition). Thus, the role of competition policy would be to create competition in countries which have embraced them, which would give them an impetus to export to those without competition reforms.

In addition to Cournot, Alfred Marshall's contribution falls within the gains from trade theories. Through his famous "offer curves," Marshall illustrated how international trade that is not restrained and taking place under perfect competition would influence trade.[32] If this theory were to hold under the modern markets, then markets operating under intense competition would trade more compared to

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25. *Id.*

26. Reinhard Schumacher, *Adam Smith's Theory of Absolute Advantage and the Use of Doxography He History of Economics*, 5 Erasmus J. Philos. Econ. 54-80 (2012).

27. *See* Alan V. Deardorff, *Comparative advantage in digital Trade, in* Cloth for Wine? The Relevance of Ricardo's Comparative advantage in the 21st Century 35-44 (Simon J. Evenett ed., 2017); Sébastien Miroudot, *Examining trade in services through Ricardo's lens, in* Cloth for Wine? The Relevance of Ricardo's Comparative advantage in the 21st Century 45-52 (Simon J. Evenett ed., 2017).

28. David Ricardo, On the principles of political economy and taxation (3rd ed. 1817).

29. *Id.*

30. Augustin Cournot, Researches into the mathematical principles of the theory of wealth (1838).

31. Many neoclassical economists later refined Cournot's model after noticing that the reason why it was only the exporting country that gained was because he had neglected consumer losses. The true picture was that the gains from trade by the exporting country were actually lower as the importing country would also gain (*see* Eithne Murphy, The evolution of trade theory: An exercise in the construction of surrogate or substitute worlds? (2013) (PhD Thesis, University of London).

32. Alfred Marshall, The pure theory of foreign trade (1930).

those in domestic markets exposed to many restrictions. Competition is therefore within the gains from trade theories, which associate competitiveness with gains from international trade. However, there are also some international trade theories which, like mercantilism, also encourage restrained competition as the basis of increased international trade in the long run.

The infant industry protection theory is an example, which is attributed to several early writers. These include Friedrich List, Alexander Hamilton, and John Rae.[33] The main argument was that if the raw materials in the production of a product that is in demand are locally available, it is critical to give temporary protection against the more competitive international firms to allow the industries to develop.[34] In this respect, unlike the comparative advantage theory, the infant industry protection theory gave more prominence to future prospects rather than current comparative advantage, even though the prospects would require government support to develop. Competition between the firms in the domestic and foreign firms had to be restrained. Since competition policy also recognizes the role of import competition in controlling anticompetitive behavior, it is expected that economies, including in the TFTA, which are still prioritizing domestic firm protection would have loose or not actively enforcement competition reforms. However, the effect on lowering international trade would be more pronounced compared to those whose competition reforms are tighter.

If modern theories are defined as those developed in the twentieth century, the Heckscher–Ohlin theory would also stand out among them. Credited to both Eli Heckscher and Bertil Ohlin, even though published as a thesis by Bertil Ohlin,[35] it showcases the role that factor endowment plays in determining comparative advantage.[36] It is the factor proportions that would determine international trade, as a capital abundant country would specialize more on capital intensive products, while a labor abundant country specializes on labor-intensive ones. However, the role of competition would still be pronounced in the model. This is because factor prices under the model would be determined under conditions where producers, consumers, and factor owners cannot individually influence market prices and outcomes, which forces of supply and demand under conditions of perfect competition determine. These are the conditions which competition enforcement seeks to mimic.

Staffan Burenstam Linder is credited with the country similarity theory, which also qualifies among the contemporary theories of international trade. Unlike the comparative advantage theories, Linder argued that it is the home demand that determines international trade, such that only when a country has similar demand patterns and tastes to the home country will trade take place.[37] Thus, international trade is only a residual; an entrepreneur produces primarily for the home market and only exports to international markets with same conditions as the home country. This implies that international trade needs similar conditions rather than different conditions to take place. Like most modern trade theories, Linder's theory of international trade fits well within the aims and aspirations of competition policy. Only when a firm has mastered the art of overcoming the rivalry at the domestic stage would the firm be able to overcome the same conditions in meeting foreign competition. This would mean that countries whose market conditions have created rivalry are better placed to have stronger firms that are able to withstand the competition in the export markets.

The role of competitive advantages in influencing international trade stems from the National Competitive Advantage theory by Michael Porter. Innovation is a country's main determinant of

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33. *See* Eithne, *supra* note 31.
34. ROBERT W. DIMAND, *Rae and international trade, in* THE ECONOMICS OF JOHN RAE 179-186 (O. F. HAMOUDA ET AL., eds., 1998).
35. BERTIL OHLIN, INTERREGIONAL AND INTERNATIONAL TRADE (1933).
36. Edward E. Leamer, *The Heckscher-Ohlin Model in Theory and Practice* (Princeton Studies in International Finance, No. 77, 1995).
37. STAFFAN BURENSTAM LINDER, AN ESSAY ON TRADE AND TRANSFORMATION (1961).

competitiveness, and it is competitiveness that is a critical determinant of trade.[38] However, it is the extent to which the economy is characterized by domestic rivalry that is strong, which builds the competitiveness that is necessary to gain advantages over their international rivals. Porter's theory falls within the purview of this study as it would imply that TFTA countries that are more used to rivalry can be better positioned to gain competitiveness. Strong competition regimes that are actively enforced can, therefore, create trade advantages.

Empirical Literature Review

There have been a number of studies which have also established the theoretical expectation that competition reforms matter in influencing the direction of international trade. Among the more direct studies is one which assessed how competition regimes in developing countries would be expected to have a bearing on trade flows.[39] The study establishes that countries with markets that are less competitive fell among those that traded less. It also establishes that if competition in the market would improve by 1%, this would trigger an increase in exports by 0.33% and in imports by 0.76%. This is also a basis for expecting a positive impact of competition reforms on international trade in the TFTA. The relationship between market concentration, output, and trade was also assessed by Adian Hollis based on eighty-two manufacturing sector industries for seven countries.[40] From the results, highly concentrated domestic markets result in reduced net exports. A similar conclusion also emerged based on a survey of 1,700 highly concentrated Chinese manufacturing and service industry firms, which were all found to be less likely to export.[41] In addition, a study that investigates the role that competition policy would play in enhancing competitiveness established that manufacturing sector exports tended to be related to competition policy positively.[42]

These studies generally confirm that markets that are subjected to rivalry are more likely to become competitive in the international market, which is in line with the National Competitive Advantage theory as well as the country similarity theories of international trade. There is an expectation that this channel can be the basis upon which international trade is expected to have an impact on international trade within the TFTA context. The role of rivalry is also confirmed by recent studies; Opoku, Yan, and Hynes estimated the impact that competition is likely to have on productivity and exports at firm level using data on 139 countries.[43] The study provides evidence that where domestic markets are characterized by strong competition, firms tend to become more productive with a higher export propensity. The study is also complimented by a recent study[44] which establish a nonlinear relationship between exports and sector-level competition. Thus, the extent to which the enforcement of competition reforms in the TFTA have assisted in enhancing rivalry and more competition in the market

