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**TWENTY-FIRST CENTURY TRADE GOVERNANCE: FINDINGS  
FROM THE COMMONWEALTH COUNTRIES**

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# Twenty-first century trade governance patterns: the case of Commonwealth countries

## 1. Introduction

The role of institutions and governance as a driver of international trade has attracted wide academic scrutiny (Linders et al., 2005; François and Manchin, 2013; Bilkin et al., 2017). Evidence suggests that institutions matter for countries' economic performance and that weak or inadequate institutions restrain trade in magnitudes not dissimilar to those related to the introduction of tariffs (Anderson and Marcouiller, 2002; Acemoglu, et al, 2002; 2005). Studies find that specific institutional dimensions impact trade flows (Martínez-Zarzoso and Marquez, 2019). For example, strong institutions, both formal (e.g. laws, rules, and organisations) and informal (e.g. trust, individual habits, values, group routines and social norms) facilitate trade (Yu et al., 2015). Corporate governance, employment protection, investor protection and political environments impact on countries' exporting performance (Bilkin et al., 2017). There is also a link between institutions, social governance and political risk and these variables determine FDI flows (Benáček et al., 2014).

Recent work suggests that streamlining trade governance and procedures could unleash economic opportunities and enable countries to harness the 'Commonwealth Advantage' (Arvis et al. 2003; Commonwealth Trade Review,

2018). A review of literature reveals none of the studies examine the impact of institutional quality on the value and direction of trade for the 53 Commonwealth members, despite their growing role in international trade (Commonwealth Secretariat, 2015). This paper fills in the missing gap and examines the role of governance in influencing trade and investment flows in the Commonwealth. It explores whether enhanced trade governance within the Commonwealth countries could potentially foster trade gains, on a both intra- and extra-Commonwealth basis. The specific research questions this paper focuses on are: first, what is the distinction between the 'trade governance' and 'good governance' agendas? Second, what indicators exist for measuring trade governance and how its use can foster trade gains for the Commonwealth countries? Third, what policies can promote trade governance and enhance the Commonwealth Advantage – that is, higher intra-Commonwealth trade and investment and lower trade costs.

This paper uses an augmented gravity model of trade to examine whether an improvement in trade governance indicators lead to higher exports from and between Commonwealth countries. We also examine the relationship between Commonwealth countries' exports and foreign direct investment (FDI), intellectual property rights (IPRs) and logistics performance indicators. Given "defining institutions is notoriously difficult and the current literature on the topic does not agree on a common definition" (Rodríguez-Pose, 2013), we draw on data from the

World Governance Indicators (WGIs) elaborated by the World Bank (Kaufmann et al., 2010), the Logistics Performance Index (LPI) and Doing Business from the World Bank. We also use FDI flows data from the United Nations Conference on Trade and Development (UNCTAD), and IPR payments and receipts from the World Bank World Development Indicators (WDIs).

The contributions of our paper to the related literature are two-fold. First, to the best of our knowledge, this is the first paper that empirically investigates effects of traditional gravity, institutional and political quality variables as factors determining the drivers of bilateral trade flows between the 53 Commonwealth countries. Second, the gravity model of trade estimates both intra-Commonwealth trade flows and Commonwealth exports to all destinations. The methodology enables us to identify interconnections between trade and trade governance whilst dealing with identification issues by using panel data.

Results provide evidence of a positive correlation between Commonwealth countries' exports and foreign direct investment flows, intellectual property rights and trade facilitation variables. Main findings include: first, contract enforcement is more efficient among Commonwealth members, in general, and requires 20 per cent less time compared to the world average. Second, a 10 per cent reduction in the costs incurred for a good to exit a country can increase intra-Commonwealth exports by 5 per cent. Third, every 1 percentage point improvement in government

effectiveness triggers a greater increase in exports from Commonwealth traders, at 3.4 per cent, compared to the rest of the world, at 2.4 per cent. Finally, trade between Commonwealth members is more than three times higher when they belong to an existing regional trade agreement, highlighting the importance of effective regional integration for boosting the Commonwealth advantage.

The paper is organised as follows: *Section 2* contextualises trade governance, and examines existing literature to understand the role of trade governance within the context of Commonwealth countries. *Section 3* presents the augmented gravity modelling framework used to examine the role of trade governance on export flows. *Section 4* presents the results on whether enhanced trade governance within the Commonwealth countries could foster gains, and how this can improve understanding of the 'Commonwealth Advantage'. *Section 5* concludes and suggests recommendations to enhance intra-Commonwealth trade.

## **2. Trade governance: Literature review**

Governance is a broad concept that has gained significance in the world trading landscape (Khorana et al., 2014). It comprises the mechanisms, processes and institutions through which decisions are made and authority in a country is exercised. The important elements of governance include: the political institutions of a society (the process of government selection), state capacity (capacity of the

government to implement policies) and regulation of economic institutions (the formal state institutions that enact and enforce the laws) (Kaufmann et al., 2005).

Sharma (2010) defines 'trade governance' as 'consisting of institutions and organisational structures that determine the formulation and enforcement of rules and the associated negotiations over policies'. Literature highlights two major forms of trade governance: regional and global (Li, 2003; Sharma, 2010, 2013). Studies suggest that global trade governance, as embodied in the erstwhile General Agreement on Tariffs and Trade and the present World Trade Organization (WTO), is characterised as a rules-based system (Mayer, 1981; Keohane, 1984; Jackson, 1989; Bagwell and Staiger, 1999, 2002; Khorana et al., 2014). At the regional level, the evolution of trade governance under regional trade agreements (RTAs) changed the focus of trade governance from traditional reduction of tariffs to broad-based commitments, and this approach addresses the quality of institutions and promotes participatory approaches. The emphasis in this form of trade governance includes deep commitments on investment, procurement, competition policy and IPR issues characterised by participatory and consensus-oriented accountability and transparency. The difference between global and regional trade governance is fundamental in that the former is largely rules-based whereas the latter can be characterised as relationship-based that provides for a degree of flexibility in the incorporation of rules (Sharma, 2010).

Literature examines a number of trade governance indicators. Hamanaka et al. (2015) construct an indicator of trade governance (proxied by quality of trade statistics at the 2-digit level) for 159 countries and global rankings with G-20 economies. The study concludes that trade governance is influenced by 'factors outside the confines of trade governance issues', which include the efficiency and soundness of government policy, especially customs. Others (see Brewer et al., 2007; Behar, 2010; Langbein and Knack, 2010) use the LPs and WGs to examine and test the level of consistency among indicators. While some report a positive relationship between trade openness and corruption, others focus on country-specific studies to test the significance of experience-based corruption in explaining corruption indices (Razafindrakoto and Roubaud, 2005; Kurtz and Schrank, 2007; Treisman, 2007).

There is mixed evidence on the relationship between governance indicators and economic performance, and how this affects countries' economic performance. But none of the existing studies examine the relationship between governance indicators and trade from the perspective of Commonwealth countries. Results show that the relationship with development varies across the dimensions of governance and the stage of a country's development. Studies broadly examine the connections between governance, economic growth and inequality (Zhuang et al., 2010) and report a positive and robust relationship between democratic governance variables, economic growth and income levels (Gerring et al., 2005; Persson and Tabellini,

2006). Han et al. (2014) find a positive relationship such that government effectiveness, political stability, control of corruption and regulatory quality have a significantly greater impact on growth performance compared with voice and accountability and rule of law. This study reports that governance matters for development, and that better governance correlates with faster growth and higher income levels. Al Marhubi (2004) investigates the determinants of governance and reports that countries with a history of Western European influence and with British common law origins have better governance.

