MARKET DISTORTIONS AND HOW BEST TO DEAL WITH THEM: SUGAR SECTOR CASE STUDY

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TABLE OF CONTENTS

	Page
SECTION 1	
1. Previous Attempts to Deal with the Problem	2
2. Tariffication of Distortion: A New Mechanism	2
3. Proving the Existence of an ACMD	3
4. Demonstration of Anti-Competitive Effect	3
5. Demonstrating Harm	3
6. WTO Implications	3
7. Market Distortions and the Trilateral Group	4
SECTION 2	7
SECTION 3	
1. Examples of Distortions in the Sugar Sector around the World	8
2. US Distortions	8
SECTION 4	
1. Impact of Distortions (Quantum)	13
2. Consideration of Brazilian Distortions as an Example of ACMDs	14
3. Using the European 'C' Sugar Model as a Proxy	14
SECTION 5	
1. ACMD Productivity Model	15
2. Applying the SRB MCMD Model to the Sugar Sector	15
3. ACMD Index	16
ANNEX 1	
Competition Policy	21
Article 15.1 Definitions	21
Article 15.2: Competition Law and Anti-Competitive Practices	22
Article 15.3: Procedural Fairness in Competition Law Enforcement	23
Article 15.4: Private Rights of Action	24
Article 15.5: Co-operation	25
Article 15.6: Consumer Protection	25
Article 15.7: Transparency of Policies and Practices	26
Article 15.8: Consultations	27
Article 15.9: State-Owned Enterprises, State Enterprises and Designated Monopolies	27
Article 15.10: Commercial Considerations	28
Article 15.11: Courts and Administrative Bodies	29
Article 15.12: Adverse Effects	29
Article 15.13: Injury	31

Article 15.14: Requirements for Transparency and Corporate Governance 31
Article 15.15: Provision of Information 32
Article 15.16: Anti-Competitive Market Distortions 34
Article 15.17 34
Article 15.18 35
Article 15.19 35
Article 15.20: Sub-Committee on State-Owned Enterprises and Designated Monopolies 35
Article 15.21: Exceptions 36
Article 15.22: Dispute Settlement 37

ANNEX 15
State-Owned Enterprises and Designated Monopolies 37

CHAPTER 16
Subsidies, State Aid and Market Distortions 39
Article 16.1: Definitions 39
Article 16.2: Principles 39
Article 16.3: Scope 39
Article 16.4: Relation to the WTO Agreement 40
Article 16.5: Transparency 40
Article 16.6: Prohibited Subsidies 41
Article 16.7: Use of Subsidies 41
Article 16.8: State aids and Disciplines on Anti-Competitive Market Distortions 42
Article 16.9: Consultations 42
Article 16.10: Confidentiality 43
Article 16.11: Exemptions 43

ANNEX 2
Singham-Rangan-Bradley Model to Measure Impact of ACMD 44
Property Rights, Competition and Trade 44
Property Rights Protection 45
Domestic Competition 46
International Competition 48
Combined Effects 49
Data 49
The Model 50
Domestic Credit Stock 52
Stock of FDI 53
Health Expenditures 54
Fuel Exports and Ore and Metal Exports 56
School Persistence 56
Results 56
Estimating Weights 60

ANNEX 3
ACMD Index 61
Property Rights 61
Domestic Competition 61
International Competition 62

Market Distortions and How Best to Deal with Them:
Sugar Sector Case Study

Modern trade policy must recognise that internal market distortions can have a profound effect on trade. They can lead to the imposition of non-tariff and non-border barriers to trade, and they can lead to the artificial decrease in the production costs of exporters. While the trade rules on dumping and subsidies tend to focus on the price of products rather than their cost, anti-subsidy law tends to focus only on those specific subsidies which involve money foregone by the government and paid to undertaking in a very specific manner. Unfortunately, most government distortions are not specific enough to be captured by anti-subsidy regimes, so we must develop an alternative approach if we are to ensure that our producers are not adversely affected by distortions in other markets.

Put another way, our approach on international trade in general should recognise the link between market distortions internally and tariff approaches externally. One cannot reduce a tariff without fully accounting for the market conditions in the exporting market because these will have a huge impact on producer costs. In addition, market distortions may also have an impact on the ability of firms to successfully export into the markets which have the distortion.

SECTION 1

1. Previous Attempts to Deal with the Problem

There have been attempts to deal with these problems. Unfortunately, most of the attempts to deal with these problems have failed at a multilateral (WTO) level. First, shortly after the conclusion of the Uruguay Round in 1994, and the setting up of the WTO, an attempt was made to deal more properly with behind the border barriers, and what I and others have christened Anti-Competitive Market Distortions (ACMDs). This led to the development of the Singapore issues (on the interface between trade and competition policy, trade and investment, and government procurement), named after the 1997 Singapore WTO Ministerial. However, these issues were not advanced by the WTO membership at the time. At the same time, services had been brought into the negotiations for the first time in 1995 through the General Agreement on Trade in Services ("GATS") agreement. The way that negotiation was structured was that most countries made fairly minimal commitments on services, and instead committed to a so-called "built-in agenda". This "built-in agenda" however did not yield much in the way of further liberalisation and did nothing to deal with market distortions which have huge impacts in the services sector. As a result of the WTO's failure to deal with this issue, we began to see the issue of competition policy and the activities of State-Owned Enterprises (SOEs) appear in a number of FTAs (starting with the US-Singapore FTA, CPTPP, and become a central issue in the Phase 1 US-China deal). However, even these efforts have not yielded many concrete results. The most recent trilateral group established by the US, EU and Japan to deal with market distortions has made some recommendations in the anti-subsidy area, but the level of ambitious has slipped.

The UK has an opportunity through its FTA with the US to introduce disciplines to deal with these distortions into the UK-US FTA as a template and then more widely. The UK can also introduce some of these concepts now that it has embraced a new Global Tariff Schedule. Finally, the UK can develop a mechanism to tarifficate distortions which will enable UK producers who are disadvantaged by distortions to benefit from a tariff that is calibrated to the scale of the distortion.

Such a mechanism would have to pass muster under WTO rules.

2. Tariffication of Distortion: A New Mechanism

We suggest the following mechanism to supplement the UK's trade remedy laws (in the areas of anti-dumping and countervailing duties). In order to be eligible for a tariffication of a market distortion, the affected industry should:

a) Prove the existence of an ACMD;
b) Demonstrate that there is an anti-competitive effect;
c) Which has caused harm to the effected industry.

3. Proving the Existence of an ACMD

An ACMD is any government intervention in the economy which substantially lessens competition and cannot be justified by an overriding legitimate public policy goal. The SLC test is a recognised competition test drawn from the antitrust law of mergers. In a sense, a merger is an event which may or may not have an effect, in the same way that a government distortion is also an event which may have a competitive effect. In that respect the distortion is different from, say the competition analysis of single firm conduct or attempting to understand whether a single firm has power over price.

4. Demonstration of Anti-Competitive Effect

The plaintiff will have to demonstrate that there has been an anti-competitive effect. The appropriate test is the test to measure the impact on competition of a merger. In that case the merger can be blocked if there is a substantial lessening of competition. By analogy, if the ACMD results in a substantial lessening of competition, because it causes firms to exit the market, or because of structural effects in either of the two markets being considered (the export and import markets), then it could lead to a tariffication.

5. Demonstrating Harm

The aggrieved industry must also demonstrate harm, and that the harm must be demonstrably caused by the ACMD.

6. WTO Implications

Since tariffication of distortions would mean a different tariff rate would be applied for different countries, it would prima facie be a WTO violation. However, the application of a trade remedy is governed by the Anti-Dumping Agreement (the "AD Agreement") and also the Agreement on Subsidies and Countervailing Measures ("ASCM").

The AD Agreement allows countries to discipline products which are exported at prices below the home country price. These anti-dumping laws are allowed provided they satisfy certain basic norms. The problem with the AD laws is that they focus on price of products and not on the underlying costs. They are therefore susceptible to abuse as well as being focused on the wrong metric. Since the problem with distortions is their impact on the underlying cost base of firms, it is more appropriate that artificial cost reduction should be the focus of policy, as opposed to international price comparisons.

Many government support schemes could also fall foul of the rules against subsidies. The ASCM provides that for a subsidy to be actionable there must be a transfer of funds from a government to an undertaking or group of undertakings that confers a benefit. The subsidy must also be specific, i.e. it must apply only to a group of firms and not all firms by an explicit limitation to a group of firms. (See Articles 1 and 2, ASCM). Subsidies contingent on export performance are also prohibited. Under Article 5, the subsidy must produce **adverse effects which are injury** to another Member's domestic industry, **serious prejudice** to the interests of a member, or **nullification and impairment** of benefits to a Member. **Serious prejudice** is assumed where the total ad valorem subsidy is in excess of five per cent, or if the subsidy covers the total operating losses of an industry, or direct forgiveness of debt.

Serious prejudice can exist in the following cases:

(a) the effect of the subsidy is to displace or impede the imports of a like product of another Member into the market of the subsidizing Member;

(b) the effect of the subsidy is to displace or impede the exports of a like product of another Member from a third country market;

(c) the effect of the subsidy is a significant price undercutting by the subsidized product as compared with the price of a like product of another Member in the same market or significant price suppression, price depression or lost sales in the same market;

(d) the effect of the subsidy is an increase in the world market share of the subsidizing Member in a particular subsidized primary product or commodity as compared to the average share it had during the previous period of three years and this increase follows a consistent trend over a period when subsidies have been granted.

This can be established by a change in relative market shares or evidence of price undercutting by the subsidized product vis a vis the unsubsidised one.

The problem here is that many of the distortions we speak to here are not necessarily specific enough to constitute an actionable subsidy. If they are, it would require more of a competition test to constitute serious prejudice. Such a test could provide that if the subsidy lessened competition significantly it would be deemed to constitute serious prejudice.

7. Market Distortions and the Trilateral Group

There has been one positive development in the WTO on these issues as of the formation of the trilateral group on market distortions (in December 2017). Work is now underway in the trilateral group to deal with the issue of distortions, and the problems alluded to above. The group agreed the Ministerial Decision on Market Distortions at the December 2017 WTO Ministerial meeting in Buenos Aires, Argentina. There is definitely an opportunity to further develop thinking on these issues. USTR has indicated that it would be interested in a UK proposal which went further than the US, EU and Japan have been able to narrowly agree in the Trilateral. There is therefore scope for the UK to suggest a more expansive approach, along the lines of this document.

The Ministerial Declaration on 14 January 2020 provides that:

On industrial subsidies, the Ministers discussed ways to strengthen existing WTO rules on industrial subsidies and agreed upon the following:

(i) The current list of prohibited subsidies provided for in Article 3.1 of the Agreement on Subsidies and Countervailing Measures (ASCM) is **insufficient** to tackle market and trade distorting subsidization existing in certain jurisdictions. Therefore, new types of unconditionally prohibited subsidies need to be added to the ASCM. These are:

   a. unlimited guarantees;

   b. subsidies to an insolvent or ailing enterprise in the absence of a credible restructuring plan;

   c. subsidies to enterprises unable to obtain long-term financing or investment from independent commercial sources operating in sectors or industries in overcapacity;

d. certain direct forgiveness of debt. Ministers agreed to continue working on identifying the scope of prohibitions and additional categories of unconditionally prohibited subsidies.

(ii) Certain other types of subsidies have such a harmful effect so as to justify a reversal of the burden of proof so that the subsidizing Member must demonstrate that there are no serious negative trade or capacity effects and that there is effective transparency about the subsidy in question. Subsidies having been discussed in this category include, but are not limited to: excessively large subsidies; subsidies that prop up uncompetitive firms and prevent their exit from the market; subsidies creating massive manufacturing capacity, without private commercial participation; and, subsidies that lower input prices domestically in comparison to prices of the same goods when destined for export. If such subsidy is found to exist and the absence of serious negative effect cannot be demonstrated, the subsidizing Member must withdraw the subsidy in question immediately. Ministers agreed to continue working on the scope of such provisions, and to identify additional instances of harmful subsidization and their scope.

(iii) The current rules of the ASCM identify in Article 6.3 instances of serious prejudice to the interests of another Member. However, these instances do not refer to situations where the subsidy in question **distorts capacity**. An additional type of serious prejudice linked to capacity should be therefore added to Article 6.3 ASCM. Further, work will continue on a provision defining the threat of serious prejudice.

(iv) The current rules of the ASCM do not provide for any incentive for WTO Members to properly notify their subsidies. Therefore, the state-of-play of subsidies notifications is dismal. Hence, a new strong incentive to notify subsidies properly should be added to Article 25 ASCM, rendering prohibited any non-notified subsidies that were counter-notified by another Member, unless the subsidizing Member provides the required information in writing within set timeframes.

(v) The current rules of the ASCM are insufficiently prescriptive when it comes to the determination of the proper benchmark for subsidies consisting of the provision of goods or services or purchase of goods by a government in situations where the domestic market of the subsidizing Member is distorted. Therefore, the ASCM should be amended to describe the circumstances in which domestic prices can be rejected and how a proper benchmark can be established, including the use of prices outside the market of the subsidizing Member.

(vi) The Ministers observed that many subsidies are granted through State Enterprises and discussed the importance of ensuring that these subsidizing entities are captured by the term “public body”. The Ministers agreed that the interpretation of “public body” by the WTO Appellate Body in several reports undermines the effectiveness of WTO subsidy rules. To determine that an entity is a public body, it is not necessary to find that the entity “possesses, exercises or is vested with governmental authority.” The Ministers agreed to continue working on a definition of "public body" on this basis. On forced technology transfers, the Ministers reaffirmed that technology transfer between firms in different countries is an important part of global trade and investment. Technology transfer that is fair, voluntary and based on market principles

can be mutually beneficial for growth and development. They also reaffirmed that when one country engages in forced technology transfer, it deprives other countries of the opportunity to benefit from the fair, voluntary and market-based flow of technology and innovation. These unfair practices are inconsistent with an international trading system based on market principles and undermines growth and development. The Ministers discussed possible elements of core disciplines that aim to prevent forced technology transfer practices of third countries, the need to reach out to and build consensus with other WTO Members on the need to address forced technology transfer issues and their commitment to effective means to stop harmful forced technology transfer policies and practices, including through export controls, investment review for national security purposes, their respective enforcement tools, and the development of new rules. The Ministers also took stock of the progress on the discussion and the joint actions on the following items and agreed to continue cooperating on them: - the importance of market oriented conditions for a free, fair, and mutually advantageous trading system; - reform of the WTO, to include increasing WTO Member compliance with existing WTO notification obligations and pressing advanced WTO Members claiming developing country status to undertake full commitments in ongoing and future WTO negotiations; - international rule-making on trade-related aspects of electronic commerce at the WTO; and - international forums such as the Global Forum on Steel Excess Capacity and the Governments/Authorities' Meeting on Semiconductors.

While the Trilateral Group has made progress in this area, we do need to build on its work. The trilateral group recommendations are based on industrial subsidies only and so, it would be good to broaden this out to include services and other goods. We include with this language which could form the basis of a competition policy and subsidies chapter which would be suitable for UK trading partners and could be something that the UK seeks to drive forward as part of their overall trade policy.

The Trilateral Group's recommendations also do not touch on some critical market distortions that are outside the subsidy's definition.

We have included with this memorandum draft language for a competition and government distortions chapter in a trade agreement which could form the basis of UK trade policy and UK FTAs with other countries. This chapter would enable the UK to deal with the issue of distortions in other countries.

SECTION 2

Distortions come in a variety of different forms. Subsidy specific analysis has focused on those distortions that constitute monies foregone by governments in favour of firms. However, our vision of ACMDs is much broader and essentially includes anything that leads to a cost reduction for a firm that is not derived from a competitive or comparative advantage or from ordinary market processes. This artificial reduction of the cost base of firms distorts the equality of competitive opportunity between firms. It certainly reaches at least the level of nullification and impairment of negotiated benefits, where the distortion acts as a market access barrier. Where the distortions leads a cost reduction for producers in the exporting market, these excess exports which can be attributed to the distortion should be taken into account in policy responses.

In *Price Distortions in Agriculture and their Effects: An International Comparison*, Malcolm Bale and Ernst Lutz (Journal of American Agricultural Economics, 1981) consider the impact of government interventions on output and conclude there are three types of distortions.

(i) Those that are neutral regarding the opportunity cost of production
(ii) Those where agricultural production is overvalued
(iii) Those where agricultural production is undervalued.

They note that most high-income countries distortions fall into category 2, and most developing countries' distortions fall into category 3. Category 2 distortions tend to elevate the price of domestic producers. Category 3 distortions tend to lower the prices and costs for domestic producers. Category 2 distortions increase the incentive to cross subsidise with the increased profits from the domestic market. Overproduction can then be exported onto global markets. Developed countries by contrast under produce, if the domestic producer costs increase and they also face barriers in external markets.

In terms of consumption, developed countries tend to consume less, whereas developing countries consume more. Category 2 causes an increase in the exports of developed countries. Category 3 causes a decrease in the exports of developing countries.

In the sugar sector, we see examples of both of these effects, and we describe them below.

SECTION 3

1. Examples of Distortions in the Sugar Sector around the World

The next section surveys distortions in a number of major sugar markets in the world (major because of domestic production or because of high levels of exports).

2. US Distortions

The US has a very high level of distortion in the sugar sector. These apply not just in terms of the tariff, but also across a range of areas.