38. Michael E. Porter, *The Competitive Advantage of Nations*, 68 HARV. BUS. REV. 73-91 (1990).
39. SÉBASTIEN MIROUDOT ET AL., THE IMPACT OF PRO-COMPETITIVE REFORMS ON TRADE IN DEVELOPING COUNTRIES (OECD Trade Policy Papers, No. 54, 2007).
40. Aidan Hollis, *Industrial Concentration, Output, and Trade: An Empirical Exploration*, 22 REVIEW OF INDUSTRIAL ORGANIZATION 103-119 (2003).
41. Hongxin Zhao & Shaoming Zou, *The Impact of Industry Concentration and Firm Location on Export Propensity and Intensity: An Empirical Analysis of Chinese Manufacturing Firms*, 10 JOURNAL OF INTERNATIONAL MARKETING 52-71 (2002).
42. Ashfaqul I. Babool et al., *The Impact of Competition Policy on Production and Export Competitiveness: A Perspective from Agri-food Processing* (Southern Agricultural Economics Association Annual Meeting conference paper, Feb. 4–7, 2007).
43. Eric E. O. Opoku et al., *Reaching Up and Reaching Out: The Impact of Competition on Firms' Productivity and Export Decisions*, 25 PAC. ECON. REV. 69-101 (2020).
44. Senol Babuşçu et al., *Sector-Level Competition and Export: Evidence from Exporter Dynamics Database*, 10 JOURNAL OF INTERNATIONAL COMMERCE, ECONOMICS AND POLICY 1-18 (2019).

would be instrumental in determining whether a positive relationship between competition reforms and international trade would be established in this study.

The expectations from the country similarity theory is also built based on the finding from Rubin Luniku, which establishes that there were positive effects arising from a stricter competition policy in terms of a country's export.[45] Specifically, those countries with more concentrated industries tend to benefit more from the adoption of a stricter competition regime. These findings also confirm that highly concentrated industries generally tend to restrict exports, which would be the reason why competition regimes are adopted in the first place; to reduce market concentration. In particular, the positive role of competition policy in promoting innovation and international trade is quite apparent from a recent study which reflects the role of competition in trying to force firms to be innovative, which gives them the impetus to become competition in the international market.[46]

The conclusion from these studies is that there is a reason to believe that the manner in which competition regimes have been enforced since the late 1990s in the TFTA would be expected to have played a role in differentiating trade benefits. What needs to be established is whether this differential gain that was brought about by the enforcement of competition reforms is significant enough for competition reforms to be prioritized within the TFTA and AfCFTA discourse.

Method

Model Specification

The study is interested in examining the determinants of intraregional trade flows, for which it is also expected that competition reforms would matter. One model mainly used to estimate international trade relationships is the gravity model, which was introduced by Jan Tinbergen in 1962. The model was intended to reflect the trade flow volumes that would be expected to take place if there were no impediments to trade. The model postulates that international trade volumes would be positively related to the economic sizes of the two trading partners and negatively related to the distance between them.[47] In the model, it was also established that some semieconomic and political factors can also explain trade, including trade agreements (commonwealth membership and preferences associated with the Benelux) and the countries being adjacent to each other (neighbors). This study, therefore, also uses the gravity model rationale as the theoretical model, as the model has continued to be highly regarded in contemporary studies.[48]

Based on theories, while maintaining the original stipulation, a number of factors have also been found to be statistically significant as explanatory variables in the gravity equation. In addition to variables such as the gross domestic product (GDP) per capita differences between the countries,

45. Rubin Luniku, *The Effects of Competition Policy Changes on International Trade and Export Flows: Canada Case Estimates* (Wayne State University Dissertations Paper 901, 2014).

46. Irena Pekarskiene et al., *The Impact of Competition Policy on the National Economy of A Country With a Developing Culture of Competition*, 29 INZINERINE EKONOMIKA-ENGINEERING ECONOMICS 72-83 (2018).

47. JAN TINBERGEN, SHAPING THE WORLD ECONOMY: SUGGESTIONS FOR AN INTERNATIONAL ECONOMIC POLICY (1962).

48. *See* KEITH HEAD & THIERRY MAYER, *Gravity Equations: Workhorse, Toolkit, and Cookbook*, *in* HANDBOOK OF INTERNATIONAL ECONOMICS 131-195 (G. GOPINATH, ET AL., eds., 2014); LUCA DE BENEDICTIS & DARIA TAGLIONI, *The Gravity Model in International Trade*, *in* THE TRADE IMPACT OF EUROPEAN UNION PREFERENTIAL POLICIES: AN ANALYSIS THROUGH GRAVITY MODELS 55-89 (L. DE BENEDICTIS & L. SALVATICI eds., 2011).

language, and exchange rates,[49] there are studies that have included variables related to competition policy.[50]

The gravity model estimated in this study is in the form:

$$X_{ijt} = \frac{K Y_{it}^{\alpha} Y_{jt}^{\beta} Z_{it}^{\gamma}}{D_{it}^{\delta}}, \tag{1}$$

where

X_{ijt} = bilateral exports from by country i to country j at time t;
K = a (gravitational) constant;
Y_{it} = nominal GDP of (exporting) country i and time t;
Y_{jt} = nominal GDP of (importing) country j at time t;
D_i = distance between the two trading partners;
Z_{it} = a vector of other variables.

Bilateral exports generally include the value of goods and services in monetary terms which one country would have exported to another at a given time period. The GDP variables are also the monetary measures of the two trading partner's economy sizes, which influence the need to export and import. The distance between the two countries is measured in kilometers and generally reflect transport and logistics costs, which would affect the decision to trade. Components of the vector Z_{it} are also regarded as multilateral resistance terms,[51] which can include trade barriers, trade incentives, and other variables creating trade costs. It is within this vector that competition reforms would be located. However, since it is bilateral trade which is being assessed, the competition reforms that matter can be in the exporting country as well as the importing country or both; hence, two variables for competition reforms are necessary.

The gravity model is estimated in this study using panel data methods, to allow for controlling individual heterogeneity and to minimize the risk of collinearity among the variables.[52] However, given that the competition reform variable is likely to be correlated with GDP variables, there could be serial collinearity which might not be fully addressed by random effects and fixed effect panel data models. As a result, a dynamic panel data model, which allows for endogeneity of individual variables, has been adopted.[53] Specifically, a generalized methods of moments (GMM) model utilizing the Arellano–Bover/Blundell–Bond estimator is adopted as these are considered as the foundation of GMM models.[54] The models use lagged endogenous terms as a way of avoiding problems of correlation between variables,[55] and the model can be stipulated as:

$$Y_{it} = \alpha Y_{it-n} + \boldsymbol{\beta_i} X_{it} + \omega_{it}, \tag{2}$$

49. *See* Xu Wang & Ryan P. Badman, *A Multifaceted Panel Data Gravity Model Analysis of Peru's Foreign Trade*, 3 TURKISH ECON. REV. 562-577 (2016); Henry Tumwebaze Karamuriro & Wilfred Nahamya Karukuza, *Determinants of Uganda's Export Performance: A Gravity Model Analysis*, 4 INTERNATIONAL JOURNAL OF BUSINESS AND ECONOMICS RESEARCH 45-54 (2015).