Studies highlight that the quality of institutions is a necessary condition and an important determinant of effective trade governance (Aron, 2000) but this neither refers to nor applies to the Commonwealth countries. Busse et al. (2007) use trade governance indicators and report that the quality of institutions is an important determinant of economic growth and income levels. Busse et al. identify three channels that contribute to positive linkages between trade and institutions, and suggest that trade influences institutions from a governance perspective. Busse and Hefeker (2007) examine the effect of governance indicators on FDI, and show that government stability, absence of internal and external conflicts, low presence of corruption and ethnic tensions, law and order, democratic accountability of the government and high quality of the bureaucracy are highly significant determinants of FDI inflows.

The academic debate has focused on the effectiveness of governance and regional trade (see Bagwell and Staiger, 2002; Cooley and Spryut, 2009; Sharma, 2010). Studies report that the regional governance mode, if designed in accordance with membership characteristics and priorities, is likely to facilitate the exploitation of key advantages of trade governance systems, though these do not explicitly touch on the Commonwealth group of countries. Sharma (2013) concludes that regional trade governance leads to innovation of rules and other governance mechanisms, and negotiations generally involve a wider set of issues that are important to negotiating partners, which allows for more effective discussion and enforcement of resulting agreements.

More recently, Berden et al. (2014) used WGIs to estimate the effects of governance on trade and FDI using a state-of-the-art gravity model. Their data is restricted to 1997 to 2004 and includes 28 OECD countries as source countries and 124 potential destination countries. They find voice and accountability in the importing countries is negatively related to exports, but there exists a positive and statistically significant effect for the other five WGI variables individually. In a similar setting, Martínez-Zarzoso and Márquez-Ramos (2019) focus on the Middle East and North Africa (MENA) countries and compare the effects with other regions in the world economy. The main results show that each of the six governance indicators in the exporting and the importing countries considered have a positive effect on bilateral trade.

However, the results for MENA exporters differ slightly. Governance in the importing countries seems to be less relevant for MENA exporters than for other exporters. Increasing country-pair similarity in governance indicators –in terms of the levels of regulatory quality and the rule of law in the exporting and importing countries– favours the exports of MENA countries. Meanwhile, similarities in voice and accountability also foster exports for the average exporter, but it does not seem relevant for MENA exporters.

### 3. Trade governance indicators: data and methodology

The indicators employed are from the WGIs, the LPI and Doing Business obtained from the World Bank database, complemented with FDI information from UNCTAD and IPR payments and receipts from the WDI.

#### 3.1 Indicators

##### 3.1.1 World Governance Indicators

The WGIs, constructed by Kaufmann et al. (2005) for the World Bank, are normalised onto a 0–100 scale (as in Berden et al., 2014 [and Martínez-Zarzoso and Márquez-Ramos, 2019](#)). The six aggregate indicators are based on 31 data sources that report the perceptions of survey respondents and assessments worldwide. Each indicator (below) represents a different dimension of governance:

1. *Voice and accountability* measures the extent to which a country's citizens are able to participate in selecting their government, as well as the freedoms of

expression, association and the media. This variable best captures most individuals' notions of how a democratic institution fosters voice and accountability.

2. *Political stability* measures the perceptions of the likelihood that a government will not be destabilised or overthrown by unconstitutional or violent means.
3. *Government effectiveness* measures the quality of public services, the civil service (and its degree of independence), the policy formation and implementation process and the overall commitment to implementing policies.
4. *Regulatory quality* indicates the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.
5. *Rule of law* measures the extent to which agents have confidence in and abide by the rules of society, with particular emphasis on the quality of contract enforcement, the police and the courts.
6. *Control of corruption* measures the extent to which public power is not exercised for private gain, including both petty and grand forms of corruption as well as the extent of 'capture' by elites and private interests.

Relevant literature substantiates that institutions and exports can directly affect the willingness of agents to trade abroad and impact on economic variables that may in

turn affect the propensity of agents to trade (Méon and Sekkat, 2004; [Nun and Treffer, 2013](#)). This suggests that, on the one hand, an improvement in the governance indicators of Commonwealth countries may increase exports and lead to a facilitative business environment, thereby facilitating trade and the 'Commonwealth Advantage'. On the other hand, an improvement in governance indicators may affect countries' comparative and competitive advantage, as well as existing trade relationships, with an ambiguous effect on exports. Within this context, this paper tests whether improved governance indicators result in an increase in exports from and between the Commonwealth countries.

### ***3.1.2 Foreign direct investment***

The literature provides ample evidence on the trade and FDI (outward and inward) relationship. Studies reporting on the FDI–trade nexus suggest that foreign-invested firms import intermediate inputs for final production in the host country and export finished goods back to the FDI home country or to third-country markets (Wei and Liu, 2001; Cuyvers et al., 2008). Using bilateral panel data for 1984–1998 on China and 19 regions, Liu et al. (2001) examine the causal relationship between inward FDI and international trade and show that China's import growth led to inward FDI growth from a home country/region, which in turn increased Chinese exports to the home country/region, which in turn led to import growth. Using cross-sectional firm-level data, Lipsey and Weiss (1981) report a positive relationship between the

output of US firms in foreign subsidiaries and the firms' exports from the USA to these subsidiaries. In other words, a higher level of output by a US firm leads to higher firms' exports from the USA. Min (2003) also shows positive effects of FDI (on Malaysia's exports), using industry-specific and FDI-investing country data.

Studies examine whether FDI and trade are substitutes or complements (see Wei and Liu, 2001; Liu et al., 2001). Although traditional economic theory assumes that trade and FDI are substitutes (Mundell, 1957), trade and FDI can be complements under certain assumptions (e.g. Schmitz and Helmberger, 1970). Empirical evidence from regions worldwide highlights the existence of complementary effects between FDI and exports (Egger, 2001; Brouwer et al., 2008; Cheung and Qian, 2009; Chen et al., 2012).

Brouwer et al. (2008) estimate gravity models of trade and FDI for a sample of 28 European countries over 1990–2004. The study reports a positive and significant correlation between bilateral FDI and trade, when FDI is included as an explanatory variable in the gravity model. Egger (2001) obtains similar results for 1988–1996. Chen et al. (2012) also analyse the relationship between outward FDI and exports, for 15 Taiwanese manufacturing industries over 1991–2007. The results, obtained using random and fixed effects estimators, confirm complementarity between FDI and exports. Finally, Cheung and Qian (2009) also report a positive relationship and observe that this gets stronger when the host countries are developing economies.

### ***3.1.3 Intellectual property rights***

IPRs are a set of national laws and rules that protect the economic value of patents, copyrights and trademarks to offer incentives for the production of knowledge. The WDI collect information on charges for the use of intellectual property such as payments and receipts between residents and non-residents for the authorised use of patents, trademarks, copyrights, industrial processes and designs including trade secrets, and franchises. It also collects such information for produced originals or prototypes (such as copyrights on books and manuscripts, computer software, cinematographic works and sound recordings) through licensing agreements, and related rights (such as for live performances and television, cable or satellite broadcast).

Literature on IPR regimes reports that, from a static welfare perspective, the destination country loses from protection but the source country benefits (Deardorff, 1991; Helpman, 1993). However, from a dynamic point of view, an IPR regime stimulates innovation in the source country and fosters trade, benefiting both the trading partners, but the benefits are reaped as long as the social return on innovation exceeds private returns (Diwan and Rodrik, 1991).

This paper uses IPR payments and recipients, the number of patent applications as the sum of foreign and domestic patent applications and the total number of trademark applications reported in the WDI. Given that IPRs are territorial, any

differences in the national regulations and norms on IPR protection can distort international trade patterns. It is in this context that harmonisation of IPR rules is likely to have a positive effect on trade.