The key elements of the US sugar programme is as follows:

(a) Price Support loan.
(b) Marketing Allotments to limit the amount that processors can sell each year.
(c) Import quotas (TRQs are agreed with a number of countries).
(d) Sugar to ethanol backstop.

Most of the US programme is denied to insulate and isolate the US sugar market and does not have significant external effects. It is therefore very different from the Brazilian programme discussed below which is designed to give a large export advantage to Brazilian exports of sugar, and lower prices.

However, the programme clearly gives a cost advantage to US sugar producers as it guarantees them very high prices, allowing them to benefit from supra-competitive profits as compared to their non-US rivals. While this does not currently translate into enhanced exports at the moment, it is not impossible that changes in consumer habits in the US could lead US producers to seek alternative markets. If they were to do so, then they would have a significant legacy advantage over other producers.

An Iowa state study by Beghin and Elobeid (*The impact of the U.S. sugar program redux,* John C. Beghin, Amani Elobeid, 5/1/2015)[1] suggests that the US sugar market is protected by a number of distortions and seeks to quantify the effect of these distortions on the price of US sugar. It considers what free trade/free market principles would translate into in terms of sugar price reduction and consumer welfare gain.

According to the study, elimination of the various US sugar programmes would mean a reduction in the domestic sugar price by a factor of 2 to 3. The consumer welfare impact of elimination of the US sugar programme could be between $2.9bn to 3.5bn.

Won Koo notes that if the US fully liberalised its border barriers, its domestic prices would go down by 20.4%, and prices in the Caribbean would go up by 32%.[2]

Differing costs between different US states also help us understand how different distortions impact pricing in different ways. Florida sugar costs 8.63 cents per pound (2005), whereas in Hawaii, costs were 13.35 cents per pound in the same year. This is partly because sugar processing costs differ widely (2.35 cents/lb in Florida, versus 4.8 cents/lb in Hawaii. Marketing costs also vary widely – 1.5 cents/lb in Florida, versus 2.7 cents/lb in Hawaii).

[1] Available at https://lib.dr.iastate.edu/cgi/viewcontent.cgi?article=1002&context=econ_las_workingpapers

[2] Koo, Won W. "Alternative U.S. and EU Sugar Trade Liberalization Policies and Their Implications." *Review of Agricultural Economics* 24, no. 2 (2002): 336-52. Accessed May 23, 2020. www.jstor.org/stable/1349764.

Australia

Australia is often cited as a free agricultural market. However, even in Australia, there are significant distortions. There are ethanol mandates in some parts of Australia, but the big distortion in Australian is the continued role played by state marketing boards, such as the Queensland Sugar Corporation. While the QSC does not benefit from direct government support any longer, it is the sole buyer of sugar in the region and therefore does exert monopsony power via government granted sole acquisition rights, and therefore does benefit from a significant distortion. Sole acquisition powers also exist in NSW. Australia's prices are significantly above world market prices for sugar.

But like the US, most of the internal distortions in the Australian market, the grant of sole acquisition authority for Queensland Sugar Corporation and the New South Wales body lead to potential price effects solely in domestic markets. However, to the extent that this does lead to a lowering of costs for Australian producers, this does mean that Australian producers are in a position to cross-subsidise and therefore be more competitive in their export business than they would otherwise be. Unlike the US, Australia is a major sugar exporter. Hence any distortions that lead to reductions in Australian industry could have major impacts on the volume of exports likely.

Brazil

Systemic distortions of the sugar sector exist in a number of areas.

First, Brazil does maintain a 16.5% tariff on sugar and sugar products.

Second, Brazil uses a combination of low interest loans and debt forgiveness to lower the costs of its producers. The soft loans available to Brazilian farmers topped $100m in 2010, and amount to around 50% of overall agricultural production. These soft loans are government backed and are available at preferential rates viz a viz private sector loans. Brazil also allows the renegotiation of agricultural loans. A sample set of Brazil laws which apply to the sugar sector in distortionary ways is as follows:

- Law 12.788/2012: The Treasury acquires defaulted agricultural loans from private banks and settles with discounts ranging from 30 to 70% on due balances. 110,000 loans affected for a remaining amount of US$ 6 billion in February 2011 – the amount forgiven is unknown.
- Law 11.775/2008: On 2.8 million agricultural contracts, this law increased terms by 3 to 10 years, forgave 5 to 70% of the balances due and US$ 500 to 8,000 bonuses – with specific parameters for each class of loan. This concerned about US$ 41 billion in outstanding loans – the amount waived is unknown.
- Law 9866/1999: Creates a 15 to 30% bonus on punctual debt repayments for settlements already re-negotiated under law 9138/1995. The amounts involved and forgiven are unknown.
- Law 9138/1995: Debts can be re-scheduled for up to 10 years at a 3% interest rate, with yearly payments. Debtor may choose to base payments on product prices. Applicable to all loans below US$ 220,000. Concerns debts amounting to US$ 7.6 billion; the amount waived is unknown.

- Law 7843/1989: Article 4 mandates that agricultural loans must be re-negotiated when unpaid for any reason other than "producer will". The amounts are unknown.

Many of these laws have significant legacy effects in terms of impact on excess exports from Brazil.

These laws are an example of the kinds of distortions which apply in the Brazil market. It is understood that these loan renegotiation terms are so favourable to Brazilian farmers that law firms regularly market their services to clients to find ways of lowering their loan amounts using these laws. The value of the subsidised interest rate is around $400m per year. As one commentator notes with respect to the benefits of this to one particular sugar company:

- To take an example from the 2010 accounts of Guarani, the fifth-largest Brazilian sugar and ethanol company: the initial amount owed was US$ 42 million; once re-negotiated, it fell to US$ 25 million and the accountants (Deloitte) calculated the net present value of that balance to be US$ 8 million. In this case, the total amount forgiven was US$ 34 million, an 81% reduction of the original debt.

Third Brazilian producers benefit from the historic subsidy programmes which were designed to promote the Brazilian ethanol and gasohol industry (the ProAlcool Programme). This has had a severe impact on competition in Brazilian and global markets. The Proalcool programme consisted of two distinct phases. The first phase was between 1975 and 1980 and began after the first oil shock. This was designed to increase the amount of anhydrous ethanol as a counterweight to increasing fuel prices. The second phase was after the second oil shock for similar reasons. Part of the second Proalcool Programme included subsidising the production of alcohol only vehicles. This involved a network of subsidies, higher taxation of oil versus ethanol, and price controls so that the ethanol price was fixed at 65% of the petrol price. One source suggest that this involved $17bn of government support. As a result of the 435 sugar cane mills in Brazil, 168 are pure distilleries making only ethanol, and only 16 are pure sugar mills. In addition, the government made up the difference between the ethanol price and its cost of production. The impact of these programmes was sugar cane production in Brazil rocketed over the period from 1975 to 1991 from 68.5m tonnes to 222.4m tonnes. Ethanol supply went from 147m tonnes to 3bn tonnes. Factories in Brazil can now determine how much sugar versus how much ethanol to produce, depending on prevailing sugar and ethanol prices, and can arbitrage between the two without significant changes to the mills themselves. It was only in 1997, that these interventions ceased, and Brazil could be said to be operating in a free market.

The precise amount of ethanol required in gasoline is set by the government, and the government regularly determines this based on the amount of ethanol in the market. This then operates as a mandate which has more significant anti-competitive effects than even a subsidy.

Fourth, Brazil has stopped the direct price support and public storage measures.

Fifth, farmers also receive incentives to buy crop insurance which are then available at non-market rates.

Sixth, tax collection can also be quite light, and tax settlement programmes are common. The sugar industry benefits from reduced mandatory payments into pension funds. Instead of the usual 28% employer contribution, the sugar sector pays only 2.1 – 2.6% of revenue.

Studies have estimated that the total cost of the Brazilian distortions is $2.5bn, about $700bn of which is attributable to ethanol policy, and the rest due to other distortions. Brazil has become the world's largest exporter of ethanol. Adding ethanol production to a sugar mill makes a huge difference in terms of economies of scale. The most expensive part of the mill is the front end, where the sugar cane is crushed, and sugar juice extracted can benefit enormously from being much larger to accommodate ethanol production as well. Legacy programmes are also important for sugar mills as they last long periods of time. Since ethanol is fermented and distilled sugarcane, and comes exclusively from sugarcane in Brazil, it is reasonable to equate ethanol with sugar. Since the overwhelming costs of the sugar mill are front end costs, and these are minimised because the processes are identical for the production of sugar or ethanol (where only the back-end processes change), it is reasonable to treat the mill as being both a sugar and ethanol mill, largely interchangeably. Mills have enormous arbitrage opportunities viz a viz the final end products.

Canada

There are significant distortions in the Canadian sugar market, including an ethanol mandate. Canada also provides crop insurance and transportation subsidies for the sugar beet sector.

China

China has significant distortions. The applied tariff is very high with an in-quota amount of 15% and an out of quota amount that can be as high as 95%. Seventy per cent of all Chinese imports of sugar are conducted by China's State-Owned Enterprises, who benefit from low or no interest loans, as well as other government privileges and subsidies. Many of China's provincial governments set minimum prices for sugar cane. The Chinese government also applies input subsidies to lower costs of firms.

Egypt

Egypt's sugar sector is highly regulated. Four of the six sugar beet firms, all the sugar mills and one of the two refineries are government owned. In 2017, Egypt also applied an export tax to ensure that more product remained inside the country. Egypt also maintains domestic price supports.

India

India maintains high tariffs and also very high export subsidies. India also has an ethanol programme. It provides for direct price supports.

Indonesia

Indonesia is a major producer of sugar. The government controls imports, prices, owns sugar cane mills. Imports are strictly controlled. It sets a minimum price, and also has an ethanol programme.

Japan

Japan provides for a number of direct payments for sugar producers. Japan also has a profit insurance programme. Japan's retail prices are the most expensive in the world.

Mexico

Mexico is a major producer of sugar. The government owns approximately half Mexico's sugar mills. Mexico also uses loan guarantees and other distortive financing incentives. It has price supports for all cane farmers and an ethanol programme.

Pakistan

Pakistan uses a sugar export subsidy, a minimum support price.

Russia

Russia has gone from being a major sugar importer to a major exporter in a very short period of time. It protects domestic production, mostly with a tariff, but also allows preferential loans, and provides a range of input subsidies.

South Africa

South Africa has a State Trading Enterprise that handles its sugar exports, and the monopoly profits of the STE are ploughed back into the industry in the form of price support.

Thailand

Thailand is a major producer of sugar with a high level of exports as well. As such it has a major impact on global sugar markets. It is second only to Brazil in terms of exports and also in terms of how much it distorts its own market. The Thai government guarantees a minimum floor price for sugar which is very high in Thailand and allows anti-competitive cross subsidisation so Thailand can effectively dump sugar on global markets. The low price for sugar exports around the world is therefore not the result of the ordinary forces of competition, or any particular efficiencies in the Thai production processes, but rather the result of distortions. In addition, the Thai government gives cane growers additional support when the world sugar price falls (thus creating a vicious circle of distortion), and also provides input subsidies and soft loans at rates well below market. The domestic price is kept high by setting quotas for sales to domestic mills (as opposed to no restriction on global prices. The Thai domestic market is further insulated from global markets by a number of border restrictions.

In addition to the subsidies for ethanol production from sugarcane which exist in Thailand, there are also significant attempts by the Thai government to divert rice farmers to sugar cane production.

SECTION 4

1. The Quantum of Distortion

The distortions set out above all have a specific impact on the cost base of sugar exporters who might be exporting sugar into the UK. Where this can be shown to be the case, the UK should consider this in its Global Tariff Schedule, by allowing domestic firms to highlight the distortion and its cost reducing impact and seek to tarifficate the distortion.

One way of looking at the reduction of distortions is to assess what happens to world prices, relative to process in countries where distortions are removed, as an indication of what tariff would deal with the impact of the distortion.

Distortions that go beyond traditional tariff and subsidy measures have been recognised to contribute to increased price for several decades. Writing as long ago as 1964, John McGee noted the impact on various internal price regulations and other domestic distortions on the Spanish beet sector.[3]

In the Review of Agricultural Economics, Won W. Koo illustrates that if the US and EU eliminate their domestic support schemes, world prices increase from 32 to 68% (depending on whether the changes are at the US, EU, or both levels).[4] Hence a tariffication of between 30 and 70% would correct for the global level of distortion. It is important to note that this particular study does not take into account the impact of other major distorting measures in other countries such as Brazil.

The OECD Agriculture Policy Monitoring and Evaluation Report (2019) found that of 53 countries studied, a total of $705bn was paid to all agricultural sectors of which $528bn was transferred to producers. An additional $445bn was passed to producers as a result of tax transfers. Seventy per cent of all transfers to agricultural producers originate from distorting measures. In markets where the distortions lead to inflated prices (such as the US) these are on average 28% above world prices.

Another approach on quantum is to look at the impact on cost of production and try to estimate the impact of cost of production of various practices. It would be important to separate out the differential impact on costs on labour, fuel, chemicals and materials except where these costs are lowered by artificial government distortions.

The United States Department of Agriculture has looked at the costs of production of sugar. In its report of 2005, there are wide variations in the cost per pound of production. In Florida, this number is 8.63 cents per pound. In Hawaii, costs are 13.35 cents per pound.

In another study, Gawali finds that in the absence of subsidies in the major producer markets, prices in Western Europe could go up by 40%.[5] But it is noteworthy that Gawali's estimates are based on more conventional subsidies and not all ACMDs as we estimate them.

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[3] McGee, John S. "Government Intervention in the Spanish Sugar Industry." *The Journal of Law & Economics* 7 (1964): 121-72. Accessed May 24, 2020. www.jstor.org/stable/724925.

[4] Review of Agricultural Economics,, Won W. Koo (Autumn, 2002) 24(2), pp336-352

[5] Suresh Gawali. "Distortions in World Sugar Trade." *Economic and Political Weekly* 38, no. 43 (2003): 4513-515. Accessed May 24, 2020. www.jstor.org/stable/4414181.

2. Consideration of Brazilian Distortions as an example of ACMDs

We can use the Brazilian distortions case study to make some observations about the impact of Brazilian policy on the UK Global Tariff Schedule. Studies show that Brazil distorts its market at the level of $2.5bn per year.

3. Using the European "C" Sugar Model as a proxy

Analysis of how the EU's sugar program initially worked and led to increase in domestic price of 20 cents per pound (from fifty cents to seventy cents per pound) also provides a proxy of how market distortions can affect price. This increase in domestic price was brought about by the distortion and amounts to a forty percent increase in price. Then when C Sugar was removed in the 2000s as a result of the Brazilian WTO case, this led to a reduction in price from seventy to around fifty-five cents per pound). This is around a twenty percent reduction in price. It is therefore reasonable to assume a 20-40% price variation caused by the imposition and then removal of an ACMD in the sugar sector.

This is along the lines of the current thirty per cent CET for Brazilian sugar coming into the UK for refining into white sugar (see post).

SECTION 5

1. <u>ACMD Productivity Model</u>

Examples of ACMDs; An Econometric Model

We have provided a typology of ACMDs in previous work.[6] The SRB model is an econometric model used to better understand the impact of anti-competitive market distortions of the type described above on global markets. The model is described in the footnoted literature. The model applies to distortions at a country level, but may be disaggregated on a proxy basis so that the types of distortions which apply to a specific sector can be more clearly identified. It should be clear that because of this the model yields estimates only.

The model is based on an optimisation model which maximises a series of variables over the dimensions of open trade, competition in the market and property rights protection. This includes the impact of areas like financial services benefits (artificially lowering the cost of capital and financing), regulatory distortions, agricultural policy distortions, tariffs and non tariff barriers, (to name a few variables of direct relevance to the types of distortions that apply in the sugar sector). Statistic modelling enables each of these variables to contribute a specific percentage to the overall level of distortion. Optimising these variables yields data points that can be fed into the model's equations, so that an overall estimation of the potential impact of this optimisation is on the log of GDP per capita as a measure of productivity. We include the model's equations and full list of variables and relevant regressions in the Annex.

2. <u>Applying the SRB ACMD Model to the Sugar Sector</u>

By way of example, we now draw on a range of market distorting practices in one particular sector, the sugar sector where there are significant distortions all over the world.

The SRB model is an econometric model which looks at the impact of trade barriers and anti-competitive market distortions behind the border. Another way of looking at this is to use the SRB model and productivity simulator which is an econometric model to determine the impact of anti-competitive market distortions on an economy. The SRB model has gone through a number of iterations (see Annex, and various levels of peer review). We can identify from the list of SRB variables those variables which can be used to demonstrate the impact of the types of distortions we have identified in the sugar sector. We have proxied the general list to the ACMD SRB variable list. For example, a proxy for the distortions in the access to capital for some parties is proxied by the impact of on financial markets. The

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[6] See *Alden F. Abbott, Shanker Singham, Enhancing welfare by attacking anticompetitive market distortions, December 2011, Concurrences N° 4-2011, Art. N° 39546;* Shanker A. Singham, *Freeing the Global Market: How to Boost the Economy by Reducing Regulatory Distortions,* Council on Foreign Relations (2011); *Shanker Singham, Robert Bradley, U. Srinvasa Rangan, The effect of anticompetitive market distortions (ACMDs) on global markets, December 2014, Concurrences N° 4-2014, Art. N° 69641, www.concurrences.com*; Introduction to Anti-Competitive Distortions and the Distortions Index, Singham, Rangan, Bradley and Kiniry; Legatum Institute, 2017 at https://img1.wsimg.com/blobby/go/bf4d316c-4c0b-4e87-8edb-350f819ee031/downloads/1cste45av_640953.pdf?ver=1588794440496; Anti-Competitive Distortions and their Impact; India Case Study; Legatum Institute, Singham, Rangan and Bradley, 2017 at https://img1.wsimg.com/blobby/go/bf4d316c-4c0b-4e87-8edb-350f819ee031/downloads/1cstfqts9_122710.pdf?ver=1588794440496; Anti-Competitive Market Distortions; A Typology, Singham and Rangan, Economic Affairs, 2018 at https://onlinelibrary.wiley.com/doi/10.1111/ecaf.12311;

energy infrastructure cost is a proxy for energy subsidies in some markets. We have eliminated from this distortions variables that do not have a connection to the sugar market.