50. *See* SIMON J. EVENETT, *How Much Have Merger Review Laws Reduced Cross Border Mergers and Acquisitions?*, in INTERNATIONAL MERGER CONTROL: PRESCRIPTIONS FOR CONVERGENCE 1-24 (W. K. ROWLEY ed., 2002); MIROUDOT ET AL., *supra* note 39.

51. WTO AND UNCTAD, A PRACTICAL GUIDE TO TRADE POLICY ANALYSIS 101–36 (2012).

52. BALDI H. BALTAGI, ECONOMETRIC ANALYSIS OF PANEL DATA 6–7 (5th ed., 2013).

53. Romilio Labra Lillo & Celia Torrecillas, *Estimating Dynamic Panel Data. A Practical Approach to Perform Long Panels*, 41 REVISTA COLOMBIANA DE ESTADÍSTICA 31-52 (2018).

54. David Roodman, *How to do Xtabond2: An Introduction to Difference and System GMM in Stata*, 9 STATA J. 86–136 (2009).

55. Lillo & Torrecillas, *supra* note 53.

where

> Y_{it} = the dependent variable of unit i at time t;
> Y_{it-n} = the lag of dependent variable for n lags;
> α = a constant;
> β_i = vector of coefficients;
> $\boldsymbol{X_{it}}$ = matrix of explanatory variables;
> $\omega_{it} = \varepsilon_i + \mu_{it}$ is the composite error terms with individual effects and random disturbance term.

There are two types of GMM models: difference and system GMM models. Under difference GMM models, instruments and models are run in first differences. As will be explained shortly, the model used in the study has a lot of time-invariant variables; hence, a system GMM, which allows for the use of instruments in levels[56] has been preferred. Roodman's systems GMM, referred to as the xtabond2 in Stata,[57] has been used in this study.

The linearized form of the GMM gravity model in this study can be specified as:

$$lnX_{ijt} = \beta_0 + \beta_1 lnY_{it} + \beta_2 lnY_{jt} + \beta_3 ln\,Dist_{ij} + \beta_4 ln\,Comp\_exporter_{it}$$
$$+ \beta_5 ln\,Comp\_importer_{it} + \beta_6 COMESA_{iit} + \beta_7 SADC_{ijt} + \beta_8 EAC_{ijt} \qquad (3)$$
$$+ \beta_9 SACU_{ijt} + \beta_{10} Border_{ij} + \beta_{11} Lang_{ij} + \varepsilon_{it},$$

where

> X_{ijt}, $Y_{it,}$ and Y_{jt} have already been defined;
> $Dist_{ij}$ = distance between capitals of country i and j;
> $Comp\_exporter_{it}$ = competition reform depth for exporting country i at time t;
> $Comp\_importer_{jt}$ = competition reform depth for importing country j at time t;
> $COMESA_{ijt}$ = dummy variable taking value of 1 if both countries belong to the COMESA FTA at time t and 0 otherwise;
> $SADC_{ijt}$ = dummy variable taking value of 1 if both countries are SADC FTA members at time t and 0 otherwise;
> $SACU_{ijt}$ = dummy variable taking value of 1 if both countries are SACU FTA members at time t and 0 otherwise;
> EAC_{ijt} = dummy variable taking value of 1 if both countries are EAC FTA members at time t and 0 otherwise;
> $Border_{ij}$ = dummy variable with value 1 if the countries share a border and 0 otherwise;
> $Lang_{ij}$ = dummy variable with value 1 if the countries share common language and 0 otherwise;
> ε_{it} = the stochastic term.

Data and Data Sources

Variables such as GDP, exports, and distance were generally sourced from published sources (Table 1). The competition reform depth for each country is measured by a measure introduced in this study, the Competition Reform Index (CRI), which measures the strength of the competition regime in terms of regulatory and policy framework, as well as the degree of competition enforcement in each country (cases handled each year). Details on the composition of the competition reform depth, including details on how the CRI is quantitatively measured, are discussed in detail in Appendix A.

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56. Roodman, *supra* note 54.
57. Lillo & Torrecillas, *supra* note 53.

Table 1. Data and Data Sources.

Variable	Data to Be Used	Data Source
X_{iit}	Exports from country i to country j at time t	TradeMap
Y_{it} and Y_{jt}	Nominal gross domestic product for country i and country j	World Bank economic indicators
$Dist_i$	Distance between the capital cities of the trading partners	GeoDist database of the CEPII
$Comp\_exporter_{it}$ and $Comp\_importer_{it}$	Author's construction of the variable	Existing secondary data sources, submissions from the competition authorities as well as a review of competition laws and amendments
$SADC_{ijt}$, $COMESA_{ijt}$, EAC_{ijt}, and $SACU_{ijt}$	Value of 1 of members that are part of the same FTA at time t and 0 otherwise	COMESA, SADC, SACU, and EAC membership list, as well as identification of the year in which each country joined the FTA from literature review
Language	Value of 1 if the two countries share a common language	Country profiles from the CIA World Factbook at the CIA website
Border	Value of 1 if the two countries share a common border	Observation based on Africa map

Source: Author's construction.
Note: COMESA = Common Market for Eastern and Southern Africa; EAC = East African Community; SADC = Southern Africa Development Community; FTA = Free Trade Area; CEPII = Centre d'Études Prospectives et d'Informations Internationales; SACU = Southern African Customs Union.

The construction of the CRI was based on the author's review of competition legislations as well as secondary sources on the strength and limitations of competition laws.[58] The number of cases completed each year as well as the size of staff were sourced from the respective annual reports of competition authorities. However, there were a lot of noticeable gaps, which called for primary data collection by engaging competition authorities. This exercise was done in early 2018, when 2016 was considered the end period with data availability. Eleven competition authorities were engaged in primary data collection, resulting in cooperation from seven of them, which resulted in the remaining four countries (Kenya, Mauritius, Ethiopia, and Egypt) being dropped. Tunisia and Sudan had also been dropped after the author failed to get access to the competition legislations and amendments in translatable format. Data for a total of twenty-two countries are thus used in this study for model estimation. Data and data sources of all the variables can be summarized as in Table 1.

Model Diagnostics and Data Transformations

The gravity model can be linearized by taking natural logarithms, which would make the interpretation easier as the coefficients become the respective elasticities. However, the standard challenges expected from the gravity model estimation crops up, as there are a number of zero values in bilateral exports data. There are several common ways of dealing with this issue when the intention is to maintain a linearized specification. Two most common include either allowing the model to treat zero values as missing or making an adjustment across all the trade values by a constant that is very small and would not change the

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58. The issue of languages became a challenge for some legislations, as the author is only conversant in English. This called for the use of online translation platforms, which include Google Translate and DeepL Transate. While it is possible that translation might have made some meaning not clear, the risk is considered minimal as the objective was to get the main thrust, while the use of two translation platforms served as a verification exercise.

trade picture (usually one dollar).[59] Treating zero values as missing distorts the data, as absence of trade between two countries would not be captured. Adding a very small constant does not distort the picture much and is not expected to affect the final results. However, this addition is arbitrary and might also create minor distortions. Thus, in addition to this approach, this study has adopted the inverse hyperbolic sine (IHS) transformation, as it resembles the natural log in terms of interpretation while also retaining the zero values.[60] While the IHS transformation resembles the natural log transformation, a plot of the means of the natural log transformations and the IHS transformation in Appendix C shows that while the change in the means for the countries follows an identical pattern under the two methods, they are not necessarily the same. There are two sets of variables where zero values are observed, namely, bilateral exports and the two competition variables. For the method of natural log transformation by adding a constant, this study transforms the exports data as well as the competition reform variable by adding 0.001 as an adjustment factor prior to linearization.[61] The IHS transformation method used in this study is given in detail in Appendix B. However, while the IHS transformation is similar to the natural logarithm, the interpretation of the coefficients as elasticities is likely to give misleading results and has to be calculated further.[62] Appendix B also explains how the coefficients for the competition reform variables based on the IHS transformation method were converted into elasticities.