### *3.1.4 Logistics performance indicators*

The LPI is an overall metric of supply chain efficiency that lists information on where a country is in terms of logistics and provides a broad indication of the problem areas. Covering 160 countries (in LPI 2014), the index is constructed from over 5,000 country assessments by more than 1,000 freight forwarders and logistics professionals worldwide. The respondents rate the logistics performance of their country and eight other countries on a scale of 1–5.

The LPI is published every two years and covers 2007, 2010, 2012, 2014 and 2016. Studies examining the LPI–trade nexus suggest that the LPI has a significant impact in terms of raising awareness and pushing for comprehensive ‘connectivity’ and logistics policies, as reported in the case of the Indonesia, Kazakhstan, the EU and Asia-Pacific Economic cooperation members. The 2007–2016 LPI report suggests that the gap between the ‘best’ and the ‘worst’ logistics performers is narrowing slowly, confirming that, although a country’s level of development plays an important role, logistics performance policies do matter. An example is Indonesia – an over-performing country in terms of the LPI that has initiated reforms to improve national logistics efficiency. In terms of trade facilitation, the customs in the country

show an improvement but the other border control agencies still lag. Subsequent LPI reports also highlight that the main challenge is the initiation of reforms in more than one area in line with the needs of the country. [Moreover, a number of studies for specific groups of countries have shown that improvements in logistic performance boosts trade and competitiveness in Spain \(Bensassi et al. \(2015\) and emerging economies \(Martí and Puertas, 2017\)\).](#)

### *3.1.5 Doing Business Indicators*

Doing Business data provide objective measures of business regulations and enforcement across 190 economies and selected cities at the subnational and regional level. They capture several dimensions of the regulatory environment and measure the regulations that apply to firms through their life cycle. The data are based on a detailed reading of domestic laws and regulations as well as administrative requirements. The information is collected through several rounds of communication with expert respondents (both private sector practitioners and government officials), questionnaires, conference calls, written correspondence and visits by the team. Doing Business relies on four main sources of information: the relevant laws and regulations, Doing Business respondents, the governments of the economies covered and World Bank Group regional staff.

Here, the first indicator this paper uses is trade facilitation, accessing variables from the Doing Business database that measure the time and cost (excluding tariffs)

associated with three sets of procedures – documentary compliance, border compliance and domestic transport – within the overall process of exporting or importing a shipment of goods. Studies assessing the impact of trade facilitation on trade use different definitions of trade facilitation. For example, Wilson et al. (2003, 2005) consider a broad definition, and quantify the impact of four different measures: port efficiency, customs environment, regulatory environment and e-business usage. Engman (2005) uses the WTO definition, which includes simplification and harmonisation of international trade procedures, and takes into account what happens around borders. Wilson et al. (2003, 2005) also focus on the effects of single measures of trade facilitation, such as information technology, port efficiency and institution quality.

Studies use the gravity model of trade augmented with 'trade facilitation' variables. Examples include Wilson et al. (2003, 2005), who examine the trade facilitation variables for a sample of countries in the Asia-Pacific region. Soloaga et al. (2006) focus on Mexican competitiveness. Djankov et al. (2010) use the World Bank's Doing Business database but focus only on the effects of time delays in the exporting country. Nordas et al. (2006) examine how time delays affect probability to export and export volumes for imports from Japan, Australia and the UK. Persson (2007) studies the effect of time delays and transaction costs on trade flows using a sample selection approach and focuses on the specific effects for each of the six groups of

African, Caribbean and Pacific countries negotiating economic partnership agreements with the EU. Martínez-Zarzoso and Márquez-Ramos (2008) analyse the effect of trade facilitation on trade volumes at a disaggregated level and focus on the simplification of 'border procedures'.

The second indicator used is contract enforcement. On this, the *Doing Business* database records the time and cost associated with the logistical process of exporting and importing goods. For instance, the indicator measures the time and cost of resolving a commercial dispute through a local first-instance court and the quality of the judicial processes index, evaluating whether each economy has adopted a series of good practices that promote quality and efficiency in the court system. The most recent round of data, collected in June 2017, comes from the study of codes of civil procedure and other court regulations, as well as questionnaires completed by local litigation lawyers and judges. The ranking of economies on the ease of enforcing contracts is determined by sorting their distance to frontier scores for enforcing contracts.

A review of the literature brings up studies that examine how contract enforcement affects the volume of international trade. For example, Anderson and Marcouiller (2002) test for the implications of contract enforcement for the volume of trade but do not make a distinction between different types of goods. Ranjan and Lee (2007) do make this distinction, estimating a gravity-type equation for trade in different

classes of goods and measuring how contract enforcement affects the volume of trade. They conclude that the impact is larger for differentiated goods.

### 3.2 Data and methodology

#### 3.2.1 Data

The databases used to construct the explanatory variables for the regression analysis are:

- The *WGI*s on governance – that is, voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, control of corruption;
- The *WDI* on IPR payments and recipients, the number of patent applications as the sum of foreign and domestic patent applications and the total number of trademarks applications;
- *UNCTAD data* on FDI inflows and outflows;
- *The LPI* database on number of days to export, cost to export a container and documents required to export/import;
- The *Doing Business database* on trade facilitation and contract enforcement.

Data from the *WGI*s are for 1998–2013. FDI data from UNCTAD are for 1996–2013.

IPR data from the *WDI* is for 1996–2003, and we use a proxy for the level of

protection in any given country. Contract enforcement and trade facilitation indicators are for 2007–2016.<sup>1</sup> Bilateral trade data from UNCTAD are for 1996–2013.

### 3.2.2 Methodology

In line with recent empirical studies that investigate the determinants of bilateral trade flows (Head and Mayer, 2014), our modelling framework uses the gravity model of trade. The rationale for the selection of the gravity framework is that it provides a good statistical fit for most datasets and can be extended with policy variables.<sup>2</sup> We augment a gravity model for aggregated exports with governance indicators to determine the role of governance in trade flows. We hypothesise that each governance indicator has an impact on trade.

The model in its basic form assumes that trade between countries is directly related to a country's size and inversely to the distance between them. Exports from country  $i$  to country  $j$ ,  $X_{ij}$ , are explained by the economic size (i.e. gross domestic product, GDP), direct geographical distance and a set of dummies that include common characteristics such as common language, common border or colonial relationships.

The specification of the gravity model of trade in its original multiplicative form for a single year is given by:

$$X_{ij} = \beta_0 GDP_i^{\beta_1} GDP_j^{\beta_2} DIST_{ij}^{\beta_3} A_{ij}^{\beta_4} u_{ij} \quad (1)$$

<sup>1</sup> This paper uses data from 2007 even though data from 2004 are available, as these are not comparable over time owing to changes in the data collection methodology. The contract enforcement regulation index consists of the following subcomponents: number of procedures in a court case involving bridging a contract and time in calendar days to resolve the dispute. The trade facilitation index uses number of days (documents) to import and export and overland transport costs.

<sup>2</sup> For a review of the literature using gravity models applied to trade flows, see Anderson and Yotov (2010).

where  $GDP_i$  ( $GDP_j$ ) indicates the GDP of the exporter (importer),

$DIST_{ij}$  measures the distance between the two countries' capitals (or economic centres).