3. ACMD Index

We have selected the key variables which can be proxied for distortions that are applicable generally to the sugar sector below. Different countries use different kinds of distortions which can be generally proxied by a subset of these different variables and sub-variables. Annex 3 contains a full list of variables and sub-variables which inform the complete SRB model together with their STATA generated contributions. The below list consists of those variables that could have applicability to the kinds of distortions which countries engage in and which are referred to in Part III.

Domestic Competition (of 33%):

- Efficiency of Infrastructure – 20%
  - (i) Energy – 30%
    - Quality of electricity supply – 10%
    - Getting electricity – Time (days) – 12%
    - Getting electricity – Cost (% of income per capita) – 78%
  - (ii) Financial Markets – 45%
    - Availability of financial services – 10%
    - Affordability of financial services – 22%
    - Ease of access to loans – 6%
    - Venture capital availability – 4%

- Industrial Organization Regulation – 17%
  - (i) Effectiveness of anti-monopoly policy – 22%
  - (ii) Agricultural policy costs – 5%

- Regulatory Promulgation Process – 23%
  - (i) Favouritism in decisions of government officials – 15%
  - (ii) Transparency of government policymaking – 85%

International Competition (of 33%):

- Tariffs and Non-Tariff Barriers – 35%
- Non-tariff trade barriers – 45%

The total ACMDs estimated by the SRB model must be lowered to only those ACMDs that could possibly have an impact in the sugar sector, which form a subgroup of the total ACMD variables. Our estimate based on the above is that 17.5% of the total benefit of ACMD reductions are attributable to the sorts of factors that could apply generally in the sugar sector. Different countries will have different approaches that may only include some of these variables, and this is reflected in the calculations below. The subsequent section analyses this on a country by country basis.

It is important that whatever mechanism is developed to deal with distortions through tariffication is simple and easy to use. An unduly complex mechanism will itself become trade distortive.

Our proposed mechanism identifies the scale of the distortion in the exporting country, and makes some key assumptions:

Assumption 1
There is a direct mathematical relationship between the level of distortion in a market and the cost reducing advantages given to exporters, and hence their trade advantage. Hence there is a concept of Excess Exports which are exports which would not have been present but for the ACMD which can be expressed as an Excess Export Rate.

Assumption 2
The percentage loss due to distortions which can be determined by the SRB model can be further refined to take into account only those types of distortion that impact the sugar sector.

Assumption 3
This provides an upper bound of potential excess exports that could be the direct result of the ACMDs modelled by the SRB model.

Assumption 4
The precise tariffication will depend on not only this upper bound estimate, but also the impact on the domestic industry, and other factors.

Assumption 5
We can attribute bands of tariff which are appropriate for different levels of distortion, based on the excess exports, and the percentage of those excess exports of the total actual exports.

First, we estimate the level of ACMDs in each of the major sugar exporting countries. The ACMD Productivity Simulator indicates a different level of distortion for each country, so by understanding that total distortion and then extracting from that distortion an indication of the percentage that is attributable to the types of distortion prevalent in the sugar sector, this will yield a number indicating the welfare losses to the country economy of the distortions.

Applying this to the value of sugar exports from the country, we should be able to come up with a total value of excess exports which can be attributable to the percentage impact of the distortion. This represents a maximum level of export excess, as not all of the distortion is directly related to cost reduction and therefore trade advantage. We can then estimate the percentage of excess exports of total actual exports as an indication of the level of effective ACMDs.

The countervailing tariff which should be applied to this distortion is therefore proportional to the level of excess exports but will also depend on other factors such as damage to the domestic industry and so forth. This in turn will depend on the GVA of the sugar industry in the relevant market to domestic GDP.

Excess exports are a measure of the level of distortion in the domestic market, and thus constitutes a useful way of measuring the government interference, and being in a position

to construct a countervailing tariff. We note that it is possible for a market to be distorted, but for this not to result in exports (as in the US). This is especially true in markets like the US where the distortions combine to protect a cost-increased market.

Brazil

ACMDs per SRB Model = 1937%

Brazil uses a number of ACMDs as discussed in the above section. Focusing on only those variables which are proxies for the distortions used in Brazil suggests 14.12% of the potential ACMD reduction can be realisable in the Brazil sugar sector. [7]

ACMDs assigned to sugar sector = 273.5%

Brazil sugar exports = $5.2bn

Hence Brazil exports without distortions = $1.39bn

Excess Exports from distortions = $3.81bn

Excess Exports as Percentage of Actual Exports = 73.27%

Thailand

ACMDs per SRB Model = 1836%

ACMDs attributable to sugar sector are 17.504% of overall optimisation = 321%

Thailand's sugar exports = $3bn

Then Thailand's sugar exports without distortion = $0.71bn

Excess Exports from Subsidy = $2.29bn

Excess Exports as Percentage of Actual Exports = 76.33%

India

ACMDs per SRB model = 1875%

Sugar-related ACMDs = 328.2%

India Exports of Sugar = $1.76bn

India Exports without ACMDs = $411m

Excess Exports from Subsidy = $1.349bn.

Excess Exports as Percentage of Actual Exports = 76.64%

France

ACMDs per SRB Model = 763%

Sugar-related ACMDs = 12.49% of 763% = 95.29%

France exports of Sugar = $960.4m

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[7] All variables apply except 1,2,3,6,8,9

France exports without ACMDs = $491.7m

Excess Exports from Subsidy = $468.7m

Excess Exports as Percentage of Actual Exports = 48.80%

<u>Mexico</u>

ACMDs per SRB Model = 1843%

Sugar-related ACMDs = 12.49% of 1843% = 230.19%

Mexico Exports of Sugar = $653m

Mexico Exports without ACMDs = $197.76m

Excess Exports due to Subsidy = $455.24m.

Excess Exports as Percentage of Actual Exports = 69.71%

<u>Indonesia</u>

ACMDs per SRB Model = 2465%

Sugar Related ACMDs = 12.49% of 2465% = 307.88%

Indonesia Exports of Sugar = $2.6m

Indonesia Exports without ACMDs = $637,442

Excess Exports from ACMDs = $1.962m.

Excess Export as Percentage of Actual Exports = 75.4%

<u>United States</u>

ACMDs per SRB Model = 572%

Sugar Related ACMDs = 12.49% of 572% = 71.44%

US Exports of Sugar = 0[8]

US Exports of Sugar without ACMDs = 0

Excess Exports from ACMDs = 0

These representative excess sugar export numbers indicate a level of distortion likely to have a significant impact on domestic sugar producers. Now that the UK's Global Tariff schedule (which will apply after December 31, 2020) specifically provides for an Autonomous Tariff Quota for raw cane sugar of 260,000 tonnes, above which the tariff applies, it will be important to understand whether these sources of raw sugar are distorted or not, and if so by how much. The excess exports as a percentage of actual exports (the "Excess Export Rate") is useful in understanding the difference between markets and applying some disciplines to those markets where the ACMD Export Rate is high.

[8] The US is a net importer of sugar, so no tariff to correct for distortion-led exports would be applicable.

There have been other attempts to quantify the impact of sugar subsidies around the world and come up with an overall subsidisation rate.[9] The Flint Global/ECIPE study is an important aggregation of support programmes to show overall subsidy rate. The SRB model builds on the support programmes approach by looking at all areas of distortion that impact the particular economy. It therefore represents an upper bound with respect to distortion impact, whereas the Flint/ECIPE study represents a lower bound. UK policy should be designed to offset somewhere between these two estimates.

The principles set out in Annex 1 should be applied to the UK's FTAs, but also could form the basis of a mechanism to deal with Excess Exports from all countries.

[9] See Joint Study by Flint Global and ECIPE (available at https://www.absugar.com/perch/resources/flint-global-uk-sugar-trade-in-the-global-market-after-brexit-february-2018.pdf).

ANNEX 1

COMPETITION POLICY

Article 15.1: Definitions

For the purposes of this Chapter:

1. "**Arrangement**" means the Arrangement on Officially Supported Export Credits, developed within the framework of the Organization for Economic Cooperation and Development (OECD), or a successor undertaking, whether developed within or outside of the OECD framework, that has been adopted by at least 12 original Members to the Arrangement that were members as of January 1, 1979;

2. "**commercial activities**" means activities the end result of which is the production of a good or supply of a service which will be sold to a consumer, including a state enterprise, state-owned enterprise, or designated monopoly, in the relevant market in quantities and at prices determined by the enterprise and that are undertaken with an expectation of gain or profit;[10]

3. "**commercial considerations**" means factors such as price, quality, availability, marketability, transportation, and other terms and conditions of purchase or sale, or other factors that influence the commercial decisions of an enterprise in the relevant business or industry;

4. "**designate**" means, whether formally or in effect, to establish, name, or authorize a monopoly, or to expand the scope of a monopoly to cover an additional good or service;

5. "**designated monopoly**" means a monopoly that a Party designates or has designated;

6. "**government monopoly**" means a monopoly that is owned or controlled by a Party or by another government monopoly;

7. "**injury**" means material injury to a domestic industry, threat of material injury to a domestic industry, or material retardation of the establishment of a domestic industry;

8. "**market**" means the geographical and commercial market for a good or service;

9. "**monopoly**" means an entity or a group of entities that, in any relevant market in the territory of a Party, is the exclusive provider or purchaser of a good or service, but does not include an entity that has been granted an exclusive intellectual property right solely by reason of such grant;

10. "**national competition laws**" shall mean the laws concerning the regulation of cartels and anti-competitive agreements or abuse of dominance/monopolisation;

11. "**non-commercial assistance**"[11] means the provision of:

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[10] For greater certainty, this excludes activities undertaken by an enterprise which operates on a:
- not-for-profit basis; or
- cost recovery basis.

[11] For greater certainty, non-commercial assistance does not include intra-group transactions within a corporate group including state-owned enterprises, e.g. between the parent and subsidiaries of the group, or among the

(a) grant or debt forgiveness;

(b) a loan, equity infusion or capital, loan guarantee, or other type of financing or loan satisfaction on terms more favourable than those commercially available to that enterprise; or

(c) a subsidy within the meaning of Article 1 of the WTO Agreement on Subsidies and Countervailing Measures; or

(d) a good or service, other than general infrastructure, on terms more favourable than those commercially available to that enterprise;

12. "**state enterprise**" means an enterprise that is owned, or controlled through ownership interests, by a Party; and

13. "**state-owned enterprise**" means an enterprise that is engaged in economic activities; and:

(a) is owned, or controlled, by a Party's government; or

(b) in which a Party's government appoints or has the power to appoint the majority of members of the board of directors or any equivalent management

(c) is controlled by a Party's government through a control person or control persons.

Article 15.2: Competition Law and Anti-Competitive Practices

1. Each Party shall adopt or maintain national competition laws with the objective of promoting economic efficiency and consumer welfare, and shall take appropriate action with respect to that conduct. These laws should take into account the OECD Competition Assessment Toolkit (2007) (as revised from time to time), OECD Regulatory Toolkit and the APEC Principles to Enhance Competition and Regulatory Reform, done at Auckland, September 13, 1999.

2. Each Party shall endeavour to apply its national competition laws to all commercial activities in its territory[12], including the activities of state-owned enterprises both in their commercial sales and their procurement activities. However, each Party may provide for certain exemptions from the application of its national competition laws provided that those exemptions are transparent and are based on public policy grounds or public interest grounds.

3. Each party shall maintain an authority or authorities responsible for the enforcement of its national competition laws (national competition authorities). Each Party shall provide that it is the enforcement policy of that authority or authorities to act in

group's subsidiaries, when normal accounting standards or business practices would require that the corporate entity prepare consolidated net financial statements of these intra-group transactions.

[12] For greater certainty, nothing in Article 15.2.2 shall be construed to preclude a Party from applying its competition laws to commercial activities outside its borders that have anticompetitive effects within its jurisdiction.

accordance with the objectives set out in Article 15.2.1 and not to discriminate on the basis of nationality.

4. In modifying, enforcing, applying, amending, reviewing or issuing new national competition law, regulations or procedures, Parties shall conduct themselves consistently with the provisions of Chapter 14 (Regulatory Coherence).

Article 15.3: Procedural Fairness in Competition Law Enforcement

1. Both parties shall ensure that before it imposes a sanction or remedy against any person for violating its national competition laws, it shall afford such person:

   (a) information about the national competition authority's competition concerns;

   (b) a reasonable opportunity to be represented by counsel; and

   (c) a reasonable opportunity to be heard and present evidence in its defence, except that a Party may provide for the person to be heard and present evidence within a reasonable time after it imposes an interim sanction or remedy

2. In particular, each Party shall afford that person a reasonable opportunity to offer evidence or testimony in its defence, including if applicable, to offer the analysis of a properly qualified expert, to cross-examine any witness (if testifying before a court); and to review and rebut the evidence introduced in the enforcement proceeding[13], subject to the confidentiality provisions of this Chapter. Parties' competition authorities shall normally afford persons under investigation for possible violation of its competition laws reasonable opportunities to consult with such competition authorities with respect to significant legal, factual or procedural issues that arise during the course of investigation.

3. Parties shall adopt or maintain written procedures pursuant to which its national competition law investigations are conducted. If these investigations are not subject to definitive deadlines, each Party's national competition authorities shall endeavour to conduct their investigations within a reasonable time frame.

4. Each Party shall publish or otherwise make publicly available written rules of procedure and evidence that apply to enforcement proceedings concerning alleged violations of its national competition laws and the determination of sanctions and remedies thereunder. These rules shall include procedures for introducing evidence, including expert evidence where applicable.

5. Each Party shall provide a person that is subject to the imposition of a sanction or remedy for violation of its national competition laws with the opportunity to seek review of the sanction or remedy, including review of alleged substantive or procedural errors, in a court or other independent tribunal established under that Party's laws.

[13] For the purposes of this Article, enforcement proceedings means judicial or administrative proceedings following an investigation into alleged violation of the competition laws.

6. Each Party shall authorize its national competition authorities to resolve alleged violations voluntarily by consent of the authority and the person subject to the enforcement action. A Party may provide for such voluntary resolution to be subject to judicial (or independent tribunal) approval or a public comment period before becoming final.

7. If a Party's national competition authority issues a public notice that reveals the existence of a pending or ongoing investigation, that authority shall avoid implying in that notice that the person referred to in that notice has engaged in the alleged conduct or violated the Party's national competition laws.

8. If a national competition authority of a Party alleges a violation of its national competition laws, that authority shall be responsible for establishing the legal and factual basis for the alleged violation in an enforcement proceeding.[14]

9. Each Party shall provide for the protection of confidential information and business secrets, and other information treated as confidential under its law, obtained by its national competition authorities during the investigative process. If a Party's national competition authority uses or intends to use that information in an enforcement proceeding, the Party shall, if it is permissible under its law and as appropriate, provide a procedure to allow the person under investigation timely access to information that is necessary to prepare an adequate defence to the national competition authority's allegations.

10. Both parties shall ensure that its national competition authorities afford a person under investigation for possible violation of the national competition laws of that Party reasonable opportunity to consult with those competition authorities with respect to significant legal, factual or procedural issues that arise during the investigation.

Article 15.4: Private Rights of Action

1. For the purposes of this Article, "**private right of action**" means the right of a legal or natural person to seek redress, including injunctive, monetary or other remedies, from a court or other independent tribunal for injury to that person's business or property caused by a violation of national competition laws, either independently or following a finding of violation by a national competition authority.

2. Recognizing that a private right of action is an important supplement to the public enforcement of national competition laws, each Party should adopt or maintain laws or other measures that provide an independent private right of action.

3. If a Party does not adopt or maintain laws or other measures that provide an independent private right of action, the Party shall adopt or maintain laws or other measures that provide a right that allows a person:

    (a) to request that the national competition authority initiate an investigation into an alleged violation of national competition laws; and

[14] Nothing in this paragraph shall prevent a Party from requiring that a person against whom such an allegation is made be responsible for establishing certain elements in defence of the allegation.

(b) to seek redress from a court or other independent tribunal following a finding of violation by the national competition authority.

4. Both Parties shall ensure that a right provided pursuant to Articles 15.5.2 or 15.5.3 is available to persons of the other party on terms that are no less favourable than those available to its own persons.

5. A Party may establish reasonable criteria for the exercise of any rights it creates or maintains in accordance with this Article.

Article 15.5: Co-operation

1. The Parties recognise the importance of co-operation and co-ordination between their respective national competition authorities to foster effective competition law enforcement in the free trade area. Accordingly, both parties shall:

   (a) co-operate in the area of competition policy by exchanging information on the development of competition policy; and

   (b) co-operate, as appropriate, on issues of competition law enforcement, including through notification, consultation and the exchange of information including confidential information and business secrets.