One common challenge with time series data is the presence of an observable trend in the data, which could result in the dependent and independent variables changing in similar patterns across time. Unless this common trend is taken into account, results can appear significant when they have no actual relationship (spurious regression). It is therefore critical to ensure that only stationary variables are included in the model. If a variable's mean, variance, and autocovariance do not change over time, it is regarded as stationary. There are a number of methods for testing variable stationarity, for which unit root tests are the most common. Panel unit root tests were conducted for this study for the time-variant variables. It is important to note that since it is bilateral trade involved, the same countries that will be exporters will also be the importers, such that GDP time series for the importer is also the same data for the exporters, with the same being true with respect to the competition reform variable. Thus, there are only three time-series variables for unit root tests: exports, GDP, and competition reforms. The choice of the unit root tests was restricted to the Fisher Type unit root tests as the data are characterized by unbalanced panel data.[63] Tests for unit roots were then done for the transformed data, including the IHS transformed variables. The Fisher Type unit root test for panel data reports four test statistics: the inverse χ^2 test statistics (P), the modified inverse χ^2 (Pm), the inverse normal (Z), and inverse logit (L^*) test statistics. However, it is generally the Z statistic which offers the best size and power trade-off, together with the L^* statistic[64] and only these are

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59. *See* Gert-Jan Linders & Henri L. F. de Groot, *Estimation of the gravity equation in the presence of zero flows* (Tinbergen Institute Discussion Paper TI 2006-072/3, 2006); Kareem Fatima Olanike et al., *Fitting the Gravity Model When Zero Trade Flows Are Frequent: A Comparison of Estimation Techniques Using Africa's Trade Data* (GlobalFood Discussion Papers, No. 77, 2016); WTO and UNCTAD, *supra* note 51.

60. *See* Terri Friedline, et al., *Transforming Wealth: Using the Inverse Hyperbolic Sine (IHS) and Splines to Predict Youth's Math Achievement,* 49 Soc. Sci. Res. 264, 267 (2014).

61. Since the bilateral exports are given in thousands by Trade Map, a dollar is equivalent to 0.001, which is very insignificant and not expected to distort the general trade patterns between countries. However, a one-unit adjustment to a competition variable could be huge enough to change the picture about the adoption of competition reforms, given that the average competition reform score is just about 9.4. An adjustment factor of 0.001 was also extended to the competition variable instead of 1 to ensure that there are no distortions on the data set as the value remains (almost) zero but just allowing for the logarithms of the observations to be defined and maintained in the model.

62. *See* Bellemare F. Marc & Wichman, J. Casey, *Elasticities and the Inverse Hyperbolic Sine Transformation,* 82 Oxford Bulletin of Economics and Statistics 50 (2019).

63. In addition to the Fisher Type, other unit root tests for panel data include the Levin–Lin–Chu test, the Im–Pesaran–Shin test, the Harris–Tzavalis test, and the Hadri LM Stationarity test. However, all these tests require strongly balanced panel data in STATA and could not be used for this study with a lot of missing data for some variables.

64. *See* Choi In, *Unit Root Tests for Panel Data*, 20 J. Int. Money Finance 249, 255 (2001).

Table 2. Unit Root Tests (Fisher Type) for the Model Variables.

		Log Transformation				Inverse Hyperbolic Sine Transformation			
		Inverse Normal (Z)		Inverse logit (L*)		Inverse Normal (Z)		Inverse Logit (L*)	
Variable	Test Statistic								
	Lag	0	1	0	1	0	1	0	1
Exports	Statistic	−40.9	−31.8	−46.9	−33.8	−39.3	−31.2	−44.6	−33.1
	p value	.000	.000	.000	.000	.000	.000	.000	.000
Gross domestic product	Statistic	−25.2	−25.1	−25.3	−25.2	NA	NA	NA	NA
	p value	.000	.000	.000	.000	NA	NA	NA	NA
Competition reform	Statistic	−18.5	−21.1	−17.5	−19.1	−16.9	−15.1	−16.0	−14.3
	p value	.000	.000	.000	.000	.000	.000	.000	.000

Source: Author's compilation.

reported in this study. The unit root test results show that the null hypothesis that all panels contain unit roots is rejected for all the variables[65] (Table 2).

Based on the unit root tests, the dynamic panel data model can be run with the variables in levels in their linearized form.

Results and Interpretation

The estimated models are a system GMM estimation as developed by Roodman in 2006[66] for both the IHS-transformed and the log-transformed models. Endogenous variables identified for the model include the bilateral exports, the GDP variables, and the competition reform variable. Predetermined variables used as instruments include distance between the trading partners, sharing a border, and membership to COMESA and SADC. The estimated results are shown in Table 3, together with the Hansen statistic for overidentification and the Arellano and Bond test statistic (AR) for autocorrelation. The Hansen test statistic confirms that there are no overidentification restrictions imposed while serial autocorrelation is also ruled out based on the AR (2) test statistic.[67]

Before focusing on the implications with respect to competition reforms, it is critical to appreciate that the findings generally are in line with what one would expect from the gravity model under both models. Bilateral exports into the TFTA are related positively to the GDP of the trading partners while being negatively related to their distance. The results show that a TFTA country that realizes an increase in its GDP by 1% will see its bilateral exports into the region increasing by approximately 0.99% on average, controlling for the effects of the other variables, based on the log-transformed model. The IHS transformation estimates this increase at about 0.52%. On the other hand, based on the log-transformed model, if a trading partner in the TFTA's GDP increases by 1%, the associated increased demand for products will see bilateral exports increasing by 1.2%, controlling for the effects of all the other included variables. Again, the IHS-transformed model gives a lower estimate of about 0.7% increase. This means that demand-induced factors from economic growth play a larger role than supply-induced factors in influencing bilateral exports. As expected under the gravity model stipulation, the distance between trading partners is a critical determinant of trade flows; as distance between

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65. Based on Fisher Type test statistic with a drift but no time trend included.
66. *See* Roodman, *supra* note 54; Labra and Torrecillas, *supra* note 53.
67. This is true at the 5% level of significance for the IHS model with respect to the AR(2).

Table 3. Estimation Results from the Two Step System GMM.