A high level of income in the exporting country indicates a high level of production, which increases the availability of goods for exports. Therefore,  $\beta_1$  is expected to be positive. The coefficient of  $Y_j$ ,  $\beta_2$ , is also expected to be positive since a high level of income in the importing country suggests higher imports. The distance coefficient is expected to be negative since it is a proxy of all possible trade cost sources.  $A_{ij}$  represents any other factors aiding or preventing trade between pairs of countries and  $u_{ij}$  is the error term. Usually,  $A_{ij}$  includes dummy variables for trading partners sharing a common language, colonial ties and a common border, as well as trading bloc dummy variables that evaluate the effects of preferential trade agreements. The coefficients of all these bilateral variables are expected to be positive.

When the gravity model of trade is estimated using panel data, a time dimension is incorporated into the model. For estimation purposes, equation (1), in log-linear form, is augmented with governance indicators and with the time dimension, and written as:

$$\begin{aligned} \ln X_{ijt} = & \beta_0 + \beta_1 \ln GDP_{it} + \beta_2 \ln GDP_{jt} + \beta_3 PC \ln GDP_{it} + \beta_4 \ln PC GDP_{jt} + \beta_5 \ln Area_i + \\ & \beta_6 \ln Area_j + \beta_7 LANDL_i + \beta_8 LANDL_j + \\ & \beta_9 (\ln DIST_{ij}) + \beta_{10} (CONTIG_{ij}) + \beta_{11} (COMLANG_{ij}) + \beta_{12} (COLONY_{ij}) + \beta_{13} RTA_{ijt} + \beta_{14} WTO_{ijt} \\ & + \beta_{15} VA_{it} + \beta_{16} PS_{it} + \beta_{17} GE_{it} + \beta_{18} RQ_{it} + \beta_{19} RL_{it} + \beta_{20} CC_{it} + \end{aligned}$$

$$\beta_{21}VA_{jt} + \beta_{22}PS_{jt} + \beta_{23}GE_{jt} + \beta_{24}RQ_{jt} + \beta_{25}RL_{jt} + \beta_{26}CC_{jt} + \delta_t + \varepsilon_{ijt} \quad (2)$$

where the variables are as follows:

- $\ln\text{GDP}_{it}$  and  $\ln\text{GDP}_{jt}$  are as defined above;
- $\ln\text{PCGDP}_{it}$  and  $\ln\text{PCGDP}_{jt}$  are the GDP per capita of an exporter (importer);
- $\ln\text{Area}_i$  and  $\ln\text{Area}_j$  are the area of the corresponding country in square kilometres;
- $\ln\text{LANDL}_i$  and  $\ln\text{LANDL}_j$  are dummy variables that take the value of 1 if the country  $i$  ( $j$ ) is landlocked;
- $\text{DIST}_{ij}$  is the bilateral distance between the economic centres of  $i$  and  $j$ ;
- $\text{CONTIG}_{ij}$  is a dummy variable assuming a value of 1 if the two countries share a common land border (and 0 otherwise);
- $\text{COMLANG}_{ij}$  is a dummy variable that takes a value of 1 if the two countries share a common language;
- $\text{COLONY}_{ij}$  is a dummy variable that takes the value of 1 when countries  $i$  and  $j$  have ever had a colonial relationship, and 0 otherwise;
- $\text{RTA}_{ijt}$  takes the value of 1 if countries  $i$  and  $j$  belong to the same regional integration agreement;

- $WTO_{ijt}$  takes the value of 1 if countries  $i$  and  $j$  are members of the WTO in year  $t$ .

The other variables include the six measures of the WGI from the World Bank:

- Voice and accountability (VA);
- Political stability (PS);
- Government effectiveness (GE);
- Regulatory quality (RQ);
- Rule of law (RL);
- Control of corruption (CC).

Each variable is specified in the model (2) with the subscripts  $it$  or  $jt$  denoting that these vary by exporter-and-time or importer-and-time. As in Berden et al. (2014), we standardise the WGI variables to range between 0 and 100 to aid interpretation of the results.

- RTA: As a proxy for regional governance, a dummy variable is used that takes the value of 1 when a pair of countries has an RTA in a given year, and 0 otherwise.
- WTO: As a proxy for global governance, we use a dummy variable that takes the value of 1 if a pair of trading countries both belong to the WTO, and 0 otherwise.

The model tests how the RTA and WTO 'effects' vary for Commonwealth countries and for intra- Commonwealth trade (i.e. all countries within the Commonwealth group) in comparison with non-Commonwealth countries to examine how and if there is an impact on the Commonwealth Advantage.

A similar comparison and analysis is carried out for the WGIs and for the FDI, IPR, LPI and Doing Business indicators.

Gravity model literature proposes the inclusion of multilateral resistance terms to control for third country price effects that can be modeled with time invariant origin and destination fixed effects in addition to time dummies. Additionally, instead of the bilateral gravity variables, origin-destination fixed effects can be added to fully control for the endogeneity of the RTA variable (Head and Mayer, 2014; Yotov et al., 2016)<sup>3</sup>.

## 4. Empirical analysis

### 4.1 Governance indicators and trade

Table 1 presents the results of the gravity model augmented with governance indicators from the WGI. The model is estimated for: All Countries – that is, Commonwealth (CW) and non-CW countries (column 1); CW Countries – that is,

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<sup>3</sup> In our setting, we do not include origin-destination fixed effects because this will prevent us from estimating the Commonwealth effect, which is time invariant.

countries exporting to any other country (column 2); Intra-CW Trade Flows – that is, countries from within the CW group (column 3) for 1998–2013.

Column (1) (Table 1) shows that an increase in the GDP of exporting and importing countries increases trade flows, and the coefficients are close to the unitary theoretically expected magnitude. Distance has an expected negative and significant effect on exports, while common language, common border and colonial links positively affect exports. The income elasticities of CW exporters and intra-CW trade are slightly lower than the elasticity of all exporters, and income per capita shows a positive coefficient, indicating that higher income levels foster CW exports. With regard to the common language effect, it is slightly higher for the whole sample, whereas common colony shows a non-significant relationship for CW countries. RTA and WTO membership dummies also present the expected positive effect on exports. The results for the gravity variables, however, vary when the sample of exporters is restricted to CW exporting countries, as seen in column (2), and to intra-CW trade flows in column (3) of Table 1.

<Table 1. Exports and governance>

The RTA effect is positive and statistically significant in all three columns, but the magnitude varies substantially. In particular, exports are 115 per cent higher to a country's trading partners when there is a common RTA, compared with exports to countries outside the RTA. The results also show that the CW exporters trade twice

as much as a result of the RTA effect ( $[\exp(1.193)-1]*100 = 230\%$  increase) and intra-CW trade is three times higher between countries with RTAs than between countries outside any RTA constellation<sup>4</sup>. Moreover, the RTA effect is greater in magnitude than the trade effect of being a WTO member. Trade between Commonwealth members is more than three times higher when they belong to an existing regional trade agreement, highlighting the importance of effective regional integration for boosting the Commonwealth advantage.

WTO membership indicates the strength of global trade governance for a pair of countries. Results show that, when the trading partners belong to the WTO, they trade 20 per cent more than countries that are not WTO members. The same is the case for CW exporters (column 2), for which the WTO effect is over 30 per cent.

The Commonwealth Advantage is positive and significant. Results show that the CW pairs of countries trade 20 per cent  $[(e^{0.0.18}-1)*100]$  more than any other country pairs, keeping the other explanatory variables constant (column 1). In the second column, when only CW exporters are considered, the Commonwealth Advantage is even bigger – around 39 per cent  $[(e^{0.33}-1)*100]$ . This indicates that the CW countries export almost 40 per cent more to CW members than to other countries, holding

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<sup>4</sup> We have also estimated the model with time invariant origin and destination fixed effects in addition to time dummies. The results indicate that the RTA effect is more moderate, in line with expectations. Commonwealth exports to their trading partners in RTAs is  $[\exp(0.561)-1]*100= 75\%$  higher than with other trading partners without common RTA; whereas for intra-Commonwealth trade members of the same RTA trade 224% more than the rest. The full results are available upon request. The results concerning governance variables remain practically unchanged.

constant all the other factors included in the gravity model – that is, accounting for other factors affecting trade, such as WTO membership, sharing a language or a border or colonial link.