2. A Party's national competition authorities may consider entering into a co-operation arrangement or agreement with the competition authorities of the other party that sets out mutually agreed terms of co-operation.

3. The Parties agree to cooperate in a manner compatible with their respective laws, regulations and important interests, and within their reasonably available resources.

4. The Parties commit to maintaining a high level of international co-operation and co-ordination. The Parties acknowledge the importance of co-operation and co-ordination internationally and the work of multilateral organizations in this area.

Article 15.6: Consumer Protection

1. The Parties recognise the importance of consumer protection policy and enforcement to creating efficient and competitive markets and enhancing consumer welfare in the free trade area.

2. For the purposes of this Article, fraudulent and deceptive commercial activities refers to those fraudulent and deceptive commercial practices that cause actual harm to consumers, or that pose an imminent threat of such harm if not prevented, for example:

   (a) a practice of making misrepresentations of material fact, including implied factual misrepresentations, that cause significant detriment to the interests of misled consumers;

   (b) a practice of failing to deliver products or provide services to consumers after the consumers are charged; or

(c) a practice of charging or debiting consumers' financial, telephone or other accounts without authorization.

3. Both parties shall adopt or maintain consumer protection laws or other laws or regulations that proscribe fraudulent and deceptive commercial activities.[15]

4. The Parties recognise that fraudulent and deceptive commercial activities increasingly transcend national borders and that cooperation and coordination between the Parties is desirable to effectively address these activities.

5. Accordingly, the Parties shall promote, as appropriate, cooperation and coordination on matters of mutual interest related to fraudulent and deceptive commercial activities, including in the enforcement of their consumer protection laws.

6. The Parties shall endeavour to cooperate and coordinate on the matters set out in this Article through the relevant national public bodies or officials responsible for consumer protection policy, laws or enforcement, as determined by each Party and compatible with their respective laws, regulations and important interests and within their reasonably available resources.

Article 15.7: Transparency of Policies and Practices

1. The Parties recognise the value of making their competition enforcement policies as transparent as possible.

2. On request of the other party, a Party shall make available to the requesting Party public information concerning:

   (a) its competition law enforcement policies and practices; and

   (b) exemptions and immunities to its national competition laws, provided that the request specifies the particular good or service and market of concern and includes information explaining how the exemption or immunity may hinder trade or investment between the Parties.

3. Each Party shall ensure that a final decision finding a violation of its national competition laws is made in writing and sets out, in non-criminal matters, findings of fact and the reasoning, including legal and, if applicable, economic analysis, on which the decision is based. Both parties shall further ensure that any such decisions and any orders implementing them are published, or where publication is not practicable, otherwise made available to the public in such a manner as to enable interested persons to become acquainted with them. The version of the decisions or orders that the Party makes available to the public shall omit confidential business information, as well as information that is treated as confidential under its laws.

[15] For greater certainty, the laws or regulations a Party adopts or maintains to proscribe these activities can be civil or criminal in nature.

Article 15.8: Consultations

In order to foster understanding between the Parties, or to address specific matters that arise under this Chapter, on request of another Party, a Party shall enter into consultations with the requesting Party within a reasonable period of time regarding any matter arising under this Chapter. In its request, the requesting Party shall specify the matter on which it seeks to consult and indicate, if relevant, how the matter affects trade or investment between the Parties. The Party addressed shall accord full and sympathetic consideration to the concerns of the requesting Party.

Article 15.9: State-owned Enterprises, State Enterprises and Designated Monopolies

1. This Chapter applies with respect to the activities of state-owned enterprises, state enterprises and designated monopolies that affect trade or investment between the Parties.

2. Notwithstanding Paragraph 1, this Chapter does not apply to:

   (a) a central bank or monetary authority of a Party;

   (b) a financial regulatory body or a resolution authority of a Party;

   (c) a financial institution or other entity owned or controlled by a Party that is established or operated temporarily solely for resolution purposes;

   (d) government procurement;

   (e) regulatory or supervisory activities of any non-governmental entity, including any securities or futures exchange or market, clearing agency, or other organization or association, that exercises regulatory or supervisory authority over financial service suppliers or financial institutions, pursuant to direction or delegated authority of the Party;

   (f) where the Party is exercising public power in their capacity as a public authority;

   (g) where the Party is exercising powers of social solidarity, characteristics of schemes pursuing social solidarity include: a compulsory scheme, which pursues an exclusively social purpose, is non-profit making, where the benefits can be independent of the contribution made.

3. For greater certainty, nothing in this Chapter shall be construed to prevent a Party from:

   (a) establishing or maintaining a state enterprise or state-owned enterprise, or

   (b) designating a monopoly.

4. Both parties shall ensure that when its state-owned enterprises, state enterprises, and designated monopolies exercise any regulatory, administrative, or other governmental authority[16] which the Party has directed or delegated to such an entity to carry out,

[16] Examples of regulatory, administrative, or other governmental authority include the power to expropriate, grant licenses, approve commercial transactions, or impose quotas, fees, or other charges.

such entity shall act in a manner that is not inconsistent with that Party's obligations under this Agreement.

5. Both parties shall ensure that its state-owned enterprises and designated monopolies, when engaging in economic activities:

   (a) act in accordance with commercial considerations in their purchases or sales of goods or services, except, in the case of a designated monopoly, to fulfil any terms of its designation that are not inconsistent with Article 15.9.5(b) and Article 15.9.7; and

   (b) accord to enterprises that are covered investments, goods of the other Party, and services suppliers of the other Party, treatment no less favourable than they accord to, respectively, like enterprises that are investments of the Party's investors, like goods of the Party, and like service suppliers of the Party, with respect to their purchases or sales of goods or services.

6. Article 15.9.5 does not preclude a state-owned enterprise or designated monopoly from:

   (a) purchasing or supplying goods or services on different terms or conditions, including those relating to price; or

   (b) refusing to purchase or supply goods or services, provided that such different terms or conditions or refusal are undertaken in accordance with commercial considerations and Article 15.9.5(b).

7. Both parties shall ensure that any designated monopoly that it establishes or maintains does not use its monopoly position to engage in, either directly or indirectly, including through its dealings with its parent, subsidiaries, or other entities that the Party or the designated monopoly owns or controls, anticompetitive practices in a non-monopolized market in its territory that adversely affect covered investments or trade between the Parties.

Article 15.10: Commercial Considerations

Except to fulfil the purpose[17] for which special or exclusive rights or privileges have been granted, or in the case of a state enterprise to fulfil its public mandate, and provided that the enterprise's conduct in fulfilling that purpose or mandate is consistent with the provisions in the Chapter on Competition, both parties shall ensure that any enterprise referred to in Articles 15.9.2 (d), (e) and (f) acts in accordance with commercial considerations in the relevant territory in its purchases and sales of goods, including with regard to price, quality, availability, marketability, transportation and other terms and conditions of purchase or sale, as well as in its purchases or supply of services, including when these goods or services are supplied to or by an investment of an investor of the other Party.

[17] Such as a Public Service Obligation. The Public Service Obligation shall be constructed in such a way as to be the most pro-competitive and least trade restrictive consistent with regulatory goals. Violation of the principals shall be grounds for violation of this agreement.

Article 15.11: Courts and Administrative Bodies

1. Both parties shall provide its courts with jurisdiction over civil claims against a foreign state- owned enterprise based on a commercial activity carried on its territory, except where a Party does not provide jurisdiction over similar claims against enterprises that are not state-owned enterprises.

2. Both parties shall ensure that anybody that it establishes or maintains, and that regulates a state- owned enterprise or designated monopoly, acts impartially with respect to all enterprises that it regulates, including enterprises that are not state-owned enterprises.

Article 15.12: Adverse Effects

1. Neither party shall cause adverse effects to the interests of the other Party through the use of non-commercial assistance to enterprises active in markets open to trade.

2. Both parties shall ensure that no state enterprise or state-owned enterprise that it establishes or maintains causes adverse effects to the interests of the other Party through the use of non- commercial assistance that the state enterprise or state-owned enterprise provides to any of its state- owned enterprises, where the Party explicitly limits access to the non-commercial assistance provided by the state enterprise or state-owned enterprise to its state-owned enterprises, or where the state enterprise or state-owned enterprise provides non-commercial assistance which is predominately used by the Party's state-owned enterprises, provides a disproportionately large amount of the non-commercial assistance to the Party's state-owned enterprises, or otherwise favours the Party's state-owned enterprises in the provision of non-commercial assistance.

3. Adverse effects cannot be established on the basis of any act, omission, or factual situation, to the extent that act, omission, or factual situation took place before the date of entry into force of this Agreement.

4. For the purpose of Articles 15.12.1 to 15.12.3, adverse effects are effects that arise from the provision of a good or service by a Party's state-owned enterprise which has benefited from non-commercial assistance and:

   (a) displace or impede from the Party's market imports of a like product or service[18] that is an originating good of the other Party, or sales of a like product that is a good produced by an enterprise that is a covered investment;

   (b) consist of a significant price undercutting by a product of the Party's state-owned enterprise compared with the price in the same market of a like product that is an originating good of the other Party or a like product that is a good produced

[18] For greater certainty, for the purpose of this Chapter, the term "product" does not include financial instruments, including money.

by an enterprise that is a covered investment, or significant price suppression, price depression, or lost sales in the same market;

(c) displace or impede from the Party's market a like service supplied by a service supplier of the other Party, or a like service supplied by an enterprise that is a covered investment, or

(d) consist of a significant price undercutting by a service supplied by the Party's state- owned enterprise as compared with the price in the same market of a like service supplied by a service supplier of the other Party, or by an enterprise that is a covered investment, or significant price suppression, price depression, or lost sales in the same market.

5. For the purposes of Articles 15.12.4(a) and 15.12.4(c), the displacing or impeding of a product or service includes any case in which there has been a significant change in relative share of the market to the disadvantage of the like product of the other Party or of a covered investment, or to the disadvantage of a like service supplied by a service supplier of the other Party or by a covered investment.

6. A significant change in relative shares of the market shall include any of the following situations:

(a) there is an increase in the market share of the product or service of the Party's state-owned enterprise in the range of 5-10%;

(b) the market share of the product or service of the Party's state-owned enterprise remains constant in circumstances in which, in the absence of the non-commercial assistance, it would have declined significantly; or

(c) the market share of the product or service of the Party's state-owned enterprise declines, but by a significantly lower amount or at a significantly slower rate than would have been the case in the absence of the non-commercial assistance.

7. Where the change manifests itself over an appropriately representative period sufficient to demonstrate clear trends in the development of the market for the product or service, which shall be at least one year unless exceptional circumstances apply.

8. For purposes of Articles 15.12.4(b) and 15.12.4(d) significant price undercutting shall include demonstration through a comparison of prices at the same level of trade and at comparable times within the same market as follows:

(a) the prices of a product of the Party's state-owned enterprise benefiting from non- commercial assistance with the prices of a like product of the other Party or an enterprise that is covered investment; or

(b) the prices of a service of the Party's state-owned enterprise benefiting from non-commercial assistance with the prices of a like service supplied by a service supplier of the other Party or an enterprise that is a covered investment.

9. Due account shall be taken for factors affecting price comparability. If a direct comparison of transactions is not possible, the existence of the price undercutting may

be demonstrated on some other reasonable basis, such as, in the case of goods, a comparison of unit values.

Article 15.13: Injury

1. Neither party shall cause injury to a domestic industry of the other Party through the use of non- commercial assistance that it provides, either directly or indirectly, to any enterprises in the territory of the other Party and where:

   (a) the enterprise produces and sells a good in the territory of the other Party: and

   (b) a like good is produced and sold by a domestic industry of the other Party.

Article 15.14: Requirements for Transparency and Corporate Governance

1. The Parties shall ensure that enterprises referred to in Article 15.9 (a) and Article 15.9 (b) shall observe high standards of transparency and corporate governance in accordance with the OECD Guidelines on Corporate Governance of State-Owned Enterprises.

2. A Party which has reason to believe that its interests under this Agreement are being adversely affected by the operations of an enterprise or enterprises referred to in Article 15.13(a) and Article 15.13(b)of the other Party may request that Party to supply information about the operations of its enterprise related to the carrying out of the provisions of this Agreement.

3. Both parties shall, at the request of the other Party, make available information concerning specific enterprises referred to in Articles 15.9.1 (d), (e) and (f)) and which do not qualify as small and medium-sized enterprises as defined in UK or EU law. Requests for such information shall indicate the enterprise, the products/services and markets concerned, and include indicators that the enterprise is engaging in practices that hinder trade or investment between the Parties.

4. The information may include:

   (a) the organizational structure of the enterprise, the composition of its board of directors or of an equivalent structure of any other executive organ exercising direct or indirect influence through an affiliated or related entity in such an enterprise; and cross holdings and other links with different enterprises or groups of enterprises referred to in Articles 15.9.1 (d), (e) and (f):

   (b) the ownership and the voting structure of the enterprise, indicating the percentage of shares and percentage of voting rights that a Party and/or an enterprise referred to in Articles 15.9.1 (d), (e) and (f) cumulatively own;

   (c) a description of any special shares or special voting or other rights that a Party and/or an enterprise referred to in Articles 15.9.1 (d), (e) and (f) hold, where such rights differ from the rights attached to the general common shares of such entity;

(d) the name and title(s) of any government official of a Party serving as an officer or member of the board of directors or of an equivalent structure or of any other executive organ exercising direct or indirect influence through an affiliated or related entity in the enterprise;

(e) details of the government departments or public bodies which monitor the enterprise and any reporting requirements;

(f) the role of the government or any public bodies in the appointment, dismissal or remuneration of managers; and

(g) annual revenue or total assets, or both; and

(h) exemptions, non-conforming measures, immunities and any other measures derogating from the application of a Party's laws or regulations or granting favourable treatment by a Party.

5. The provisions of Articles 15.14.2 and 15.14.3 shall not require any Party to disclose confidential information which would impede law enforcement or otherwise be contrary to the public interest or would prejudice the legitimate commercial interests of particular enterprises.

6. Both parties shall ensure that any regulatory body responsible for regulating any of the enterprises referred to in Articles 15.9.1 (d), (e) and (f) is independent from, and not accountable to, any of the enterprises referred to in Articles 15.91 (d), (e) and (f).

7. Both parties shall ensure the enforcement of laws and regulations in a consistent and non- discriminatory manner at all levels of government, be it central or local, and their application to enterprises referred to in Articles 15.9.1 (d), (e) and (f). Exemptions must be limited and transparent.

8. The provisions of this Article apply to enterprises operating in all sectors.

Article 15.15: Provision of Information

1. Both parties shall provide to the other Party a list of its state-owned enterprises within 180 days of the date of entry into force of this Agreement, and thereafter shall provide an updated list annually.

2. Where a Party designates a monopoly, or expands the scope of an existing designated monopoly, it shall promptly notify the other Party of the designation or expansion of scope and the conditions under which the monopoly shall operate.

3. On the written request of the other Party, a Party shall promptly provide the following information concerning a state-owned enterprise or a government monopoly:

(a) the percentage of shares that the Party, its state-owned enterprises, state enterprises, or designated monopolies cumulatively own, and the percentage of votes that they cumulatively hold in the entity;

(b) a description of any special shares, or special voting or other rights, that the Party, its state-owned enterprises, or designated monopolies hold, to the extent different from the rights attached to the general common shares of such entity;

(c) the government titles, or former government titles, and decision-making ability of any official serving as a board member, officer, director, manager, or other control person of such entity;

(d) the entity's annual revenue and total assets over the most recent three year period for which information is available;

(e) any exemptions and immunities from which the entity benefits under the Party's law; and

(f) any additional information regarding the entity which is publicly available, including annual financial reports and third-party audits, and which is sought in the written request.

4. On the written request of the other party, a Party shall promptly provide the following information concerning assistance received by any of its state-owned enterprises:

(a) any financing or re-financing that the Party, or another of the Party's state-owned enterprises or state enterprises, has provided to the state-owned enterprise, including the amount of such financing and the terms on which it was provided;

(b) any loan guarantee that the Party, or another of the Party's state-owned enterprises or state enterprises, has provided to the state-owned enterprise, including fees associated with the guarantee and any other conditions associated with the guarantee;

(c) any forgiveness of debt or other financial liability that the Party, or another of the Party's state-owned enterprises or state enterprises, has provided to the state-owned enterprise;

(d) any goods or services that the Party, or another one of the Party's state-owned enterprises or state enterprises, has provided to the state-owned enterprise, and the conditions associated with such provision; and

(e) any export credit that the Party, or one of the Party's state-owned enterprises, has provided in support of the export of a good or service from one of the Party's state-owned enterprises, including the amount of such export credits, and the terms and conditions on which it was provided.

5. Both parties shall include in any written request under Article 15.15 an explanation of how the activities of the state-owned enterprise may be affecting trade or investment between the Parties.

Article 15.16: Anti-Competitive Market Distortions

1. The Parties agree that they will not, through laws, regulations, administrative practices or other Covered Actions, distort their markets in trade restrictive or anti-competitive ways ("Anti-Competitive Market Distortions" or "ACMDs"), unless there is a clearly expressed regulatory goal which has been published in advance consistent with Chapter 14 of this Agreement (Regulatory Coherence).