Dynamic Panel-Data Estimation, Two-Step System GMM for Exports Based on 4,666 Observations				
	IHS Transformed		Log Transformed	
No. of observations	4,666		4,666	
No. of groups	377		377	
No. of instruments	370		351	
F-statistic (*p* value)	59.21 (.000)		57.07 (.000)	
AR(2) *p* value	.097		.108	
Hansen statistic	0.397		0.162	
Variable	Coefficient	*p* Value	Coefficient	*p* Value
Lagged exports	0.115	.006***	0.216	.000***
Exporter GDP	0.515	.001***	0.993	.000***
Importer GDP	0.702	.000***	1.239	.001***
Distance	−2.397	.000***	−2.583	.000***
Competition reforms-exporter	0.254	.072*	0.164	.000***
Competition reforms-importer	0.183	.015**	−0.461	.000***
COMESA	−0.393	.453	0.227	.681
SADC	−0.542	.103	1.646	.001***
SACU	−3.805	.091*	1.064	.655
EAC	0.236	.859	−4.099	.178
Common language	2.249	.408	4.015	.000***
Sharing border	0.542	.000***	2.644	.000***
Constant	−6.335	.173	−32.927	.001***

Source: Author's compilation.
Note: GDP = gross domestic product; IHS = inverse hyperbolic sine; COMESA = Common Market for Eastern and Southern Africa; EAC = East African Community; SADC = Southern Africa Development Community; GMM = generalized methods of moments; SACU = Southern African Customs Union.
*Significance level of 10%. **Significance level of 5%. ***Significance level of 1%.

a TFTA member and its bilateral trading partner increase by 1%, then bilateral exports to this member would be expected to fall by about 2.5%, holding other effects constant, with both models showing almost a similar estimate. A common language and a common border also enhance bilateral exports, even though the IHS-transformed model does not show a common language to be a significant determinant of bilateral exports.

However, the interest of the study mainly lies on the competition variables. Based on the findings, the nature of competition reforms in both the exporting country and the importing country matter in influencing bilateral exports. This is true based on both models, even though the IHS-transformed model generally gives higher estimates of the impact. As explained in Appendix B, the IHS coefficients need to be transformed into elasticities as the coefficients do not necessarily correspond with log transformations.[68] For comparative purposes, the elasticities implied from the two models are shown in Table 4.

First, if a country in the TFTA region increases its competition reforms (which could be both by improving its competition regime and increasing enforcement) by 1%, the country would be expected to realize an increase in exports into the TFTA region by about 0.16% on average in the short run,

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68. *Supra* note 62.

Table 4. Implied Elasticities from the Two Models.

	Elasticities	
Coefficient	Log Transformed	IHS Transformed
Competition reforms-exporter	.164	.252
Competition reforms-importer	−.461	.182

Source: Author's compilations.

holding the impact of other variables constant. The IHS-transformed model actually estimates the increase in exports to be about 0.25%. This generally means that competition reforms enhance competitiveness in the international market, which is in line with the theoretical expectation from Porter's National Competitive Advantage theory. This also means that there is some evidence that those TFTA countries that have tightened their competition regimes as well as actively enforced them are at an advantage in terms of realizing more export volumes compared to their counterparts that are still lagging behind. Specifically, this means that differentials in terms of tightness of the competition regimes as well as their enforcement significantly explain export capacity differentials within the TFTA bilateral trade relations.

However, the two models give conflicting results in terms of an improvement in the competition reform measures in the traditionally importing economies. The log-transformed model shows that bilateral exports will fall if a traditional partner, who used to import, were to increase their competition reforms. Specifically, the results show that if competition reforms in the importing country were to increase by 1%, then a decline in bilateral exports into that country of about 0.46% would be expected, controlling for the effects of all the other included variables. However, the other model shows that if the traditional importer were to increase their competition reforms by 1%, then exports into those economies would actually increase by about 0.18% in the short run, controlling for the effects of all the other included variables. In this study, although there could be some plausible explanations, the findings with respect to the IHS model are considered less convincing than those from the log-transformed model. The log-transformed model findings generally reinforce what has been established with respect to competition reforms enhancing competitiveness. If a country embraces competition reforms, it becomes competitive to such an extent that it will no longer be an easy target market for exports. In other words, its import appetite will fall due to competition reforms, as it becomes more competitive. This means that countries whose competition regimes are tighter in the TFTA tend to be more import independent in terms of bilateral relations in the longer term. As a result, it is the log-transformed model that is considered superior in this study.

Conclusion: Findings' Implications on TFTA Discourse

The study findings generally mean that despite the general regional and continental integration benefits that members will enjoy, those countries in the TFTA region which are more advanced in terms of competition reform adoption unlock more exports. There is, therefore, a need to ensure that while countries also prioritize other critical issues associated with preparations for the continental integration, competition reforms should matter. Improving competition reforms through either tightening the competition law provisions or putting in place strong institutions to enforce them should remain a priority. It is also positive that under both the TFTA and the AfCFTA, a need has already been noted with respect to the negotiation of the competition policy protocol. Those economies in Africa that are yet to fully embrace competition reforms need to ensure that they also negotiate the protocol while having their own regimes in place, as they will have a lower share of the benefits of continental

integration. The results generally show that such economies are more likely to be net importers than net exporters by virtue of lagging behind in competition reforms. This means that stakeholders and development partners that are currently involved in strengthening capacities for countries to enjoy the international trade benefits of continental integration should also embrace competition reforms in their agenda as a complimentary capacitation tool.

The study findings' implications can also be extended beyond the continental context. In 1996 at the Singapore World Trade Organization (WTO) Ministerial conference, developing countries were among those that opposed having competition policy among the issues to be negotiated at the WTO level.[69] With the findings showing that competitiveness is enhanced by competition reforms, African countries need to realize that one way of changing their "dumping ground" status is to enhance their competition reforms. Rather than placing more reliance on trade barriers such as safeguards and antidumping laws, which cause unnecessary tensions, competition reforms can be quite easier. Competition reforms can, therefore, be seen as being useful as a means to enhance exports from the region into the world, which falls neatly within the aspirations of the AfCFTA.

Appendix A

Construction of Competition Reform Measures

This study demonstrates the importance of both the quality of the competition regime (meaning the policy as well as the law) as it exists on paper as well as the manner in which the competition laws are being enforced. The measurement of the quality of competition laws has already gained a lot of traction since the introduction of the Antitrust Law Index (ATLI) by Michael Nicholson.[70] In particular, there have been modifications of the ATLI over the years in line with observed changes in competition law discourse. For example, there were some refinements by Hylton and Deng to produce the Scope Index.[71] The Scope Index is described as reflecting the "size of the competition law net," achieved by modifying the ATLI in terms of whether the provisions on "public interest" in merger assessment was deemed to be either pro-merging partners or leaned toward the competition authority.[72] The Competition Law Index (CLI) was produced by Bradford and Chilton and it is also based on some modifications of the ATLI together with the Scope Index.[73] Specifically, the CLI separates provisions of competition laws into two: those focusing on the substance of the law and those focusing on the quality of the competition authority. This study introduced a CRI, which goes beyond the law but also looks at the competition policy, if it exists. In addition, there are further variables that matter in differentiating the strength of competition reforms that are introduced. But the main framework for the CRI is the CLI and a discussion might help contextualize how this is constructed.

A diagrammatic representation of the CLI (Figure A1) shows that its weight is shared evenly between the substance of the law and the strength of the enforcing authorities. In addition, the three categories of anticompetitive practices have an equal weight in determining the substance of the law.

In this study, there are several observations made with respect to competition policy and critical attributes that matter in distinguishing between competition regimes which were not considered in the CLI. These additions pertain to both the substance and the authorities. For the authorities, one issue

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69. Pradeep S. Mehta & S. Chakravarthy, *Dimensions of Competition Policy and Law in Emerging Economies* (CUTS CCIER Discussion Paper, 2011).