The analysis of governance indicators shows that the coefficients obtained in column (1) are positive and significant for both exporter and importer countries. The results in columns (2) and (3) show that, for CW exporters, the outcomes differ when compared with column (1) for voice and accountability, and a negative and significant coefficient for an exporter, indicating that an increase by 1 percentage point in the indicator decreases exports by 1 per cent. For the other five indicators (political stability, governance effectiveness, regulatory quality, rule of law, control of corruption), the coefficients remain positive in column (2) and are in general higher than in column (1), indicating that trade governance in an exporter and an importer country has a greater effect on exports for CW exporters. For example, according to the results in column (3), an increase of 1 percentage point on governance effectiveness in an exporter increases exports by 3.4 per cent ( $0.034 \times 100$ ) for a CW exporting country, whereas the increase for any world exporter is 2.4 per cent, holding all other factors constant.

All the CW developed countries have government effectiveness of above 90. However, for most CW developing countries, improvements in governance are gains in terms of higher exports. Assuming that all CW developing countries reach

the level of governance effectiveness (=70 in 2016) of Malaysia, this translates into an average increase in the index of around 26 percentage points. When we consider the corresponding increase in the index for individual CW countries (for which the index is below 70), this translates into a predicted yearly average increase in exports for the CW countries to all destinations of around 5.6 per cent. This finding reiterates the importance of government effectiveness in trade.

#### 4.2 Foreign direct investment and exports

Table 2 shows the results when the gravity model, for the same sample of countries for 1996–2013, is augmented with FDI variables. The results are for: All Exporters, CW Exporters and Intra-CW Trade, in columns (1), (2) and (3), respectively. This does not present the coefficients for some gravity variables, including RTA, WTO and CW Advantage, given that these are similar to what is reported in Table 1.

##### <Table 2. Exports and FDI>

We expect a positive correlation between inward and outward FDI stocks and trade. The results (Table 2) indicate that an increase of 10 per cent in the stock of inward FDI in an exporter country is associated with a 3 per cent increase in exports (column 1). This increase is slightly lower for CW exporters, at around 2.8 per cent, and for intra-CW exports, at 2.46 per cent.

Further, higher levels of inward FDI leads to an increase in importing countries' exports, but the elasticities are lower (0.19) for the whole sample, when compared with the CW exporters with an elasticity of 0.12.

Regarding outward FDI, higher outward FDI is associated with higher exports. Note that the magnitude of estimated elasticities is higher for intra-CW exports (column 3) than for the whole sample and for CW exporters as a group (see columns 1 and 2, respectively).

Finally, neither inward nor outward FDI for an importer country is statistically significant to explain intra-CW exports.

#### 4.3 Intellectual property rights and exports

Table 3 shows results for the gravity model augmented with IPR variables for 1996–2003. The results are for: All Exporters, CW Exporters and Intra-CW Trade in columns (1), (2) and (3), respectively. The coefficients of the other gravity variables, including RTA, WTO and CW Advantage, are not presented, given that these are practically the same as in Table 1.

##### <Table 3. Exports and IPRs>

The results indicate that higher payments and receipts for the use of proprietary rights in an exporter country (an importer) are positively correlated with exports in column (1), whereas in columns (2) and (3) this is only for the importer country.

Similar results are obtained for the number of patents and trademark applications, suggesting that higher innovation levels of the importing country increase exports from the CW countries and intra-CW trade.

#### 4.4 Doing Business indicators and exports

Table 4 shows the results for the gravity model augmented with contract enforcement and trade facilitation variables for: All Exporters, CW Exporters and Intra-CW Trade, in columns (1), (2) and (3), respectively. As in previous cases, the coefficients for other gravity variables are not shown, since they are similar to in Table 1, with the exception of the Commonwealth Advantage, which is considerably higher when considering countries with similar levels of trade facilitation.

The first trade facilitation variable considered is the LPI score, which is positively correlated with bilateral exports in columns (1)–(3), indicating that an increase of 1 per cent on the index is associated with an increase of 1.7 per cent in exports. The coefficient is lower in column (2) for CW exporters and slightly higher in (3) for intra-CW trade. An increase in the index of 1 per cent increases exports more than proportionally, by 1.7 per cent for intra-CW trade.

With regard to number of days to export, the coefficients are statistically significant and negative, indicating that a reduction in the number of days needed to export will increase exports for the whole sample and for CW exporters. However, the coefficient is not statistically significant for intra-CW trade. The magnitude of the

effect is considerably higher for CW exporters (column 2), indicating that a reduction in the number of days to export of 10 per cent, equivalent to two days less needed for the average exporter, increases exports by 6.7 per cent in Commonwealth exporters (column 2), but only by 4.8 per cent in the whole sample (column 1).

The results for cost to export a container, with the expected sign, indicate that a reduction of 10 per cent in the costs incurred for goods to exit the country is associated with a 4.8 per cent increase in exports for the average exporter (4.9 per cent for CW exporters, column 2, and 3.5 per cent for intra-CW trade, column 3).

**<Table 4. Exports and Doing Business>**

Number of documents required to export has the expected negative coefficient, in columns (1)–(3). The results indicate that fewer documents required to export results in higher exports. The negative coefficient, as expected in column (2) for CW exporters, is slightly higher than in column (1), but much higher for intra-CW in column (3). Thus, if the number of documents required to export is reduced to two (equivalent to a 20 per cent reduction in CW countries), this will increase trade by 24 per cent [ $-1.228 \times 20$ ], whereas in the all countries case (column 1) the increase will be only 8.4 per cent [ $-0.425 \times 20$ ], substantiating that reduced document requirement enhances trade between CW countries.

Important differences emerge for number of days to enforce a contract. The elasticity is -0.426 for all exporters (column 1) and -0.648 for intra-CW trade (Col 3). The

maximum number of days needed to enforce a contract is 1,785 for the whole sample and 1,442 for the CW countries, respectively. Thus, contract enforcement is more efficient among Commonwealth members, in general, and requires 20 per cent less time compared to the world average. If number of days to enforce a contract is reduced to the minimum (which is 120 days in Singapore), the corresponding average number of days to enforce the contract for all countries and CW countries is 651 and 619, respectively. For intra-CW trade, total number of days to enforce a contract reduces to 499. Such a reduction will lead to higher exports for intra-CW exporters, and as a result intra-CW exports will increase by 6.4 per cent for each 10 per cent reduction in the number of days to enforce a contract.

## 5. Conclusions and the way forward

In this paper, we examined the interlinkage between trade governance and bilateral trade flows for Commonwealth exports within the 53 Commonwealth countries and to the rest of the world. The modelling exercise applies the gravity model of trade to a sample of countries over 1997-2016 using panel data techniques. The main findings include: first, contract enforcement is more efficient among Commonwealth members, in general, and requires 20 per cent less time compared to the world average. Second, a 10 per cent reduction in the costs incurred for a good to exit a country can increase intra-Commonwealth exports by 5 per cent. Third, every 1 percentage point improvement in government effectiveness triggers a greater

increase in exports from Commonwealth traders, at 3.4 per cent, compared to the rest of the world, at 2.4 per cent. Finally, trade between Commonwealth members is more than three times higher when they belong to an existing regional trade agreement, highlighting the importance of effective regional integration for boosting the Commonwealth advantage.