2. The Parties agree that they may provide supports to regionally impoverished areas[19] in their territories, and that prior to providing these supports the Parties should consult with each other through the Competition Policy Sub-Committee.

3. The Parties agree that they will develop mechanisms to deal with ACMDs of the other Party, and that these measures may include imposing a duty that is correlated to the scale of the impact of the ACMD on competition in the market, and that the imposition of such a duty, provided that it is consistent with the factors set out below it shall not be deemed to be a violation of this agreement or of the rules of the World Trade Organization:

   (a) the complaining party must prove that there is an ACMD[20];

   (b) the complaining party must prove that there is an adverse effect, or damage to their interests;

   (c) the complaining party must adduce evidence of the scale of the adverse effect; and

   (d) the complaining party must produce evidence of damage, and evidence that the ACMD has caused the damage.

4. The Parties agree that they will use these ACMD mechanisms with respect to ACMDs in other jurisdictions and will mutually defend any claims brought that such mechanisms violate WTO rules.

Article 15.17

The corporate governance framework of each Party shall include provisions aiming at protecting and facilitating the effective exercise of shareholders' rights in publicly listed companies, ensuring timely and accurate disclosure on all material matters, including the financial situation, performance, ownership and governance of those companies.

Article 15.18

The Parties will ensure that they maintain corporate governance rules which require all companies to disclose government supports, privileges or other benefits as part of any applicable securities filings.

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[19] Definition of Regionally Impoverished Area

[20] Any measure can give rise to an ACMD, including laws, regulations, government actions or inactions, statements by regulators, made publicly and privately.

Article 15.19

1. The Parties shall adopt or maintain corporate governance mechanisms which ensure accountability of the management and board towards the shareholders, responsible, objective and independent board decision-making, and equal treatment of shareholders of the same class.

2. The Parties may provide that some corporate governance principles, but not those set out in 15.17, may not be applied to companies outside regulated markets or early phase development of the company.

Article 15.20: Sub-Committee on State-Owned Enterprises and Designated Monopolies

1. The Parties hereby establish a Sub-Committee on State-Owned Enterprises and Designated Monopolies, State Aids and ACMDs ("SOE Committee"), comprised of officials from both parties.

2. The Sub-Committee meet within one year of the date of entry into force of the Agreement, and at least annually thereafter, unless the Parties decide otherwise.

3. The Sub-Committee shall:

   (a) review and consider the operation and implementation of this Chapter;

   (b) discuss, at a Party's request, the activities of any state-owned enterprise or designated monopoly of a Party specified in the request with a view to identifying any distortion of trade or investment between the Parties that may result from those activities;

   (c) Provide a framework for consultations under this Chapter;

   (d) develop cooperative efforts, as appropriate, to promote the principles underlying the obligations contained in this Chapter and to contribute to the development of similar obligations in regional and multilateral institutions in which the Parties participate; and

   (e) undertake such other activities as the Sub-Committee may decide.

4. Prior to each Sub-Committee meeting, both parties shall invite, as appropriate, input from the public on matters related to state-owned enterprises or designated monopolies that may affect developing its meeting agenda.

Article 15.21: Exceptions

1. Nothing in Article 15.11 (Courts and Administrative Bodies), Article 15.12 (Adverse Effects), or Article 15.13 (Injury), Article 15.16 (state aids and ACMDs) shall be construed to:

(a) prevent the adoption or enforcement by any Party of measures to respond temporarily to a national or global economic emergency; or

(b) apply to a state-owned enterprise for which a Party has taken measures on a temporary basis in response to a national or global economic emergency.

2. Article 15.11(Courts and Administrative Bodies), Article 15.12 (Adverse Effects), Article 15.13 (Injury), Article 15.7 (Requirements for Transparency & Corporate Governance), Article 15.20 (Committee on State-Owned Enterprises and Designated Monopolies), and Article 15.22 (Dispute Settlement) shall not apply where the state-owned enterprise is:

(a) established or maintained by a Party solely to provide essential services to the general public in its territory; or

(b) subject to government mandates defining its public service function, such as universal service obligations, or requirements to provide services at below market rates or on a cost recovery basis which are not imposed on similarly situated private companies, except where that public services function is being fulfilled in a manner that unnecessarily damages competition or restricts trade.

3. Articles 15.11 (Courts and Administrative Bodies), Article 15.12 (Adverse Effects) and Article 15.13 (Injury) shall not apply to a state-owned enterprise or designated monopoly that provides healthcare services or finances housing, including insurance or guarantees of residential loans or mortgage securities, except where such a state-owned enterprise or designated monopoly shall accord treatment to covered investments no less favourable than the treatment it accords to like enterprises which are investments of the Party's investors, and provided that these activities do not unnecessarily damage competition or restrict trade.

4. With respect to a state-owned enterprise of a Party that provides export credits, Article 15.11] (Courts and Administrative Bodies), Article 15.12 (Adverse Effects) and Article 15.13 (Injury) shall not apply to:

(a) the provision of export credits that fall within the scope of the Arrangement and are offered on terms consistent with the Arrangement, regardless of whether the Party is a Participant to the Arrangement; and

(b) the provision of short-term insurance, guarantee, or other financing with a repayment term of less than two years, provided that the state-owned enterprise charges premium rates or interest rates that are adequate to cover the long-term operating costs and losses of the program, determined on a net present value basis, under which the insurance, guarantee, or other financing is provided.

Article 15.22: Dispute Settlement

Any recourse to dispute settlement pursuant to Chapter 19 (Dispute Settlement) for any matter arising under this Chapter shall be subject to Annex 15.1 of this Chapter.

ANNEX 15: Process for Developing Information Concerning

State-Owned Enterprises and Designated Monopolies

1. Where a panel has been established pursuant to Chapter 19 (Dispute Settlement) to examine a matter arising under this Chapter, the panel shall administer the process set out in paragraphs 2 through 4 aimed at developing information relevant to the claim, including data regarding the volume and value of relevant purchases or sales by the state-owned enterprise or designated monopoly in question, and information about that entity's relevant purchasing, sales, and contracting procedures.[21] The process shall include procedures aimed at protecting information that is by nature confidential or which a disputing Party provides on a confidential basis.

2. The complaining Party may present written questions to the other Party within 60 days of the date on which the panel is established. The responding Party shall provide its responses to the questions to the complaining Party and the panel within 60 days from the date it receives the questions.

3. The complaining Party shall have 60 days from the date it receives the responses to its questions to review them and provide any additional questions related to the responses to the responding Party. The responding Party shall have 45 days from the date it receives the additional questions to provide its responses to the additional questions to the complaining Party and the panel.

4. If the complaining Party considers that the responding Party has failed to cooperate in the process, the complaining Party shall inform the panel and the responding Party in writing no later than 30 days from the date responses to the complaining Party are due, and provide the basis for this view. The panel shall afford the responding Party an opportunity to reply to this view in writing.

5. The panel may seek additional information from a disputing Party that was not provided to the panel through the information development process carried out under this Annex, where the panel considers the information necessary to resolve the dispute. However, the panel shall not request additional information to complete the record where the information would support a Party's position and the absence of that information in the record is the result of that Party's non- cooperation in the information gathering process.

Comments

1. This chapter does a lot of heavy lifting in the areas of SOEs, state aids and government distortions. This is not only important for both parties, but it also aligns both parties around the developing global consensus in the OECD ad other venues to deal with the problem of market distortions. A high-level agreement on these points should be

[21] The presentation of written questions and responses pursuant to paragraph 2 and 3 may commence prior to the date a panel is composed. Upon its composition, the complaining Party shall provide any questions it presented to the responding Party, and the responding Party shall provide any responses it provided to the complaining Party, to the panel.

possible between the US and UK and could be a template for dealing with these problems in China and other highly distorted markets.

2. These provisions are based on existing US-X agreements, but we have drawn in language on state owned enterprises from other FTAs, as well competition language in the OECD Regulatory Toolkit and Competition Assessment.

3. Deleted Article 15.19: We would want no exceptions, because these disclosure obligations only apply to listed companies on regulated markets.

4. The Competition Provisions also discuss market distortions which have been raised by the EU, US, and Japan in the WTO Declaration in Buenos Aires, December, 2017. Here the trilateral group is seeking to lower market distortions in third countries. The US-UK FTA should build on and improve on what has been agreed in the trilateral.

CHAPTER 16

SUBSIDIES, STATE AID AND MARKET DISTORTIONS

Article 16.1: Definitions

For the purposes of this Chapter:

(a) "**economic activities**" means those activities pertaining to the offering of goods and services in a market;

(b) "**subsidy**" means a measure which fulfils mutatis mutandis the conditions set out in Article 1.1 of the SCM Agreement, irrespective of whether the recipients of the subsidy deal in goods or services, and shall also include where a government imposes financial burdens (such as direct or indirect taxes, or other levies) on firms in the other Party which do not apply to its own firms which disturb the equality of competitive opportunity ; and

(c) "**specific subsidy**" means a subsidy which is determined mutatis mutandis to be specific in accordance with Article 2 of the SCM Agreement.

(d) "**Significant lessening of competition"** shall have its ordinary meaning under prevailing competition law and can be demonstrated by a concentration of the market after firm exit through structural or price tests typically used in merger analysis.

Article 16.2: Principles

1. The Parties agree to use their best endeavours to remedy or remove through the application of their competition or state aid laws or otherwise, distortions of competition caused by subsidies in so far as they affect international trade, and to prevent the occurrence of such situations.

2. Notwithstanding these commitments, the Parties reserve their rights to adopt anti-subsidy or countervailing duty measures against goods originating in the other Party in accordance with Article [insert] of this Chapter.

Article 16.3: Scope

1. This Chapter applies to specific subsidies to the extent they are related to economic activities.

2. This Chapter does not apply to:

    (a) subsidies granted to enterprises entrusted by the government with the provision of services to the general public for public policy objectives. Such exceptions from the rules on subsidies shall be transparent and shall not go beyond their targeted public policy objectives;

    (b) subsidies granted to compensate the damage caused by natural disasters or other exceptional occurrences.

(c) subsidies granted temporarily to respond to a national or global economic emergency. Such subsidies shall be targeted, economical, effective and efficient in order to remedy the identified temporary national or global economic emergency[22];

(d) subsidies granted in relation to the supply of audio-visual services; and

(e) subsidies for small and medium-sized enterprises granted in accordance with objective criteria or conditions as provided for in Article 16.2.1 (b) and footnote 2 attached thereto of the SCM Agreement.

3. The Parties shall use their best endeavours to develop rules applicable to subsidies to services, taking into account developments at the multilateral level, and to exchange information upon the request of either Party. The Parties agree to hold the first exchange of views on subsidies to services within three years after the entry into force of this Agreement.

Article 16.4: Relation to the WTO Agreement

1. Nothing in this Chapter shall affect the rights and obligations of either Party under the SCM Agreement, Article XVI of GATT 1994 and Article XV of GATS.

2. For the avoidance of doubt the provisions in this Chapter are without prejudice to the rights of a Party in accordance with the relevant provisions of the WTO Agreement to apply trade remedies or to take dispute settlement or other appropriate action against a subsidy granted by the other Party.

Article 16.5: Transparency

1. Every two years, each Party shall notify the other Party of the following with respect to any subsidy granted or maintained within its territory:

    (a) the legal basis of the subsidy;

    (b) the form of the subsidy; and

    (c) the amount of the subsidy or the amount budgeted for the subsidy.

2. If a Party makes publicly available on an official website the information specified in paragraph 1, the notification pursuant to paragraph 1 shall be deemed to have been made.

3. If a Party notifies subsidies pursuant to Article 25.2 of the SCM Agreement, the Party shall be considered to have met the requirement of paragraph 1 with respect to such subsidies.

[22] For greater certainty, an emergency shall be understood as one that affects the whole economy of a Party. For the European Union, the whole economy of a Party means the whole economy of the European Union or at least of one of the Member States of the European Union.

4. Upon request by a Party, the other Party shall provide further information on any subsidy schemes and particular individual cases of subsidy which is specific. The Parties shall exchange this information, taking into account the limitations imposed by the requirements of professional and business secrecy.

5. The Parties shall keep under constant review the matters to which reference is made in this Article.

Article 16.6: Prohibited Subsidies

1. The following subsidies shall be deemed to be specific under the conditions of Article 2 of the SCM Agreement and shall be prohibited for the purposes of this Agreement in so far as they adversely affect international trade of the Parties[23]:

   (a) subsidies granted under any legal arrangement whereby a government or any public body is responsible for covering debts or liabilities of certain enterprises within the meaning of Article 2.1 of the SCM Agreement without any limitation, in law or in fact, as to the amount of those debts and liabilities or the duration of such responsibility; and

   (b) subsidies (such as loans and guarantees, cash grants, capital injections, provision of assets below market prices or tax exemptions) to insolvent or ailing enterprises, without a credible restructuring plan based on realistic assumptions with a view to ensuring the return of the insolvent or ailing enterprise within a reasonable period of time to long-term viability and without the enterprise significantly contributing itself to the costs of restructuring. This does not prevent the Parties from providing subsidies by way of temporary liquidity support in the form of loan guarantees or loans limited to the amount needed to merely keep an ailing enterprise in business for the time necessary to work out a restructuring or liquidation plan.

2. Paragraph 1 does not apply to subsidies granted as compensation for carrying out public service obligations.

3. The Parties hereby agree that this Article applies to subsidies received only after the date when this Agreement enters into force.

Article 16.7: Use of Subsidies

1. Each Party shall ensure that enterprises use subsidies only for the specific legitimate purpose for which the subsidies were granted.

2. Each Party shall ensure that those legitimate purposes shall be publicly stated with an opportunity for private firms or individuals from either Party to comment prior to the subsidy being adopted.

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[23] International trade of the Parties comprises both domestic and exports markets.

3. Each Party shall ensure that subsidies shall not be granted unless they objectively achieve the legitimate purposes for which they are granted, and that they are the least trade restrictive as possible consistent with those legitimate, publicly stated goals.

4. Each Party shall ensure that any subsidies granted do not seriously prejudice international trade or competition. Serious prejudice shall have the meaning set forth in the Agreement on Subsidies and Countervailing Measures (applied to services as well as goods) as well as the following:

   a. The effect of the subsidy is to give a producer of goods or services in one Party a cost advantage over producers in the other Party that would not have occurred if normal market conditions prevailed which causes a significant lessening of competition;

   b. The effect of the subsidy is to artificially increase the costs of producers of goods or services in the other Party which negatively impacts the equality of competitive opportunity for firms of the other Party;

   c. The effect of the subsidy is to create a barrier to trade for exporters from the other Party into the market of the subsidising Party

Article 16.8: State Aids and Disciplines on Anti-Competitive Market Distortions

1. The Parties recognise that the provisions of Article 15.12 are to be read as additional commitments above and beyond the subsidy commitments in this Chapter.

Article 16.9: Consultations

1. In the event a Party considers that a subsidy of the other Party has or could have a significant negative effect on its trade or investment interests under this Chapter, the former Party may submit a request for consultation in writing. The Parties shall enter into consultations with a view to resolving the matter, provided that the request includes an explanation of how the subsidy has or could have a significant negative effect on trade or investment between the Parties.

2. During the consultations, the Party receiving the request for consultation shall consider to provide information about the subsidy, if requested by the other Party, such as:

   (a) the legal basis and policy objective or purpose of the subsidy;

   (b) the form of the subsidy such as a grant, loan, guarantee, repayable advance, equity injection or tax concession;

   (c) dates and duration of the subsidy and any other time limits attached to it;

   (d) eligibility requirements of the subsidy;

   (e) the total amount or the annual amount budgeted for the subsidy and the possibility of limiting the subsidy;

(f) where possible, the recipient of the subsidy; and

(g) any other information, including statistical data, permitting an assessment of the effects of the subsidy on trade or investment.

3. To facilitate the consultations, the requested Party shall provide relevant information on the subsidy in question in writing no later than 90 days after the date of receipt of the request referred to in Paragraph 1.

4. In the event that any information referred to in paragraph 2 is not provided by the requested Party, that Party shall explain the absence of such information in its written response.

5. During consultations, a Party may seek additional information on a subsidy or particular instance of government support related to trade in services provided by the other Party, including its policy objective, its amount, and any measures taken to limit the potential distortive effect on trade.

6. On the basis of the consultations, the responding Party shall endeavour to eliminate or minimise any adverse effects of the subsidy, or the particular instance of government support related to trade in services, on the requesting Party's interests.

Article 16.10: Confidentiality

When providing information under this Chapter, a Party is not required to disclose confidential information.

Article 16.11: Exemptions

Nothing in this chapter shall prevent a Party from subsidising its healthcare or education sectors, or from operating a public, regulated monopoly, provided it notifies the other Party in advance of its intention to do so.