70. Michael W. Nicholson, *Quantifying Antitrust Regimes* (Federal Trade Commission Working Paper No. 267, 2004).

71. Keith N. Hylton & Fei Deng, *Antitrust Around the World: An Empirical Analysis of the Scope of Competition Laws and their Effects*, 74 ANTITRUST LAW J. 271-341 (2007).

72. *Id*.

73. Anu Bradford & Adam S. Chilton, *Competition Law around the World from 1889 to 2010: The Competition Law Index*, 14 J. COMPETITION LAW ECON 393–432 (2018).
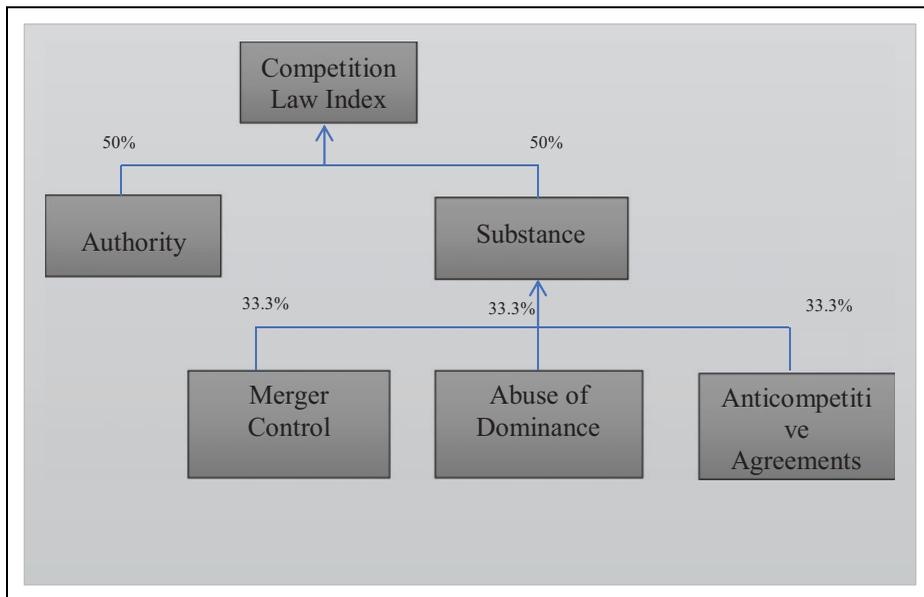
Figure A1. Composition and weights of the Competition Law Index. *Source:* Bradford and Chilton (2018).

considered critical in this study is whether a separate appellant platform adds or worsen the quality of competition enforcement. In general, the enforcement of competition laws is a shared responsibility among a number of institutions[74] and this has to be done in a well-coordinated manner. There is need for a competition authority that does the investigation while there is also need for competition authorities doing the adjudication,[75] which is also extended to the courts.

   While there are a number of models in existence, three models have emerged across the world.[76] The first is the bifurcated judicial model where there is only one competition authority with investigation role but without any enforcement power, which is reserved for the courts. The second is the bifurcated agency model,[77] where there are two competition authorities; one doing the investigation while the other is a specialized Tribunal which enforces the decisions, as well as presiding over any appeals that firms might have against the order of the competition authority.[78] The third is the integrated agency model, where there is one competition authority but with two arms; the investigating arm as well as a Board of Commissioners within the agency to undertake the first level adjudication.[79] It is mainly the last two models that are found within the African context.[80] In general, courts within the African context are generally weak and lack specialization with respect

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74. *See* Rabah Arezki et al., *Reaching New Heights: Promoting Fair Competition in the Middle East and North Africa* (World Bank Middle East and North Africa Economic Update, 2020); Eleanor M. Fox & Michael J. Trebilcock, *The Design of Competition Law Institutions and the Global Convergence of Process Norms: The GAL Competition Project* (Law & Economics Research Paper Series, Working Paper No. 12-20, 2012).

75. Arezki, et al, *supra* note 74.

76. *See* Fox & Trebilcock, *supra* note 74; Fredrick Jenny, *The Institutional Design of Competition Authorities, in Competition Law Enforcement*, in BRICS and in Developing Countries 1-57 (F. Jenny & Y. Katsoulacos, eds., 2016).

77. *Id*.

78. Jenny, *supra* note 76.

79. Fox & Trebilcock, *supra* note 74.

80. Mark Burke, et al*., Cross-cutting Competition Issues in Regional Industrial Development* (CCRED Working Paper 20/2017, 2017).

to competition issues.[81] This means that under an integrated agency mode, parties aggrieved by competition authority decisions and have appealed to the courts have to wait for years before their cases are heard.

A separate Competition Tribunal can be time saving and enhance the extent to which cases can be completed, especially when the Tribunal has built expertise over time. A bifurcated agency model can be regarded as having an advantage in that it allows independence in the presiding of the cases while also reducing the time taken for a decision to be made compared to the normal courts.[82] While the integrated agency model is often touted as more suitable within developing countries due to lack of resources, it can be subject to partiality challenges when the demarcation between investigation and adjudication became blurred by virtue of being housed under the same roof.[83] In addition, if there is only one agency as in the integrated agency model, at a time when it is not adequately capacitated, this can create a governance vulnerability with the ability to compromise impartiality and effectiveness.[84] A bifurcated agency model allows the concentration of adjudication expertise within a small specialized group, making it easy to create expert judges who can expedite the administration of competition justice, thus becoming the most efficient enforcement scheme.[85] The importance of relying on more than one competition authority as an insurance against poor decisions, which can easily arise due to resource shortage, state capture, political interference, and sloth, also arises.[86] Since enforcement agencies generally tend to build expertise over time, a bifurcated agency model can actually tend to be more advantageous with time, as this might limit the amount of cases going to the courts. Having a separate investigation authority and adjudication authority is thus considered an advantage in this study, which is also included among the measurement criteria of good quality competition regimes in the construction of the CRI.[87]

Another critical issue is the capacity of competition authorities in Africa to deal with cartels. The introduction of a corporate leniency program has been credited for some milestones in busting cartels, as there should be an incentive for inducing some members of the cartel to cooperate and help expose the other members.[88] The leniency program became embedded within many competition regimes in early 2000s, and in countries, such as Canada, Germany, Korea, and New Zealand, it is credited with about 45%–55% of cartels detected and 80% in the European Union by 2015.[89] The existence of a leniency program was also included in this study as an added strength of the competition authority.

The third modification is the realization that a competition law is more effective if it is preceded or complimented by a stand-alone competition policy, which makes it easier for some policy induced barriers to competition to be addressed. A country with a competition policy is more likely to take a pro-competition stance when other laws and regulation that negatively affect competition coexist with the competition law. A number of countries have also successfully implemented competition laws

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81. JENNY, *supra* note 76.

82. SYED AKHTAR MAHMOOD & MERIEM AIT ALI SLIMANE, PRIVILEGE-RESISTANT POLICIES IN THE MIDDLE EAST AND NORTH AFRICA: MEASUREMENT AND OPERATIONAL IMPLICATIONS (World Bank MENA Development Report, 2018).