Based on the results some important policy implications can be derived to increase trade between the Commonwealth countries. Given that an efficient border management between Commonwealth countries and robust contract enforcement for intra-Commonwealth trade fosters participation in trade it is important to initiate policy reforms (for trade liberalisation) complemented by improved domestic regulatory governance to 'unpack' the positive effects of governance indicators to the fullest benefit of the Commonwealth countries. Second, improving the availability of trade-related information, simplifying and harmonising documents, streamlining procedures and using automated processes are important as these reduce trade costs. The high-income Commonwealth countries could support with capacity-building initiatives through the establishment of new IPR bodies, such as those that deal with the registration of patents, the granting of rights, rights management and so on. In addition, efforts should focus on the promotion of the second generation of multilateral treaties to ensure that IPR regimes and sifter

contract enforcement continue to remain beneficial for Commonwealth exporters. Such policy reforms will allow the countries to reap the Commonwealth advantage.

The overall analysis of interactions between the governance indicators, as defined in the WGI database, suggests a complementary relationship between the quality of domestic governance and exports. Results obtained are aligned with the findings of previous studies in that our model shows that distance has an expected negative (and significant) effect on exports, unlike common language, common border and colonial links, which affect exports positively. RTA and WTO membership have a positive effect on exports, with the former greater than the latter (see Yotov et al., 2016 for an exhaustive discussion). However, the results suggest a negative (and significant) relationship with voice and accountability, implying that an increase on this sub-indicator affects exports adversely. For the remaining WGIs (i.e. political stability, governance effectiveness, regulatory quality, rule of law, control of corruption), trade governance affects exports, especially for the Commonwealth exporters. These results are in line with existing literature (see Kaufmann, 2008).

Results for the model augmented with FDI variables show a positive correlation between inward and outward FDI stocks and trade. On the IPR–trade relationship, the results suggest that higher payments and receipts from IPRs are positively correlated with exports (see Moore (2018) for a discussion). On trade facilitation and contract enforcement, we find that a reduction in the number of days and documents

required promotes trade, suggesting that improved customs administration promotes trade between Commonwealth countries, this is in line with findings by Iwanov and Kirkpatrick (2007) and Portugal-Perez and Wilson (2012).

Possible directions for further research to explore the realm of trade governance could include how new technologies, and digitalisation could be utilised to improve logistics and track trade flows in an efficient and transparent manner. In particular, blockchain technologies enable the identification and the tracking of goods through the layers of the supply chain and speed the process of identification of the route ensuring anonymity. Such characteristics enhance transparency and facilitate trade and, hence, a new research area is to focus on evaluating the economics consequences in terms of efficiency and cost savings from the on-going trade facilitation initiatives. Such examples of trade facilitation include Singapore's initiative to adopt the exclusion of the certificates of origin which is also being implemented in fifteen African countries. Such new areas will be the next step forward in an era of trade and innovation.

Table 1. Exports and governance

Dep. VAR: ln X Exp. VARIABLES	(1) All	(2) CW_EXP	(3) Intra_CW
Ln GDP exporter	1.352*** [0.0118]	1.315*** [0.0203]	1.244*** [0.0374]
Ln GDP importer	0.939*** [0.0114]	0.885*** [0.0228]	0.867*** [0.0393]
Ln GDP per head exporter	-0.173*** [0.0168]	0.111*** [0.0309]	0.217*** [0.0569]
Ln GDP per head importer	-0.187*** [0.0155]	-0.135*** [0.0318]	-0.0556 [0.0551]
Ln area importer	-0.0759*** [0.00942]	-0.107*** [0.0193]	-0.0891*** [0.0303]
Ln area exporter	-0.0928*** [0.0102]	-0.0721*** [0.0155]	-0.0596** [0.0296]
Importer is landlocked	-0.802*** [0.0364]	-0.874*** [0.0745]	-0.930*** [0.150]
Exporter is landlocked	-0.380*** [0.0373]	-0.835*** [0.105]	-0.904*** [0.174]
Ln geographical distance	-1.246*** [0.0193]	-1.267*** [0.0415]	-1.620*** [0.0695]
Common border	1.208*** [0.0940]	1.586*** [0.223]	1.023*** [0.278]
Common language	0.669*** [0.0408]	0.620*** [0.0751]	0.309*** [0.115]
Common colonial relationship	0.632*** [0.0612]	0.0542 [0.0871]	-0.236 [0.124]
RTA	0.768*** [0.0382]	1.193*** [0.0877]	1.517*** [0.159]
WTO membership	0.188*** [0.0306]	0.307*** [0.0700]	0.148 [0.174]
Commonwealth Advantage	0.187*** [0.0641]	0.331*** [0.0835]	
VA (exporter)	0.00619*** [0.000806]	-0.0161*** [0.00209]	-0.0182*** [0.00393]
VA (importer)	0.00643*** [0.000694]	0.00702*** [0.00151]	0.0115*** [0.00328]
PS (exporter)	0.0183*** [0.000909]	0.0118*** [0.00211]	0.0114*** [0.00394]
PS (importer)	0.00782*** [0.000790]	0.0115*** [0.00174]	0.0142*** [0.00362]
Governance Effectiveness (exporter)	0.0245*** [0.00121]	0.0343*** [0.00338]	0.0282*** [0.00608]
Governance Effectiveness (importer)	0.0124*** [0.00107]	0.0197*** [0.00229]	0.0154*** [0.00491]
RQ (exporter)	0.0190*** [0.00117]	0.0221*** [0.00332]	0.0154** [0.00600]
RQ (importer)	0.0101*** [0.00103]	0.0132*** [0.00224]	0.00700 [0.00504]
RL (exporter)	0.0158*** [0.00105]	0.0181*** [0.00264]	0.0121*** [0.00466]
RL (importer)	0.0111*** [0.000939]	0.0205*** [0.00209]	0.0212*** [0.00428]
CC (exporter)	0.0117*** [0.000898]	0.0129*** [0.00240]	0.0102** [0.00433]
CC (importer)	0.00869*** [0.000840]	0.0160*** [0.00182]	0.0171*** [0.00375]
Time FE	Yes	Yes	Yes

Dep. VAR: ln X	(1)	(2)	(3)
Exp. VARIABLES	All	CW_EXP	Intra_CW
Observations	245,375	62,227	18,179
R-squared	0.659	0.616	0.626

Note: Robust standard errors in brackets, clustered by ij. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Period 1998-2013 in all columns.

**Table 2. Exports and FDI (summary table)**

Dep. VAR: ln X Exp. VARIABLES	All		CW_EXP		INTRA_CW	
	(1)	(2)	(3)	(4)	(5)	(6)
Ln inward FDI (exporter)	0.307*** [0.0137]		0.281*** [0.0286]		0.246*** [0.0519]	
Ln inward FDI (importer)	0.192*** [0.0129]		0.124*** [0.0268]		0.0377 [0.0516]	
Ln outward FDI (exporter)		0.144*** [0.00923]		0.129*** [0.0184]		0.152*** [0.0359]
Ln outward FDI (importer)		0.114*** [0.00881]		0.126*** [0.0180]		0.0534 [0.0342]
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	268,638	207,208	69,274	50,899	20,592	13,625
R-squared	0.670	0.684	0.623	0.634	0.632	0.650

Note: The model includes the same regressors as in Table 1 apart from the WGs, which are replaced by the FDI variables. Robust standard errors in brackets, clustered by ij. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Period 1996-2013 in all columns.