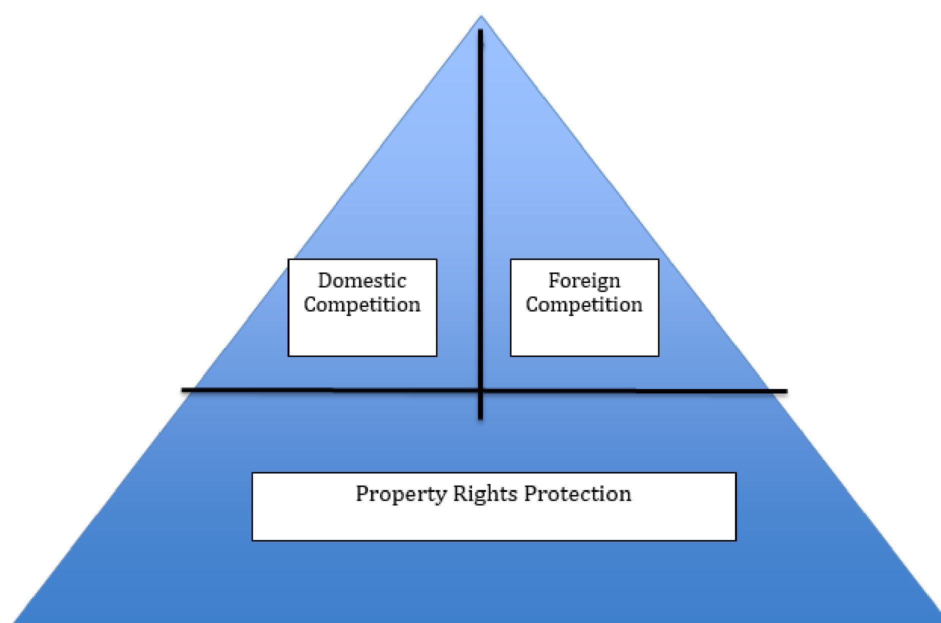
ANNEX 2

Singham-Rangan-Bradley Model to measure impact of Anti-Competitive Market Distortions

The first step in developing the SRB Model is the selection of specific factors, culled from numerous indicators that already exist and using some of our own data points subdivided into the classifications of property rights protection, competition, and open trade. We have extracted a series of specific factors from the following sources: (i) World Economic Forum Global Competitiveness Index; (ii) Fraser Index; (iii) Heritage Foundation Economic Freedom Index; (iv) Services Trade Restrictiveness Index; and (v) Trade Restrictiveness Index.

Property Rights, Competition and Trade

The model which we have developed is based on the notion that the three pillars of economic development are property rights, domestic competition, and international competition[24]. The triangle in the figure below illustrates how these three pillars work together to deliver economic growth. Property rights protection is the key issue on which the other two pillars are built.



This triangle illustrates the three core principles of a good regulatory system which can deliver growth. The different factors in various indices such as the World Economic Forum Global Competitiveness Index (GCI), World Bank Doing Business Index, Heritage Foundation Economic Freedom Index, can be indexed into the triangle above to create a relative score for each country with respect to each section of the triangle. See the Appendix for the structure of the index and the weights for each subcategory and variables within the subcategories.

The goal of creating these indicators was to give each country a score which reflects the degree to which policy in that area promotes welfare-maximizing competition. To achieve this goal we had two primary objectives: create subcategories in each of the three indicators according to economic theory and, wherever possible, use actual policy variables instead of outcome variables. To use outcome variables in the construction of our index would be to

[24] As proposed and argued in Singham, Shanker. *A General Theory of Trade and Competition: Trade Liberalisation and Competitive Markets*. Kent: Cameron May, 2007.

include the effect of the policy we are trying to measure in the construction of the policy comparison. However, there were cases when the relevant policy variables were not readily available or were available for only a subset of our sample, so outcome variables were used in their place.

Each of the subcategories of the Property Rights Protection, Domestic Competition, and International Competition indicators is defined by a set of variables normalized to take on a value of between 0 and 6[25]. The variables are each given a weight within each subcategory.[26] Then each subcategory is given a weight, which generates a score of between 0 and 6 for Property Rights Protection, Domestic Competition, and International Competition.

Property Rights Protection

The foundation of a productive economy is property rights protection. If property rights are left unprotected, the incentive to invest, compete, and innovate is lost. If the returns from effort cannot be captured, can be taken away, or cannot be regained if wrongly taken away, what incentive is there to exert effort? Furubotn and Pejovich[27] describe the nature of property rights in this way: "…property rights do not refer to relations between men and things but, rather, *to the sanctioned behavioral relations among men that arise from the existence of things and pertain to their use*… The prevailing system of property rights in the community, then, can be described as the set of economic and social relations defining the position of each individual with respect to the utilization of scarce resources" (p. 1139, italics are the authors'). The authors add in a footnote that, "Roman Law, Common Law, Marx and Engels, and current legal and economic studies basically agree on this definition of property rights." In other words, the very nature of an economic transaction is defined by the right to property and this definition is not disputed. So, a lack of property rights protection effectively undermines the ability of economic agents to be economic agents. In developing countries in particular, establishing and enforcing property rights plays a significant role in creating the preconditions for growth[28] [29]. Therefore, all other factors influencing economic outcomes depend on the level and quality of property rights protection. We account for the fact that the effect of domestic competition and international competition on other factors depends on the level of property rights in our model and will discuss how we capture this in the next section.

The Property Rights Protection (PRP) indicator is constructed as follows. Intellectual property rights are themselves a type of property rights and are a crucial aspect of economic development[30]. Including this measure as a part of a PRP indicator was obvious and necessary. The other six subcategories are each different ways in which policy can ensure that the effort of agents cannot be wrongfully expropriated, that when a person's rights are

[25] Where a value of 0 represents the most restrictive form of policy and 6 represents the most pro-competitive form

[26] Intellectual Property Protection is both a subcategory and a variable within Property Rights Protection.

[27] Furubotn, Eirik G. and Pejovich, Svetozar. Property Rights and Economic Theory: A Survey of the Recent Literature. Journal of Economic Literature. Vol. 10 No. 4. Pp. 1137-1162. Dec., 1972.

[28] Besley, Timothy. Property Rights and Investment Incentives: Theory and Evidence from Ghana. The Journal of Political Economy. Vol. 103, Issue 5. Oct. 1995. Pp. 903-937.

[29]A lack of property rights protection creates what De Soto calls "dead capital" – the poor cannot leverage the assets they do accumulate, which prevents entrepreneurialism. See: De Soto, Hernando. The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else. New York: Basic, 2000. Print.

[30] For a detailed treatment of the importance of intellectual property rights, see chapter 9 of Singham (2007). FN 28.

violated the process for righting that wrong is not prohibitively expensive[31], and that the legal system itself has integrity. The subcategories of the PRP indicator follow the Heritage Foundation Index of Economic Freedom's criteria for grading countries in terms of Property Rights Protection[32].

Domestic Competition

Domestic competition plays a significant role in the efficiency of both domestic and foreign firms. Competition among firms encourages innovation and upgrading of production processes, as well as positive externalities in local markets[33] [34]. Each of these features of competition has a positive impact on welfare, which justifies its inclusion as part of this index.

Typically, the term "competition policy" refers to regulations – and the enforcement of regulations – concerning restraint on competition created by private parties. Our Domestic Competition indicator, instead, captures the extent to which government policy itself restricts competitive behavior[35]. Muris (2005)[36] highlights the importance of understanding and correcting restrictive government actions – not just private restrictions. He compares these two sources of competitive restrictions to the forks in a stream and states that, "Protecting competition by focusing solely on private restraints is like trying to stop the water flow… by blocking only one channel." Muris goes on to say that creating a system which prevents anticompetitive behavior by firms but allows a government to dictate the same anticompetitive outcome that would have resulted from private action has not eliminated the problem, "It has simply dictated the form that the problem will take."

Domestic Competition here refers to the domestic policies affecting the way in which firms make decisions and interact with one another. Any policy which limits profit-maximizing firms' ability to make their own decisions will reduce the score for Domestic Competition for a country[37]. If a policy reduces the ability of some subset of firms to make their own

[31] Either financially or through time commitments.

[32] That is, Heritage Foundation describes why a country receives each level of score and this, in turn, provides a framework for the aspects of policy which we considered in building our indicator. http://www.heritage.org/index/property-rights

[33] Porter, Michael E. *The Competitive Advantage of Nations* (New York: Free Press, 1990). As cited in Sakakibara, Mariko and Porter, Michael E. Competing at Home to Win Abroad: Evidence from Japanese Industry. The Review of Economics and Statistics. May 2001, 83(2): 310-322.

[34] Positive externalities include, "…supplier availability, easier access to technology and market information, and specialized human resource development" (Sakakibara, et al. p. 310).

[35] As part of our Domestic Competition indicator we include an indicator of the success of policy in limiting the ability of private entities to restrict competition through the "Effectiveness of Anti-Monopoly Policy" variable in the "Industrial Organization Regulation" subcategory.

[36] Muris, Timothy J., Principles for a Successful Competition Agency. University of Chicago Law Review, Vol. 72, No. 1, pp. 165-187, Winter 2005; George Mason Law & Economics Research Paper No. 06-24. Available at SSRN: http://ssrn.com/abstract=901677

[37] Similarly, the Washington Consensus includes privatization as one of the 10 key areas of development because of the belief that "private industry is managed more efficiently than state enterprises, because of the more direct incentives faced by a manager who either has a direct personal stake in the profits of an enterprise or else is accountable to those who do. At the very least, the threat of bankruptcy places a floor under the inefficiency of private enterprises, whereas many state enterprises seem to have unlimited access to subsidies." This theory is the backbone of our Domestic Competition indicator. However, regulation of private markets is not discussed in the Washington Consensus. We correct this oversight by emphasizing the importance of policies which allow firms to make their own decisions.

decisions while not restricting others in the same way, then the Domestic Policy score will be reduced. However, this does not mean that a country with no regulations controlling the decisions of firms will receive the highest score. The goal of this index and the scores it generates is to allow comparisons between countries regarding the degree to which policy is welfare-maximizing. If welfare is to be maximized, then some government regulation may be appropriate in many contexts. For example, if a market can be characterized as a natural monopoly, appropriately tailored government regulation may be crucial for welfare maximization.[38] If there are true market failures that are not being handled adequately through purely private action (severe adverse health effects from pollution, a shortage of funds for post-secondary education, harmfully discriminatory practices, etc.), then government regulation may be necessary.[39] These anti-trust, or industrial organization types of regulations are part of the Domestic Competition score. No judgment is made as far as the exact specification of the regulation. Instead, the effectiveness of antitrust policy and the cost of adhering to different policies are the measures used.

The Domestic Competition score is higher when firms are able to make their own decisions because we are trying to evaluate how well domestic policies promote competitive behavior. Competitive behavior refers to the behavior firms exhibit in a particular market which will maximize welfare within the market. Therefore, the Domestic Competition score is higher when policies respond to market failures and antitrust violations efficiently but otherwise do not interfere with or dictate firm behavior. This is because the behavior of profit maximizing firms – faced with market demand, decisions of competitors, no market failures, and no antitrust violations – will produce and charge a price which generates the welfare-maximizing equilibrium. That is, once any market failures are corrected for, firms will behave in a way which maximizes welfare. Of course, in practice it is often very difficult or impossible to fully correct a market failure. However, some countries will do a better job than others in choosing and implementing policies that effectively respond to market failures. The closer a country is to actually eliminating a market failure, the closer it will be to moving a market toward its welfare-maximizing equilibrium[40].

The Domestic Competition indicator is defined by infrastructure[41] and the policies concerning how firms make decisions. Infrastructure and the efficiency with which it is built have serious implications for the competitiveness of a country. Reliable, well-maintained infrastructure is a crucial component of efficient markets. Here, the infrastructure

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Originally conceived in: Williamson, John. "What Washington Means by Policy Reform." Chapter 2 from *Latin American Adjustment: How Much Has Happened?* Ed. John Williamson. April 1990.
http://iie.com/publications/papers/paper.cfm?ResearchID=486
See also: http://www.who.int/trade/glossary/story094/en/
http://www.economicshelp.org/blog/7387/economics/washington-consensus-definition-and-criticism/
http://www.piie.com/publications/chapters_preview/6628/02iie6628.pdf

[38] When changing market characteristics, such as new technologies, eliminate natural monopoly conditions, however, maintaining government regulation may become counterproductive and welfare-inimical, and such regulation should be lifted.

[39] Before the government acts, care should be taken to ensure that the private sector cannot adequately rectify the market failure at issue, and that the costs associated with government intervention are not likely to outweigh the benefits that flow from eliminating (or reducing) the market failure.

[40] The welfare-maximizing number and size of firms will depend on the market (type of good, substitutes, demand, etc.).

[41] The ideal infrastructure measures would be those that reflect the policy for awarding contracts for infrastructure projects (specifically, for building, managing, or maintaining infrastructure). However, the primary data available is concerned with outcomes, with only a couple of exceptions in financial infrastructure.

subcategory reflects each type of infrastructure in an economy. Labour regulations are defined by how free firms are to hire and fire employees, as well as how firms are then allowed to utilize those workers. Restrictions on the hiring and firing process or deployment of labour decisions will reduce the score for Domestic Competition. The less flexible policy makes the labour force, the higher the cost of production will be because firms will have to work around or suffer the restriction of each policy. Regulatory promulgation process refers to how laws are created. If the government is allowed to make decisions based on favouritism and the process is not transparent, ACMDs can be created at will. There will be no need to disguise them as market failures, or if they are disguised, they will be very difficult to recognize. Industrial organization policies refer to the regulations which firms must adhere to in order to exist in a market and how antitrust behavior is dealt with if it arises. All of these areas impact a firm's ability to make their own profit-maximizing decisions.

International Competition

International Competition refers to the degree to which a country allows foreign firms to access its domestic market and the degree to which it allows domestic firms to access foreign markets. Any restriction on the free flow of trade which is not the correction to a market failure will reduce the score for International Competition. Greater access to a wider variety of goods benefits consumers and greater access to less expensive or higher quality inputs benefits firms. Also, exposing firms to potentially more efficient foreign firms promotes innovation. All of these forces combine to generate gains in welfare[42].

International Competition refers to how open a country is to interacting with foreign markets. The policies which reduce the score here are those that make it more costly or burdensome to transact internationally. The indicator is constructed as follows. Tariffs and procedural burden directly affect the flow of goods. Financial restrictions affect the flow of capital. The freedom of foreigners to visit is a measure reflecting the general openness of the economy to outsiders visiting. A policy which restricts visitation by foreigners would make it more difficult for foreign firms to have a presence in an economy. If any of these categories is restrictive, it will be more difficult for trade to occur. The Washington Consensus[43] also noted the importance of eliminating distortionary trade policies applied differently in different areas. Import liberalization is seen as particularly important because it eliminates the export disadvantage created by restricted access to less expensive imported

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[42] For a description of the theory see: Bajona, Claustre, Mark J. Gibson, Timothy J. Kehoe, and Kim J. Ruhl. "Trade Liberalization, Growth, and Productivity." Prepared for the conference "New Directions in International Trade Theory" at the University of Nottingham. 2008.
http://www.econ.umn.edu/~tkehoe/papers/BajonaGibsonKehoeRuhl.pdf.
Note: These authors also highlight the fact that trade openness does not always lead to increased GDP and that the theory does not predict an increase in GDP from openness. The theory does predict greater welfare from openness, though. We will use GDP per capita as our proxy for welfare because we do not have a direct measure of welfare. Also, there are many sources which do find a positive relationship between openness and GDP. A few examples include (as cited in Bajona et al (2010)):
Frankel, J. A., and D. Romer (1999), "Does Trade Cause Growth?" American Economic Review, 89, 379-399.
Hall, R. and C. Jones (1999) "Why do some countries produce so much more output per worker than others?" Quarterly Journal of Economics 114: 83-116.
Alcalá, F., and A. Ciccone (2004), "Trade and Productivity," Quarterly Journal of Economics, 119, 613-46.
[43] Though, again, no emphasis was given to the competitive environment within a country except for the stress on privatization. See FN 41.

intermediate goods. This type of ACMD is exactly what we are trying to capture with our International Competition indicator.

Combined Effects

An important point to be made is that if one of these three areas is improved while the other two are left in poor condition the impact on productivity will be reduced or reversed. For example, if Domestic Competition is improved by making it faster and less costly for domestic firms to start a business but property rights are left unprotected and international competition is prevented, the impact on productivity will likely be zero because firms will still be uncertain about entering the market (because their property can be expropriated, for example) and will not need to compete as fiercely as they would in the face of foreign competition.

Each of the three categories has an impact on how an improvement in the other categories will be realized in terms of productivity. As stated previously, without property rights protection agents cannot act in their own economic interests. This means that without property rights protection improvements in the other two categories will have no effect on the determinants of productivity. Domestic competition determines the structure of a domestic market which determines the equilibrium of each domestic market. If firms are not allowed to decide how they will behave then imported foreign goods will enter an inefficient market and face inefficient constraints on their position in that market. It is possible that distorted domestic competition may help or hurt foreign firms. Similarly, international competition policies can prevent foreign firms from entering the domestic market, or may prevent domestic firms from reaching foreign markets. In either case, the total effect in the long-run will be a reduction of welfare[44]. Also, improving each of these three areas simultaneously will have a combined effect. If a country can correct the ACMDs in every area it can move toward its optimal welfare level. Leaving ACMDs uncorrected in any area will negatively affect the benefits from correcting other ACMDs.

Data

The data is from the World Economic Forum's Global Competitiveness Index (GCI), the World Bank's Doing Business Index (DBI), and the World Bank's Global Development Indicators. Any country not used in the GCI or DBI was excluded from our data, which reduced the number of countries in our sample to 144. Based on the data from the Global Development Indicators we reduced our sample size further to a final 136 countries (See the appendix for the list of countries) by removing any country missing any data points used in our model.

The data from the GCI and DBI was organized into the categories and subcategories discussed above. We avoided using variables representing outcomes rather than policies where possible. The subcategories within the three policy areas (Property Rights Protection, Domestic Competition, and International Competition) represent the primary components of these policy areas. We created subcategories which practically and theoretically capture the way policy takes shape in the three main areas.