83. *Id.*

84. *Supra* note 74.

85. UNCTAD, MODEL LAW ON COMPETITION: REVISED CHAPTER IX (UNCTAD Report number TD/B/C.I/CLP/L.11, 2019).

86. WILLIAM E. KOVACIC & DAVID A. HYMAN, COMPETITION AGENCY DESIGN: WHAT'S ON THE MENU? (628, 2012).

87. Each model has its own advantages and weaknesses, as the Competition Tribunal might also have capacity challenges and cause delays as well. In addition, even after passing through the Tribunal, cases could still eventually go to the courts, meaning that the Tribunal would be an unnecessary layer (Jenny, 2016). However, these weaknesses only occur if there is no sufficient expertise being built in the adjudicative body over time. The volume of cases appealed to the Tribunals coupled with capacity building programs for officials in both institutions would virtually close off any capacity challenges with time.

88. *See* OECD, CHALLENGES AND CO-ORDINATION OF LENIENCY PROGRAMMES (Background Note by the Secretariat No. DAF/COMP/WP3(2018)1, 2018); UNCTAD, COMPETITION GUIDELINES: LENIENCY PROGRAMMES (UNCTAD report no. UNCTAD/DITC/CLP/2016/3, 2016).

89. *Id.*

Table A1. Decomposition of the Competition Reform Index based on Attributes for the Competition Authorities.

Attribute	Value
(a) Competition investigating authority	
Functionally independent*	1
Private right of action	1
Fines	1
Imprisonment	1
Divestitures	1
Damages	1
Extraterritoriality	1
Corporate leniency*	1
Industry exemptions	−0.5
Enterprise exemptions	−0.5
Highest possible: Competition investigating authority	8
(b) Separate appellate institution*	
Appeal platform	1
Power to reverse or confirm orders	1
Power to impose fresh orders	1
Power to impose fines	1
Highest possible: Appellate institution	4

Source: Bradford and Chilton (2018) with author's addition shown with *.

without a competition policy. However, the existence of a competition policy has been regarded as part of the substance of the competition law regime in this study, as it makes the enforcement of the law smoother.

This generally explains the measure of the strength of competition regimes used in this study; the CRI. However, once new qualifying factors are added, it becomes necessary to identify the attributes that would be used to objectively assess their presence or absence. For the competition appellate body, there are generally about four critical factors that would enhance competition enforcement. First, having the appeal role in itself is a confidence booster as it can prevent cases from going to the courts. Second, powers to be able to either reverse or uphold the decision of the competition investigating authority add value to competition enforcement. Third, the ability of the appellate body to impose fresh orders in addition to those imposed by the investigating authority also allow for new dimensions on competition enforcement without being referred back to the investigating authority. And finally, the ability of the appellate body to be able to impose fines, which include introducing new fines as well increasing or decreasing the level of fines imposed by the investigating authority, also enhances the effectiveness of the competition regime. The values to be used in assessing the strength of the competition authorities are as given in Table A1.

In addition to the authorities, the manner in which the substance of the law can be assessed is shown in Table A2. From a review of various literature as well as competition policy discourse, there are about three important issues which an effective competition policy needs to influence for the competition regime to be effective. First, the competition policy should seek to ensure that there is a cooperation framework between the competition authorities and the various sector regulators which perform roles with a bearing on competition. A competition policy that seeks to provide for interface between regulators is more effective in addressing policy-induced distortions which stifle competition. Second, a competition policy should seek to ensure that there is consistency between the competition legislation and other legislations, especially given that the competition law would be introduced when other laws with conflicting provisions were already operational. The competition policy should also provide for a review or amendment of those laws which would be found to be in conflict

Table A2. Decomposition of the Competition Reform Index based on Attributes for the Substance of the Law.

Attribute	Value	Attribute	Value	Attribute	Value
(a) Competition policy*		(b) Competition law			
Government commits to competition in market	1	(i) Abuse of dominance		(ii) Anticompetitive agreements	
Interface with other regulators	1	Definition of dominance*	0.5	Price fixing	0.5
Consistency with other laws	1	Excessive pricing*	0.5	Market sharing	0.5
Provides for review of laws in conflict	1	Market access	0.5	Output limitation	0.5
Open up markets to competition	1	Tying	0.5	Bid rigging	0.5
Highest possible: Competition policy	5	Discounts	0.5	Joint Boycott*	0.5
		Unfair pricing	0.5	Tying	0.5
		Discriminatory pricing	0.5	Exclusive dealing	0.5
		Predatory pricing	0.5	Resale price maintenance	0.5
		Retail price maintenance	0.5	Eliminate competitors	0.5
		Other abusive acts	0.5	Quantity forcing*	0.5
		Efficiency defense	−0.5	Efficiency defense	−0.5
		Public interest defense	−0.5	Public interest defense	−0.5
		Highest possible	5	Highest possible	5
		(iii) Merger control			
		Premerger notification	1		
		Mandatory notification	1		
		Substantive assessment: Economic	1		
		Substantive assessment: Public interest	1		
		Regulates all types of mergers*	1		
		Efficiency defense	−0.5		
		Failing firm defense	−0.5		
		Public interest defense	−0.5		
		Highest possible	5		

with the provisions of a competition law. Finally, given that some sectors can be monopolized by public institutions or other private institutions, the competition policy should announce government's intention to open up sectors to competition to deal with monopolies and dominant institutions.

This generally forms the context under which the quality of the competition regimes will be assessed in this study. However, while there have been added quality criteria, the main framework in this study remains that of Bradford and Chilton with respect to the disaggregation of competition regimes into two: the substance and the authorities. Thus, the overall maximum score should remain thirty-two, which was also retained from the ATLI. With these modifications, the overall scores and the implied weights are no longer equal but differ (Figure A2).

However, while the quality of the competition regime as it exists on paper matters, it is the extent to which the competition regime is being actively enforced that determines the level of competition in the market. As a result, this study goes beyond assessing the quality of the competition reforms on paper
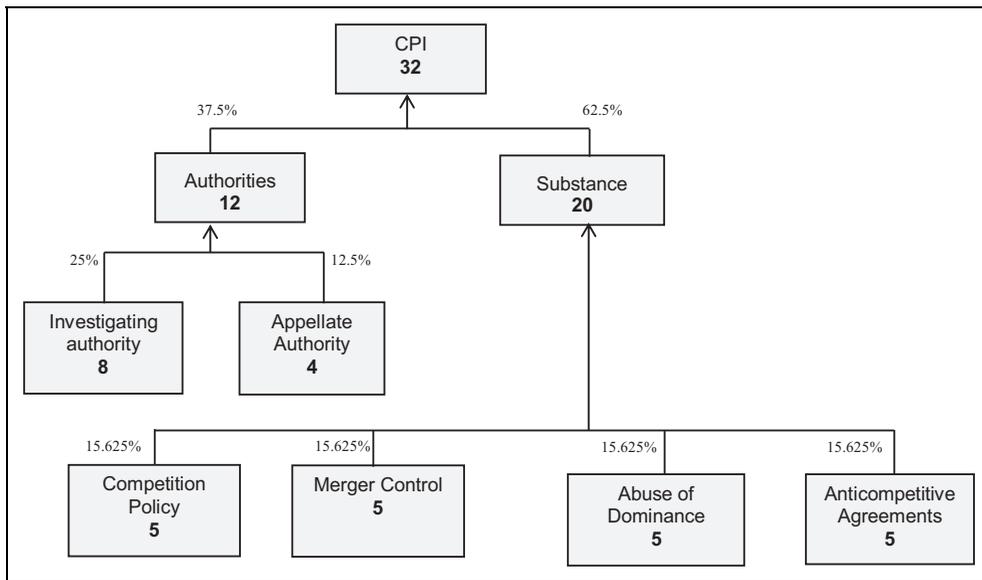
Figure A2. Highest possible Competition Reform Index score.
Source: Author's modification of Bradford and Chilton (2018).