**Table 3. Exports and IPRs (summary table)**

Dep. VAR: ln X Exp. VARIABLES	(1)	(2)	(3)
	All	CW_EXP	INTRA_CW
Ln IPR payments (exporter)	0.0564*** [0.00909]	0.0157 [0.0186]	0.0541* [0.0281]
Ln IPR payments (importer)	0.261*** [0.0108]	0.253*** [0.0187]	0.269*** [0.0310]
Ln IPR receipts (exporter)	0.0527*** [0.00706]	0.104*** [0.0147]	0.110*** [0.0213]
Ln IPR receipts (importer)	0.0431*** [0.00866]	0.0576*** [0.0148]	0.0874*** [0.0245]
Ln patent applications (exporter)	0.111*** [0.0135]	-0.0485 [0.0289]	0.221*** [0.0726]
Ln patent applications (importer)	0.325*** [0.0141]	0.672*** [0.0338]	0.618*** [0.0631]
Ln trademark (exporter)	0.153*** [0.0143]	-0.0533 [0.0297]	0.138* [0.0733]
Ln trademark (importer)	0.384*** [0.0174]	0.624*** [0.0390]	0.511*** [0.0726]
Time FE	Yes	Yes	Yes

Note: The model includes the same regressors as in Table 1 apart from the WGs, which are replaced by IPR variables. Robust standard errors in brackets, clustered by ij. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Period 1996-2013 in all columns.

**Table 4. Exports and Doing Business (summary table)**

Dep. VAR: ln X Exp. VARIABLES	(1) All	(2) CW_EXP	(3) INTRA_CW
Ln LPI	1.722*** [0.0600]	1.173*** [0.132]	1.710*** [0.304]
Ln days needed to export	-0.478*** [0.0605]	-0.669*** [0.110]	-0.220 [0.252]
Ln days needed to import	0.128*** [0.0455]	0.232*** [0.0744]	-0.00298 [0.141]
Ln cost to export a container	-0.483*** [0.0545]	-0.490*** [0.106]	-0.355* [0.195]
Ln cost to import a container	-0.0700 [0.0544]	-0.239** [0.0943]	-0.270 [0.186]
Ln documents needed to export	-0.425*** [0.0695]	-0.436*** [0.132]	-1.228*** [0.398]
Ln documents needed to import	-0.254*** [0.0629]	-0.650*** [0.144]	-0.624** [0.263]
Ln days to enforce a contract (exporter)	-0.426*** [0.0422]	-0.534*** [0.0800]	-0.648*** [0.159]
Ln days to enforce a contract (importer)	-0.409*** [0.0432]	-0.403*** [0.0800]	-0.368** [0.150]
Commonwealth Advantage	0.550*** [0.0806]	0.709*** [0.0965]	

**Note:** The model includes the same regressors as in Table 1 apart from the WGs, which are replaced by trade facilitation variables. Robust standard errors in brackets, clustered by country pair. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Period 2007-2016.

## Appendix 1: List of countries (Commonwealth countries in bold)

Afghanistan	<b>Dominica</b>	<b>Lesotho</b>	Senegal
Albania	Dominican Republic	Liberia	<b>Seychelles</b>
Algeria	Ecuador	Libya	<b>Sierra Leone</b>
Angola	Egypt	Lithuania	<b>Singapore</b>
<b>Antigua and Barbuda</b>	El Salvador	Madagascar	Slovakia
Argentina	Equatorial Guinea	<b>Malawi</b>	Slovenia
Armenia	Eritrea	<b>Malaysia</b>	<b>Solomon Islands</b>
<b>Australia</b>	Estonia	Maldives	Somalia
Austria	Ethiopia	Mali	<b>South Africa</b>
Azerbaijan	FS Micronesia	<b>Malta</b>	Spain
<b>The Bahamas</b>	Faeroe Islands	Marshall Islands	<b>Sri Lanka</b>
Bahrain	<b>Fiji</b>	Mauritania	Sudan
<b>Bangladesh</b>	Finland	<b>Mauritius</b>	Suriname
<b>Barbados</b>	France	Mexico	<b>Swaziland</b>
Belarus	French Polynesia	Mongolia	Sweden
Belgium	Gabon	Morocco	Switzerland
<b>Belize</b>	The Gambia	<b>Mozambique</b>	Syria
Benin	Georgia	Myanmar	TFYR of Macedonia
Bermuda	Germany	<b>Namibia</b>	Tajikistan
Bhutan	<b>Ghana</b>	Nepal	Thailand
Bolivia	Greece	Netherlands	Togo
Bosnia Herzegovina	Greenland	New Caledonia	<b>Tonga</b>
<b>Botswana</b>	<b>Grenada</b>	<b>New Zealand</b>	<b>Trinidad and Tobago</b>
Brazil	Guatemala	Nicaragua	Tunisia
<b>Brunei Darussalam</b>	Guinea	Niger	Turkey
Bulgaria	Guinea-Bissau	<b>Nigeria</b>	Turkmenistan
Burkina Faso	<b>Guyana</b>	Norway	Turks and Caicos Islands
Burundi	Haiti	Oman	<b>Tuvalu</b>
Cambodia	Honduras	<b>Pakistan</b>	USA
Cameroon	Hungary	Palau	<b>Uganda</b>
<b>Canada</b>	Iceland	Panama	Ukraine
Cape Verde	<b>India</b>	<b>Papua New Guinea</b>	United Arab Emirates
Cayman Islands	Indonesia	Paraguay	<b>United Kingdom</b>
Central African Republic	Iran	Peru	<b>United Republic of Tanzania</b>
Chad	Iraq	Philippines	Uruguay
Chile	Ireland	Poland	Uzbekistan
China	Israel	Portugal	<b>Vanuatu</b>
Colombia	Italy	Qatar	Venezuela
Comoros	<b>Jamaica</b>	Republic of Korea	Viet Nam
Congo	Japan	Republic of Moldova	Yemen
Costa Rica	Jordan	Russian Federation	<b>Zambia</b>
Croatia	Kazakhstan	<b>Rwanda</b>	Zimbabwe
Cuba	<b>Kenya</b>	<b>St Kitts and Nevis</b>	
<b>Cyprus</b>	<b>Kiribati</b>	<b>Saint Lucia</b>	
Czech Republic	Kuwait	<b>St Vincent and the Grenadines</b>	
Côte d'Ivoire	Kyrgyzstan	<b>Samoa</b>	
DPR Korea	Lao PDR	San Marino	
Denmark	Latvia	São Tomé and Príncipe	
Djibouti	Lebanon	Saudi Arabia	