[44] See FN 1.

The Model

Our model is a reaction to the growth convergence model used by the WEF to assess the validity of the GCI. The WEF argues that the GCI is valid because the coefficient on the GCI score in the following specification is positive and statistically significant:

$t,\ y_{it}$:

$$\gamma_{yi} = \alpha_0 + \alpha_1 \times \ln(GCI_i) - \beta \times \ln(y_{it}) + \epsilon_i$$

Where γ_{yi} is the current GDP growth rate of a country, GCI_i is the GCI score for a country, and y_{it} is the current GDP per capita for a country. The WEF also argues that the GCI is valid because a bivariate regression of the log of GDP per capita on the log of the GCI score has an R-squared of around 0.67.

These two models show that GCI is positively correlated with growth and productivity. However, neither model addresses the endogeneity of the GCI score in anyway. Furthermore, the fact that the GCI score is correlated with GDP per capita in particular is not surprising given the use of outcome variables in the construction of the GCI. These outcomes are likely highly correlated with GDP per capita, but are not necessarily indications of the competitiveness of an economy. Lastly, the GCI assumes equal weighting[45] between the factors used in its construction.

Our model sets out to create an indicator which predicts GDP per capita more objectively. First, we eliminate outcome variables in every possible instance. Second, we forego the assumption of equal weights among factors in favour of statistically fitted values. Third, we attempt to measure the validity of our scores using a similar, but more thorough model to the WEF. Lastly, we assess our results by seeing how they work in the real world.

We model productivity as a function of factors which have a direct impact on productivity in a country. These factors are themselves influenced by the policy decisions of a country. The factors affecting productivity are: stock of foreign direct investment, stock of capital provided by the financial sector, health expenditures, educational attainment, fuel exports, and ore and metal exports. The policy decisions are captured using our three indicators: Property Rights Protection, Domestic Competition, and International Competition.

Productivity is measured in terms of GDP per capita. We estimate a reduced-form model to determine the factors which affect productivity. These factors are themselves influenced by the scores for Domestic Competition, International Competition, and Property Rights Protection. Our productivity model is:

$$\begin{aligned}\log\ of\ GDP\ per\ cap &= \beta_0 + \beta_1 \\ &* \log\ of\ FDI\ stock + \ \beta_2 * Health\ Expenditures\ per\ cap + \beta_3 \\ &* Domestic\ credit\ stock + \beta_4 * School\ persistence + \beta_5 * Fuel\ exports \\ &+ \beta_6 * Ore\ and\ Metal\ exports\end{aligned}$$

[45] Except in the final weights of the broadest categories, which are set according to a country's GDP per capita – the very thing the GCI is supposed to be able to predict.

The *log of FDI stock* variable is the logarithm of the stock of Foreign Direct Investment per capita in a given country in a given year[46] and represents the stock of foreign capital available to each person in a given country in a given year. The *Health expenditures per cap* variable is a dollar value per person spent on healthcare in a country in a given year and it captures the influence of overall health in a country. *Domestic credit stock* is measured as the value of credit provided in an economy by its own financial sector and is reported as a percentage of GDP. *School persistence* measures the portion of the population that reports to have completed primary school and/or advanced to secondary school. This controls for the human capital stock within a country. *Fuel exports* and *Ore and Metal exports*[47] are both reported as percentages of total merchandise exports and are both controls for differences in productivity which arise from the existence of natural resources within a country.

The specification of this productivity function follows theoretically from Robert Solow's critique of productivity growth regressions[48]. Solow argues for the use of productivity as the left-hand side variable and using factors directly influencing productivity on the right-hand side. Our desire to find the impact of policies on productivity also led to the decision to specify our regression using productivity as the dependent variable because it is differences in productivity – not growth – that we are trying to capture. We want to know how ACMDs are impeding economic efficiency and, thus, we want to know what level of productivity countries could reach absent all ACMDs. The path to that particular level of productivity is important and interesting, but it is a separate issue from the one we are exploring here.

Our right-hand side variables also extend from the Solow critique. The types of variables recommended to be used on the right-hand side can be classified into four categories: economic factors, institutions, social base, and physical base[49]. These categories are partially captured by the variables in our productivity function, but are also covered through our ACMD category scores. For further inspiration for specifying our productivity function, we returned also to the traditional Solow model of productivity which models productivity as a function of capital and labour[50] [51]. In addition to the traditional approach, our model fully

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[46] Source: http://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx?sRF_ActivePath=p,5&sRF_Expanded=,p,5

[47] Source for health expenditures per cap, domestic credit stock, school persistence, fuel exports, and ore and metal exports: http://databank.worldbank.org/data/home.aspx

[48] Solow, Robert M. What have we learned from a decade of empirical research on growth? Applying Growth Theory across Countries *World Bank Econ Rev (2001) 15 (2): 283-288 doi:10.1093/wber/15.2.283.*

[49] *Economic factors* includes things like 'size of the government,' 'openness of the economy,' etc.; *Institutions* includes things like 'political stability,' 'democratic rights,' etc.; *Social base* includes things like 'ethnic and religious composition of the population,' etc.; *Physical base* includes things like 'location of a country,' 'climate,' 'access to sea,' etc.
Source: Islam, Nazrul. Determinants of Productivity: A Two-Stage Analysis. Working Paper Series Vol. 2005-13. International Centre for the Study of East Asian Development. October 2005.

[50] Solow, Robert M. A Contribution to the Theory of Economic Growth. The Quarterly Journal of Economics, Vol. 70, No. 1. (Feb., 1956), pp. 65-94.

[51] Total factor productivity (TFP) has been shown to be a key component of productivity as well (for example: Solow, Robert M. 1957. "Technical Change and the Aggregate Production Function." Review of Economics and Statistics39 (August), pp. 312-20.; Denison, Edward F. 1985. Trends in American Economic Growth, 1929-1982. Washington: Brookings Institution.; Jones, Charles I. 1997. "On the Evolution of the World Income Distribution." Journal of Economic Perspectives11 (Summer) pp. 19-36.). TFP is typically measured as the Solow residual, which would be the residual in our model. Our concern here is estimating the effect of removing ACMDs on GDP through the effect of reducing ACMDs on capital and labour. This is essentially the first step in the process of using the ACMD index to evaluate the impact of ACMDs. Future research should attempt to disaggregate the types of inputs (capital, labour, TFP) to find the specific way in which ACMDs reduce productivity and welfare.

subscribes to the notion of the importance of total factor productivity. We will now discuss the factors directly affecting productivity and how the Property Rights Protection, Domestic Competition, and International Competition scores influence these factors.

Domestic Credit Stock

In our model, the effect of capital on productivity includes financial capital and natural resources. *Domestic credit stock* is a measure of capital provided to the private sector by domestic financial institutions expressed as a percentage of GDP. The more credit available (the greater the supply), the easier it will be for firms and individuals to access capital and use it for productive activities. As it is measured as a percent of GDP, the ease of access is relative to the size of an economy, so it is capturing the availability of credit given the size of the economy. It means that comparisons made across countries will pick up the relative ease of access to capital. Also, domestic credit available falls into the Solow critique category of 'economic factors.'

The amount of credit available domestically will depend on how well property rights are protected in a country. For example, the weaker property rights, the less certainty borrowers and lenders have that the arrangement they agree upon will be the reality once the loan is disbursed. This will make lenders less willing to make funds available because the uncertainty generated by poor property rights protection means there is greater risk in lending. In general, the less certain property rights are the less total investment there will be in an economy and the slower will be economic growth[52].

All else equal, liberalizing financial markets – and markets in general – will increase the supply of domestic credit, which leads to economic growth[53]. Improving the Domestic Competition score in a country can be thought of as liberalization (with an emphasis on liberalization in every sector and the added component of government transparency and accountability). However, the financial crises associated with liberalizing financial markets in the 1990s provide an excellent example of why improving Domestic Competition alone will not create a thriving financial sector. Countries which liberalized their financial sectors in the 1990s failed to make necessary reforms in Property Rights Protection, International Competition policies, and in other Domestic Competition areas. Examples of existing issues which became detrimental once financial markets were deregulated include: unsustainable fiscal policy, defense of unsustainable exchange rate pegs, absence of meaningful oversight, and growing concern over deposit guarantees[54]. However, it is also important to note that liberalization of financial markets was not complete. Governments failed to address ACMDs in the sector (government regulations that distorted the market), and also failed to address the presence of the state-owned mortgage entities, another ACMD. So while financial

[52] Numerous studies show this relationship. A few examples include:
Barro, Robert J. Economic Growth in a Cross Section of Countries. Quarterly Journal of Economics. May 1991.
Mauro, Paolo. Corruption and Growth. Quarterly Journal of Economics. August 1995.
Besley, Timothy. Property Rights and Investment Incentives: Theory and Evidence from Ghana. The Journal of Political Economy. Vol. 103, Issue 5. Oct. 1995. Pp. 903-937.
Svensson, Jakob. Investment, Property Rights, and Political Stability. European Economic Review. 42. Pp. 1317-1341. 1998.
[53] See, for example: Levine, Ross, Loayza, Norman, and Beck, Thorsten. Financial Intermediation and Growth: Causality and Causes. Journal of Monetary Economics 46 (2000).
Levine, Ross and Zervos, Sara. Stock Markets, Banks, and Economic Growth. The American Economic Review. June 1998.
[54] Zagha, Roberto, and Gobind T. Nankani, eds. *Economic Growth in the 1990s: Learning from a Decade of Reform*. Chapter 7. World Bank Publications, 2005.

services liberalization might have scored highly in our International Competition and perhaps Property Rights indicators, the underlying weaknesses would have been exposed in our Competition Indicator.

Financial institutions are tied – either directly or indirectly through other institutions – to foreign capital. If access to foreign capital markets is restricted, then domestic credit will be reduced compared to open access. It has been shown that when a country's access to foreign capital markets is restricted it reduces the supply of domestic credit[55]. Therefore, policies which lower the International Competition score of a country will lead to a tightening of domestic credit.

Stock of FDI

Another measure of capital is *log of FDI stock*. This measure captures the amount of foreign money that has come into a country and how that money is spread across the population on average. The stock of FDI is used instead of the change in FDI because the stock essentially tells us the amount of foreign money available to the average individual. Current flows, on the other hand, will slow down once the stock reaches a certain threshold and pick up if the stock starts to dwindle. The stock of FDI also reflects the openness of an economy. If trade is truly allowed to flow freely in and out of a country, then the FDI stock will be higher because the costs associated with investing will be reduced. FDI brings, "needed capital, skills, and know-how, either producing goods needed for the domestic market or contributing new exports."[56] Thus, FDI falls into the Solow critique category of 'economic factors.'

Property rights play a significant role in the inflow of FDI. The positive relationship between property rights and FDI is due in large part to the roles played by intellectual property rights protection and protection from expropriation. The strength of intellectual property rights protection has a positive effect on FDI inflows[57] since greater intellectual property rights protection attracts investment in innovative technology[58]. Ensuring that property will not be expropriated is a necessary insurance for foreign entities considering investing in a country[59]. One of the reasons FDI is so low in developing countries when the potential returns are so high is what Lucas[60] called 'political risk.' Lucas described 'political risk' as an imperfection or absence in the mechanism for enforcing international borrowing agreements. Put differently, one explanation for the reason FDI does not flow into developing countries where returns are greatest is because this relationship is a possible equilibrium when property rights are not protected.

Domestic competition related policies also play an important role in attracting FDI. In particular, the less costly it is to start a business the greater FDI inflows – especially in

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[55] Aiyar, Shekhar and Jain-Chandra, Sonali. The Domestic Credit Supply Response to International Bank Deleveraging: Is Asia Different? IMF Working Paper WP/12/258. Asia and Pacific Department. IMF. 2012.
[56] See FN 41.
[57] Adams, Samuel. Intellectual Property Rights, Investment Climate, and FDI in Developing Countries. International Business Research. Vol. 3, No. 3. July 2010.
[58] Adams (2010) shows that patent protection had a greater, positive influence on FDI after the adoption of TRIPS, which tells us that committing to protecting intellectual property and actually increasing patent protection together attracted more FDI. See FN 60.
[59] Ramamurti, Ravi and Doh, John P. Rethinking Foreign Infrastructure Investment in Developing Countries. Journal of World Business. Vol. 39. 2004.
[60] Lucas, Jr., Robert E. Why Doesn't Capital Flow from Rich to Poor Countries? The American Economic Review 80 (2):92-6. May 1990.

developing countries[61]. Improving domestic competition regulations can even make countries less abundant in natural resources more competitive in attracting FDI[62]. Even if trade is open between two countries and FDI is technically allowed to flow freely between them, a distorted domestic market creates uncertainty for foreign firms and reduces the likelihood of investing. The exception to this pattern would, of course, be a case where the foreign firm has political connections in the domestic market which allow it to bypass the burdensome regulations[63].

All else equal, reducing or removing trade barriers will increase FDI as firms considering investing into a particular country will observe fewer barriers to investment. The degree to which open trade policies or free trade agreements positively influence FDI is entirely dependent on the 'investment climate' and 'political stability' in the host country[64]. Put differently the quality of Domestic Competition and Property Rights Protection in a country each combine with the quality of International Competition policy to determine the amount of FDI entering the country. If any of these factors is poor it will divert FDI to a more open, stable environment[65].

Health Expenditures

The *Health expenditures per capita* variable is a proxy for health outcomes[66]. The initial goal was to measure health outcomes here, but an ideal single measure of health outcomes is difficult to define because there are many indications of overall health (life expectancy, infant mortality, malnutrition, etc.) and the data for each is not uniformly available. Health expenditures per person are a labour input in the original Solow context. All else equal, a healthier population will be more productive. Also, *Health expenditures per capita* falls into the 'economic factors' and 'social base' categories in the Solow critique context.

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[61] Bayraktar, Nihal. Foreign Direct Investment and Investment Climate. Procedia Economics and Finance 5 (2013) 83 – 92.

[62] Nnadozie, E. and A. E. Njuguna. 2013. Investment Climate and Foreign Direct Investment in Africa. Mimeo, United Nations Economic Commission for Africa.

[63] Pan, Yigang, et al. Firms' FDI ownership: the influence of government ownership and legislative connections. Journal of International Business Studies. Vol 45. 2014.

[64] Pilarska, Czeslawa and Walega, Grzegorz. Determinants of FDI Inflows to Poland, Czech Republic and Hungary in Context of Integration into European Union. The 8th International Days of Statistics and Economics, Prague, September 11-13, 2014.

[65] This interdependence has been documented many times. Some examples include:
Dunning, John H. The Role of Foreign Direct Investment in Upgrading China's Competitiveness. Journal of International Business and Economics. Fall 2003.
United Nations Conference on Trade and Development's World Investment Reports (numerous reports, but the 1998 and 2012 report focus on trends in determinants of FDI and investment climate, political stability, and openness of trade are factors in each report).

[66] The literature supports the use of health expenditures as a proxy for health outcomes: Farag, Marwa et al. Health Expenditures, Health Outcomes and the Role of Good Governance. *Int J Health Care Finance Econ* 13.1 (2012): 33-52. Shows that health expenditures reduce child and infant mortality rates in low- and middle-income countries and that good governance improve this effect; Bokhari, Farasat A. S., Yunwei Gai, and Pablo Gottret. Government Health Expenditures and Health Outcomes. *Health Econ.* 16.3 (2007): 257-273. Shows that health expenditures reduce infant and maternal mortality rates across all income levels; Anyanwu, John C. and Erhijakpor, Andrew E. O. Health Expenditures and Health Outcomes in Africa. Working Paper No. 91.African Development Bank. 2007. Show that the relationship between health expenditures and child and infant mortality rates holds for Africa; Joumard, I., C. Andre and C. Nicq (2010), "Health Care Systems: Efficiency and Institutions", OECD Economics Department Working Papers, No. 769, OECD Publishing, Paris. Show that 40% of the increase in life-expectancy since 1990 for OECD countries can be attributed to increases in health expenditures.

Property rights have a mixed effect on health expenditure. On the one hand, if property rights are protected the returns to innovation can be captured by the innovator, which increases the incentive for people to enter the research field and for the government to spend money in the health sector. On the other hand, healthcare is an industry which can generally be characterized by highly inelastic demand and the necessity of large financial and time investments for innovation. High costs and inelastic demand can lead to high prices for medications, equipment, and training. In the face of such high costs, limited government resources may be diverted away[67]. However, increased protection of property rights (particularly patent protection) has a positive impact on the availability of medications across countries[68]. So, property rights protection has an ambiguous effect on health expenditures on its own.

The negative effect on health expenditures from increased property rights protection is due primarily to increased prices. The sources of relatively high prices include inelastic demand, government price controls, and other disincentives to enter a market (fixed costs of launching, potential competition from generics, etc.)[69]. However, these issues apply to developing countries. As countries develop and property rights are more strongly protected, innovation becomes more common domestically (as highlighted above). Thus, strong property rights increase health expenditures when domestic competition and open trade are promoted because countries with these characteristics are stronger economically.

Domestic competition improvements will increase the quality of health services and, therefore, the return to health expenditures. One avenue through which this effect occurs is the potential for competition over patients and health insurance buyers. If hospitals must compete for patients and insurers must compete for clients, quality will improve relative to the case where these entities are not allowed to compete. This is true even when price is regulated; though, a higher regulated price can also lead to higher quality of services. Also, when prices are determined competitively, prices may not rise relative to the regulated price. It stands to reason that competition over insurers will lead hospitals to lower prices – particularly if insurers are competing over clients[70].