but also includes enforcement attributes. The enforcement attributes generally refer to the number of competition cases that the competition investigating authority finalizes each year, as this is a good proxy for the market regulatory role to ensure pro-competition behaviour.[90] However, economies that are bigger generally tend to have more cases compared to the smaller economies due to the number of business units. It is expected that the staff's complement of the competition authority would vary with economic size, such that cases finalized per staff[91] could be a way of reflecting the efforts of the competition authority while being size neutral. In this study, therefore, the variable used to reflect the quality of the competition regime on paper as well as the extent to which the competition law is being effectively enforced is given by the equation:

$$\text{Comp} = \text{CRI} + \frac{\text{number of cases completed in a year}}{\text{number of employees in the institution per year}} \quad . \tag{A1}$$

Appendix B

The IHS Transformation for the Study

The IHS transformation of a variable is generally its arcsinh. It helps ensure that zero values are captured in estimation models as the transformation retains the zero values. The IHS transformation of a variable, say *x*, can be written as:

---

90. No weights are assigned with respect to the three types of anticompetitive practices. For example, a competition authority that approves twenty merger cases per year only will have the same score as one which has twenty cases spread across the types of anticompetitive practices. This was done to avoid subjectivities which could be debatable.
91. Cases finalized each year divided by the number of staff, including those offering support services.

$$\tilde{x} = ihs(x) = \ln(x + \sqrt{x^2 + 1}).$$

This transformation gives a distribution $\tilde{x}$ which is close to the natural logarithm transformation of x. However, while $\tilde{x}$ gives a good proximation of $\ln x$, using the coefficients as elasticities can at times give misleading results. Thus, it is also important to work out the relevant elasticity from the coefficient. For a model where both the dependent and independent variables have been transformed using the IHS (arcsinh-arcsinh model), which can be in the form:

$$\tilde{y} = \alpha + \beta \tilde{x} + \varepsilon.$$

Then, the estimated elasticity ($\hat{\varepsilon}$) can be given as:[92]

$$\hat{\varepsilon} = \hat{\beta} \frac{\sqrt{y^2 + 1}}{y} * \frac{x}{\sqrt{x^2 + 1}}.$$

However, the coefficient can also be directly estimated using STATA. In this study, this was done as follows:[93]

```
egen xbar = mean(comp_exporter)
egen xbar1=mean(comp_importer)
egen ybar =mean(exports)
. nlcom(_b[ihs_compexp]*xbar*(sqrt(ybar2+1)))/(ybar*sqrt(xbar2+1))

ihs_x | Coef. Std. Err. z P>|z| [95% Conf. Interval]

_nl_1 | .2520207 .1398328 1.80 0.071 −.0220465 .5260879

. nlcom(_b[ihs_compimp]*xbar1*(sqrt(ybar2+1)))/(ybar*sqrt(xbar12+1))

ihs_x | Coef. Std. Err. z P>|z| [95% Conf. Interval]

_nl_1 | .18161 .0740429 2.45 0.014 .0364886 .3267313
```

92. *See* Marc & Casey, *supra* note 62, 9.
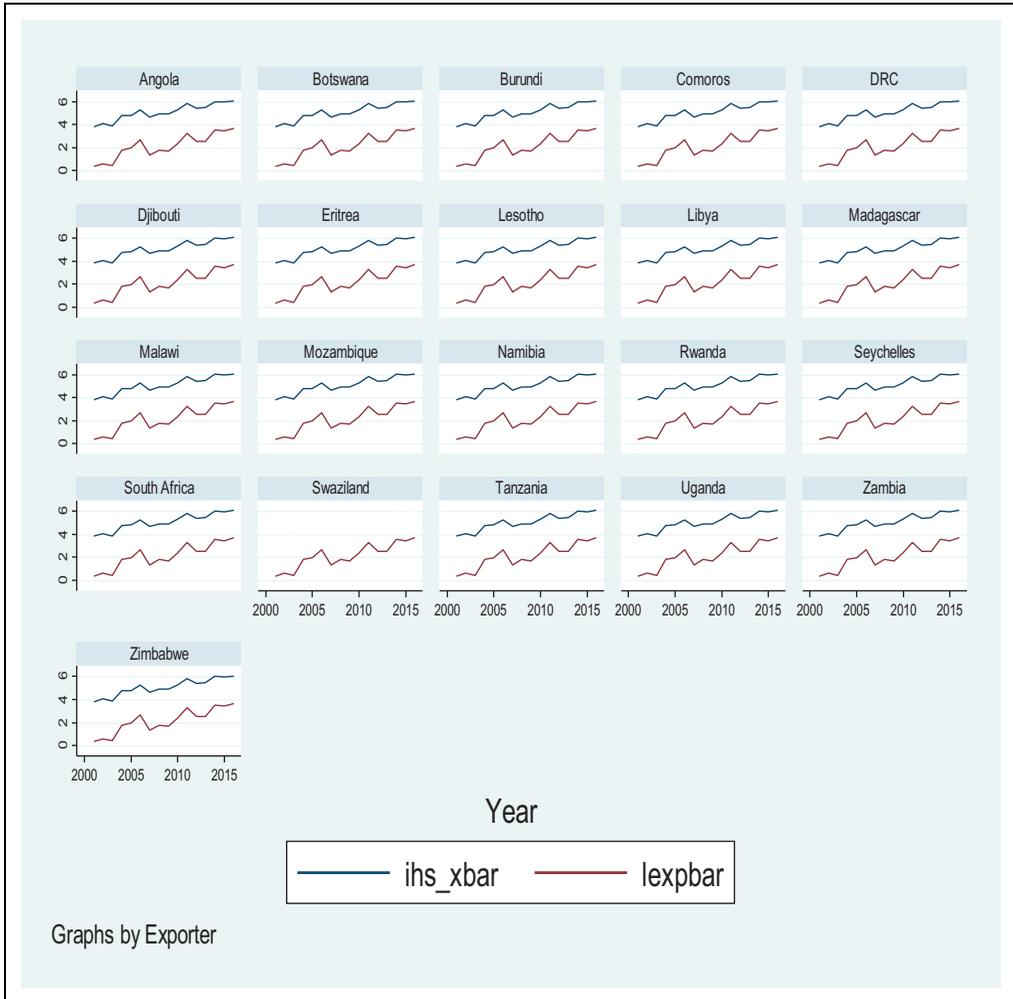93. *Id.* 25.

Appendix C

Figure C3. Plot of the mean exports for the IHS transformation (IHS_XBAR) and natural log transformations (LEXPBAR).

Declaration of Conflicting Interests

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