Also, health expenditures have become linked to international trade relationships. Health services trade is growing and the potential gains in health outcomes and, therefore, returns to health expenditures from trading health services openly have been documented[71]. These potential gains can make an important difference globally, as the demand for health services is predicted to grow as populations become “older, wealthier, and subject to more chronic disease.”[72]is predicted to grow as populations become “older, wealthier, and subject to

[67] Cockburn, Iain M. (2009), “Intellectual Property Rights and Pharmaceuticals: Challenges and Opportunities for Economic Research”, in The Economics of Intellectual Property, Chapter 5, World Intellectual Property Organization, Geneva.
[68] Berndt, Ernst R., Nathan Blalock, and Iain M. Cockburn. "Diffusion of New Drugs In The Post-TRIPS Era." *International Journal Of The Economics Of Business* 18.2 (2011): 203-224.
[69] See FN 71.
[70] Gaynor, Martin and Town, Robert J. Competition in Health Care Markets. NBER Working Paper 17208. July 2011.
[71] Waeger, Patricia. Trade in Health Services: an Analytical Framework. Kiel advanced studies working papers, No. 441. 2007.
[72] Recent Trends in U.S. Services Trade – Annual Report 2013. U.S. International Trade Commission.

more chronic disease."[73]disease."[74]is predicted to grow as populations become "older, wealthier, and subject to more chronic disease."[75]

Fuel Exports and Ore and Metal Exports

The effect of natural resources on productivity is captured using *Fuel exports* and *Ore and Metal exports*. These factors clearly have a direct effect on our measure of productivity because GDP includes exports. When a large percent of manufacturing exports consists of these goods, the relative productivity of workers will be impacted. *Fuel exports* bias GDP per capita upwards because large export values can be generated with relatively few workers. Oil's share of GDP reaches almost as high as 50% for some countries[76] and oil exports can reach a value equal to over 40% of GDP[77]. *Ore and Metal exports* bias GDP per capita downwards because fairly low export values for the volume of goods produced are generated with relatively many workers[78]. Also, the types of infrastructure and other businesses which exist in high fuel exporting and high ore and mineral exporting countries are different than those which exist in other countries. So, these variables capture their direct effect on productivity as well as the indirect effect generated by the relative dependence of countries on these goods. Also, *Fuel exports* and *Ore and Metal exports* fall into the categories of 'economic factors' and 'physical base' in the Solow critique context.

School Persistence

School persistence is our measure of human capital in a country. The more people who have reported to have completed primary school or attended some amount of secondary school the better educated the population is. The higher the level of education, the more skilled the population and, therefore, the more productive the population[79]. Also, *School persistence* falls into the 'economic factors' and 'social base' categories in the Solow critique context.

Results

The coefficients in the productivity function are estimated using an Ordinary Least Squares regression with heteroskedasticity robust standard errors. The regression's results are as follows**:**

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[73] Recent Trends in U.S. Services Trade – Annual Report 2013. U.S. International Trade Commission.
[74] Recent Trends in U.S. Services Trade – Annual Report 2013. U.S. International Trade Commission.
[75] Recent Trends in U.S. Services Trade – Annual Report 2013. U.S. International Trade Commission.
[76]Regional Economic Outlook Update. Middle East and Central Asia Department. International monetary Fund. May 2014.
[77] Harb, N. (2009), Oil Exports, Non-Oil GDP, and Investment in the GCC Countries. Review of Development Economics, 13: 695–708.
[78] Davis, Graham A. Trade in Mineral Resources: Background Paper to the 2010 World Trade Report. World Trade Organization: Economic Statistics and Research Division. Staff Working Paper ESRD-2010-01. January 2010.
[79] Many studies have examined the relationship between education and productivity or wages. Some examples include:
Duflo, Esther. 2001. "Schooling and Labour Market Consequences of School Construction in Indonesia: Evidence from an Unusual Policy Experiment." *American Economic Review*, 91(4): 795-813.
Rosenzweig, M. (1995), Why are there returns to schooling, American Economic Review, 85(2), 153-8.
Ashenfelter, Orley and Alan Krueger. 1994. "Estimates of the Economic Return to Schooling from a New Sample of Twins." American Economic Review, 84(5): 1157-1173.

Table 1:

Log of GDP per capita	Coefficient	Standard Error
Log of fdi stock	0.362***	0.0254
Health expenditure	0.000258***	0.0000
Domestic credit provided by financial sector	0.00197***	0.0006
School persistence	0.0217***	0.0023
Fuel exports	0.00695***	0.0120
Ores and metals exports	-0.00537***	0.0016
Constant	3.592***	0.1430
N	383	
adj. R-sq	0.903	
*** p<0.01		

Each variable is statistically significant at the 99% confidence level and the regression as a whole explains about 90% of the variance in GDP per capita between countries. This production function captures the determinants of productivity within a country at a given time with a high degree of accuracy. The mean absolute prediction error is about 4%, which means that the above regression is roughly 96% accurate when estimating GDP per capita when given the values for the independent variables.

Next, we evaluate the effect of improving a country's score in Domestic Competition, International Competition, and/or Property Rights Protection on the stock of FDI, the stock of domestic credit, and overall health in an economy. Our model counterintuitively shows that school persistence is largely uncorrelated with our policy indicators. This is likely because school persistence can simply be mandated or prohibited by a government regardless of the quality of Domestic Competition, International Competition, or Property Rights Protection. So, we instead use school persistence as a control in our productivity function to control for differences in human capital stock. In reality, for a particular country it is likely that improving the regulatory environment may provide a new path to improve education where necessary. Because the pattern across all countries is ambiguous, we treat school persistence as a control.

Each factor influencing GDP is itself influenced by policy and these policies determine the scores a country receives for Domestic Competition, International Competition, and Property Rights Protection. Therefore, we estimate the impact of the three policy scores on the productivity factors using the following regressions:

$$\log FDI\ stock = \alpha_{fdi0} + \alpha_{fdi1} * Property\ rights + \alpha_{fdi2} * Domestic\ competition + \alpha_{fdi3} * International\ Cometition + \alpha_{fdi4} * (Property\ rights * domestic\ comp) + \alpha_{fdi5} * (Property\ rights * interntional\ comp) + \alpha_{fdi6} * (domestic\ comp * international\ comp) + \alpha_{fdi7} * (Property\ rights * domestic\ competition * international\ competition)$$

$$\text{Healh expenditure per cap} = \alpha_{health0} + \alpha_{health1} * Property\ rights + \alpha_{health2} * Domestic\ competition + \alpha_{health3} * International\ Cometition + \alpha_{health4} * (Property\ rights * domestic\ comp) + \alpha_{health5} * (Property\ rights * interntional\ comp) + \alpha_{health6} * (domestic\ comp * international\ comp) + \alpha_{health7} * (Property\ rights * domestic\ competition * international\ competition)$$

$$\text{Domestic credit stock} = \alpha_{dcs0} + \alpha_{dcs1} * Property\ rights + \alpha_{dcs2} * Domestic\ competition + \alpha_{dcs3} * International\ Cometition + \alpha_{dcs4} * (Property\ rights * domestic\ comp) + \alpha_{dcs5} * (Property\ rights * interntional\ comp) + \alpha_{dcs6} * (domestic\ comp * international\ comp) + \alpha_{dcs7} * (Property\ rights * domestic\ competition * international\ competition)$$

In each function, the only explanatory variables entering are the scores for the three policy areas. These scores enter the equations alone and multiplied with other scores. The multiplications represent the interaction effects from changing each score included in the interaction. The coefficients on the scores by themselves represent the change in the dependent variable when that particular score changes and the other scores equal zero. For the interactions, the coefficient represents the effect on the dependent variable of changing at least one score while the other score or scores remains constant – and greater than zero – or of changing all scores in the interaction. If none of the scores for a country equals zero, then the effect of changing one score on the dependent variable will be the total of the individual effect plus all of the interaction effects containing the score that is changing. Changing the score for any of the policy categories will impact each dependent variable through the total effect of the interactions and the solo effect.

The results of the OLS regressions above are:

Table 2

	Log FDI stock	Health expenditures	Domestic credit stock
Property Rights	-0.652	-3463.2***	-169.5***
	(0.98)	(1059.50)	(39.85)
International Competition	-3.011***	-15.02	-133.5***
	(0.71)	(611.60)	(22.51)
Domestic Competition	-4.845***	-1498.4**	-129.8***
	(0.74)	(631.30)	(20.82)
Property Rights * Domestic Competition	0.475**	792.0***	39.13***
	(0.24)	(280.00)	(9.08)
Property Rights * International Competition	0.374*	496.5**	52.55***
	(0.21)	(245.70)	(9.64)
Domestic * International	1.020***	-115.1	28.68***
	(0.16)	(147.80)	(4.91)
Property Rights * domestic * International	-0.111**	-59.81	-9.895***
	(0.05)	(58.74)	(1.89)
Constant	19.17***	6186.5***	535.6***
	(2.63)	(2194.00)	(78.99)
N	807	803	774
adj. R-sq	0.634	0.623	0.493
Standard errors in parentheses	* p<0.10	** p<0.05	*** p<0.01

It is important to remember that the effects of changing a score in one policy are equal to the total effect from each component of the regression. So, a negative coefficient should not be seen as a negative impact on the dependent variable from improving a score, but should be seen as reducing the positive impact of the effect from the change somewhere else in the regression. This portion of the model explains between 49.4% and 63.4% of the variation in the factors affecting productivity.

This level of accuracy is much greater than other comparable indicators, such as the World Economic Forum's Global Competitiveness Indicators which have an accuracy of about 19% when used to predict GDP per capita. That is, when using the WEF's own indicators in the regression structure they suggest, the regression has a mean absolute prediction error of about 19%. This is likely due to the fact that the WEF's GCI indicator is a single value which is meant to capture the overall competitiveness of a country and, therefore, the indicator generates a weighted average of very different types of variables (such as cost of terrorism and telephony, as one example). Also, the WEF indicator includes many variables which are actually the direct result of the competitive environment, as opposed to characteristics of a pro-competitive environment. Finally, the WEF suggests a very simple linear regression which directly estimates the change in GDP per capita through the GCI score and GDP growth. This fails to capture the fact that changing policy does not increase GDP directly (that is, removing a distortion is only productivity enhancing because it allows participants in the market to optimize their behavior, not because the policy itself is productive). Our model is much more streamlined and parsimonious than other models, and is different from other models because of the importance it ascribes to competition, which is partly why it is more accurate.

To determine the impact of improving a score in one or more policy areas on GDP per capita we find the impact of changing that score on each of the three policy areas above and then calculate the impact of that change in each of the three areas above on GDP per capita. For example, if property rights protection increases by 1, domestic competition equals 4, and international competition equals 3, then log of FDI stock will increase by 1.038, Health expenditures will increase by 476.58, and domestic credit stock will increase by 25.93. These increases will then increase log of GDP per capita by 0.55, which is equivalent to a 70% increase in productivity.

We discounted an approach that would estimate the equations for FDI stock, domestic credit stock, and health expenditures, using the fitted values from these estimates as the values in the regression on the log of GDP per capita, because the goal for this process is to find the impact of changing the policy area scores on GDP per capita. Since this is not a direct effect, we need a production function which would accurately estimate log of GDP per capita using independent variables which are influenced by the policy area scores. We then estimate functions for FDI stock, domestic credit stock, and health expenditures that are functions of the policy area scores and where the policy areas were statistically significantly influential and where the function as a whole was statistically significant. The functions did not need pin-point accuracy, but the coefficients on each policy area and the interactions needed to be accurate.

Estimating Weights

To calculate the scores for each policy are we took the data points for the WEF GCI and the World Bank's Doing Business Index and rearranged them into subcategories in each policy area (See the appendix for the exact subcategories and data points). We then estimated the models for each productivity factor (which are functions of the scores, as shown above) repeatedly, adjusting the weights of each variable and subcategory each time. The fitted values for the productivity factors as a function of these scores were then used as the data points for the productivity model. The predictive power (estimated as the mean absolute prediction error) of the productivity model was recorded and the process was repeated using new weights for the data points and subcategories. We assigned a random weight to each potential indicator in each subcategory and a weight for each subcategory in each policy area. Then, the equations for FDI stock, domestic credit stock, health expenditures, and school persistence were estimated using OLS regressions. The fitted (or predicted) values for each regression were then used to estimate the regression for GDP per capita. The mean absolute prediction error was calculated as a percent of GDP per capita. Then, the program assigned a new weight to each value and subcategory, re-ran the regressions, and then predicted GDP per capita using the new fitted values. We repeated this process in order to minimize the distance between the mean absolute prediction error and perfect predictive power (0 prediction error). The resulting weights predicted GDP increases with 93% accuracy, using the simple regression set up, and now predict GDP increases with 96% accuracy using the current framework. See the Appendix for the structure of the index and the weights for each subcategory and variables within the subcategories.

The goal was to minimize the mean absolute prediction error of the productivity model, while maintaining statistically significant explanatory power of the scores themselves in the models of productive factors as functions of the scores. The program would throw out any scores which did not yield any statistically significant coefficients in the models for productive factors. We also restricted the weights to be integer percentage values (ie, 1%, 2%, 3%, etc., but not 1.5% or 2.5%, for example) and did not allow any of the data points or subcategories to hold no weight. In the end, the scores which generated fitted values for the productive factors which then yielded the smallest mean absolute prediction errors for the model of productivity were chosen and the weights associated with these scores used.

ANNEX 3

ACMD Index

Property Rights:

- Intellectual Property Protection – 25%

- Enforcing Contracts – 15%
  - Enforcing Contracts - Time (days) - 15%
  - Enforcing Contracts - Cost (% of claim) – 60%
  - Registering Property – Time (days) – 5%
  - Registering Property – Cost (% of property value) – 20%

- Efficiency of the Judicial System – 30%
  - Efficiency of the legal framework in settling disputes – 20%
  - Efficiency of the legal framework in challenging regulations – 80%

- Integrity of the Legal System – 17%
  - Judicial Independence – 15%
  - Legal rights index (financial) – 32%
  - Strength of Investor Protection – 53%

- Resolving Insolvency – 13%
  - Time (years) – 17%
  - Cost (% of estate) – 14%
  - Outcome (0 as piecemeal sale and 1 as going concern) – 59%
  - Recovery rate (cents on the dollar) – 10%

Domestic Competition:

- Efficiency of Infrastructure – 20%
  - (i) Transportation – 15%
    - (a) Quality of roads – 30%
    - (b) Quality of railroads – 20%
    - (c) Quality of ports – 25%
    - (d) Quality of air – 25%
  - (ii) Information Technology – 10%
    - (a) Fixed telephone lines – 30%
    - (b) Mobile telephone subscriptions – 40%
    - (c) Individuals using the internet – 30%
  - (iii) Energy – 30%
    - (a) Quality of electricity supply – 10%
    - (b) Getting electricity – Time (days) – 12%
    - (c) Getting electricity – Cost (% of income per capita) – 78%
  - (iv) Financial Markets – 45%
    - (a) Availability of financial services – 10%
    - (b) Affordability of financial services – 22%

(c) Financing through local equity market – 7%
(d) Ease of access to loans – 6%
(e) Venture capital availability – 4%
(f) Soundness of banks – 10%
(g) Regulation of securities exchanges – 17%
(h) Getting Credit - Depth of credit information – 9%
(i) Ownership of banks – 8%
(j) Number of banks (per 1,000 people) – 7%

- Industrial Organization Regulation – 17%
  - (i) Effectiveness of anti-monopoly policy – 22%
  - (ii) Agricultural policy costs – 5%
  - (iii) Starting a Business - Cost (% of income per capita) – 29%
  - (iv) Starting a Business - Paid-in min. capital (% of income per capita) – 33%
  - (v) Dealing with Construction Permits - Time (days) – 11%

- Regulatory Promulgation Process – 23%
  - (i) Favouritism in decisions of government officials – 15%
  - (ii) Transparency of government policymaking – 85%

- Labour Regulation – 40%
  - (i) Flexibility of Deployment – 35%
    - (a) Fixed-term contracts prohibited for permanent tasks? – 55%
    - (b) Maximum length of a single fixed-term contract (months) – 17%
    - (c) 50-hour workweek allowed for 2 months a year in case of a seasonal increase in production? – 14%
    - (d) Flexibility of wage determination – 14%

  - (ii) Ease of Recruitment and Letting Go – 65%
    - (a) Hiring and firing practices – 18%
    - (b) Redundancy costs, weeks of salary – 22%
    - (c) Dismissal due to redundancy allowed by law? – 60%

International Competition:

- Procedural Burden – 52%
  - Burden of customs procedures – 17%
  - Time to export (days) – 11%
  - Cost to export (deflated US$ per container) – 31%
  - Time to import (days) – 13%
  - Cost to import (deflated US$ per container) – 28%

- Tariffs and Non-Tariff Barriers – 35%
  - Prevalence of trade barriers – 28%
  - Trade tariffs, % duty – 17%
  - Standard deviation of tariff rates – 10%
  - Non-tariff trade barriers – 45%

- Financial Restrictions – 5%
  - Freedom to own foreign currency – 79%
  - Capital controls (international) – 21%
- Freedom of Foreigners to Visit – 8%