## Appendix 2: Variable definitions

Variable name	Description	Source
Ln GDP_exp	Exporting country GDP at current prices	WDI
Ln GDP_imp	Importing country GDP at current prices	
Ln pop_exp	Population of exporting country in number of inhabitants	
Ln pop_imp	Population of importing country in number of inhabitants	
Ln IPRp_exp (Ln IPRr_exp)	IPR payments done by exporting country (receipts)	
Ln IPRp_imp (Ln IPRr_imp)	IPR payments done by importing country (receipts)	
Ln pat_exp (imp)	Number of patent applications in exporting (importing) country	
Ln TM_exp (imp)	Number of trademark applications	CEPII
Ln DIST	Distance between capital cities	
Ln area_imp	Area of importer	
Ln area_exp	Area of exporter	
landlocked_imp	Dummy variable takes value of 1 if importing country is landlocked	
landlocked_exp	Dummy variable takes value of 1 if exporting country is landlocked	
CONTIG	Dummy variable takes value of 1 if partner countries share a border	
COMLANG	Dummy variable takes value of 1 if partner countries share a common language	
COLONY	Dummy variable takes value of 1 if partner countries have ever had a colonial relationship	
WTO	Takes the value of 1 if country i or country j is a WTO member and 2 if both are members	
RTA	Dummy variable takes value of 1 if partner countries have an RTA	World Bank
Ln LPI	LPI	
Ln iFDI_exp (Ln iFDI_imp)	Inward FDI stock in exporting (importing) country	UNCTAD
Ln oFDI_exp (Ln oFDI_imp)	Outward FDI stock in exporting (importing) country	
Ln daysx_exp	Days for exports for exporting country	World Bank Doing Business
Ln daysm_imp	Days for imports for importing country	
Ln docx_exp	Number of documents for exports for exporting country	
Ln docm_imp	Number of documents for imports for importing country	
Ln costxusd_exp	Costs to export (in US dollars) for exporting country	
Ln costmusd_imp	Costs to import (in US dollars) for importing country	
Ln enforc_imp	Number of days needed to enforce contract in importing country	World Bank WGI
Ln enforc_exp	Number of days needed to enforce contract in exporting country	
VAstd_exp	Exporting country's standardised value (0-100) of VA	World Bank WGI
PSstd_exp	Exporting country's standardised value (0-100) of PS	
GEstd_exp	Exporting country's standardised value (0-100) of GE	
RQstd_exp	Exporting country's standardised value (0-100) of RQ	
RLstd_exp	Exporting country's standardised value (0-100) of RL	
CCstd_exp	Exporting country's standardised value (0-100) of CC	
VAstd_imp	Importing country's standardised value (0-100) of VA	
PSstd_imp	Importing country's standardised value (0-100) of PS	
GEstd_imp	Importing country's standardised value (0-100) of GE	
RQstd_imp	Importing country's standardised value (0-100) of RQ	
RLstd_imp	Importing country's standardised value (0-100) of RL	
CCstd_imp	Importing country's standardised value (0-100) of CC	

### Appendix 3: Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
lnX	303,515	14.881	3.879	0	26.634
lnGDP_exp	601,209	23.567	2.472	16.328	30.451
lnGDP_imp	597,080	23.523	2.484	16.328	30.451
lnPCGDP_exp	601,209	8.081	1.605	4.284	11.541
lnPCGDP_imp	597,080	8.082	1.603	4.284	11.541
larea_imp	625,968	11.306	2.675	3.401	16.654
larea_exp	625,968	11.373	2.614	3.401	16.654
landlocked_imp	625,968	0.185	0.388	0	1
landlocked_exp	625,968	0.185	0.388	0	1
lnDIST_ij	625,968	8.757	0.827	0.651	9.899
CONTIG_ij	625,968	0.015	0.123	0	1
COMLANG_ij	625,968	0.158	0.364	0	1
COLONY_ij	625,968	0.117	0.322	0	1
RTA	625,968	0.089	0.285	0	1
WTO	653,484	0.536	0.499	0	1
VAstd_exp	527,929	55.344	25.543	0	100
PSstd_exp	488,785	61.909	22.263	0	100
GEstd_exp	524,119	49.592	22.020	0	100
RQstd_exp	524,313	55.067	21.875	0	100
RLstd_exp	527,929	53.261	23.121	0	100
CCstd_exp	524,119	41.388	23.695	0	100
lnifdist_exp	579,852	8.391	2.623	-1.347	15.415
lnifdist_imp	589,982	8.385	2.605	-1.347	15.415
lnofdist_exp	459,837	6.854	3.628	-4.605	15.649
lnofdist_imp	466,125	6.807	3.647	-4.605	15.649
lnIPRp_exp	404,407	17.307	3.328	-0.991	24.561
lnIPRp_imp	413,778	17.312	3.328	-0.991	24.561
lnIPRr_exp	308,557	16.340	3.786	4.804	25.576
lnIPRr_imp	315,899	16.344	3.786	4.804	25.576
lnpat_exp	307,704	7.064	2.273	1.099	13.623
lnpat_imp	311,585	7.059	2.282	1.099	13.623
lnTM_exp	420,149	8.677	1.781	0	14.430
lnTM_imp	420,658	8.703	1.787	0	14.430
llpi	157,620	-1.566	0.459	-5.389	-0.131
lndaysx_exp	138,276	2.849	0.493	1.792	4.625
lncostx_exp	138,276	6.890	0.395	5.966	8.269
lnndoc_exp	186,830	1.707	0.333	0.693	2.639
lnenforc_exp	200,018	6.386	0.425	4.787	7.487

Note: The definition of variables is provided in Appendix 2. For the governance indicators and the trade facilitation variables, only the summary statistics for the exporting countries are provided. Those coincide with the corresponding values for the importing countries, since there are no missing data for these indicators.



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# **TWENTY-FIRST CENTURY TRADE GOVERNANCE PATTERNS: FINDINGS FROM THE COMMONWEALTH COUNTRIES**

## **1. Introduction**

The Commonwealth is not a formal trading bloc, yet there is evidence to suggest that the 53 Commonwealth members enjoy an important trade advantage (Commonwealth Trade Review, 2018). Statistics shows that Commonwealth members on average tend to trade by 20 per cent more between themselves and generate 10 per cent more FDI flows, while bilateral trade costs are estimated to be 19 per cent less, on average (Commonwealth Secretariat, 2015). While Commonwealth countries enjoy a trade cost advantage, it is perceived that streamlining trade governance and procedures could unleash economic opportunities and enable countries to harness the ‘Commonwealth Advantage’ (Arvis et al. 2003; Commonwealth Trade Review, 2018).

This paper examines the role of governance in influencing trade and investment flows in the Commonwealth. It explores whether enhanced trade governance within the Commonwealth countries could potentially foster trade gains, on a both intra- and extra-Commonwealth basis. We use an augmented gravity model to examine whether an improvement in trade governance indicators lead to higher exports from and between Commonwealth countries. We also examine the relationship between Commonwealth countries’ exports and foreign direct investment (FDI), intellectual property rights (IPRs) and logistics performance indicators. Data sources used include the World Governance Indicators (WGIs), the Logistics Performance Index (LPI) and Doing Business from the

World Bank; FDI flows data comes from the United Nations Conference on Trade and Development (UNCTAD); and IPR payments and receipts from the World Bank World Development Indicators (WDI).

The paper is organised as follows: *Section 2* contextualises trade governance, and examines existing literature to understand the role of trade governance within the context of Commonwealth countries. *Section 3* presents the augmented gravity modelling framework used to examine the role of trade governance on export flows. *Section 4* presents the results on whether enhanced trade governance within the Commonwealth countries could foster gains, and how this can improve understanding of the ‘Commonwealth Advantage’. *Section 5* concludes and suggests recommendations to enhance intra-Commonwealth trade.

## **2. Trade governance: Literature review**

Governance is a broad concept that has gained significance in the world trading landscape (Khorana et al., 2014). It comprises the mechanisms, processes and institutions through which decisions are made and authority in a country is exercised. The important elements of governance include: the political institutions of a society (the process of government selection), state capacity (capacity of the government to implement policies) and regulation of economic institutions (the formal state institutions that enact and enforce the laws) (Kaufmann et al., 2005).

Sharma (2010) defines ‘trade governance’ as ‘consisting of institutions and organisational structures that determine the formulation and enforcement of rules and the associated negotiations over policies’. Literature highlights two major forms of trade governance: regional and global (Li, 2003; Sharma, 2010, 2013). Studies suggest that global trade

governance, as embodied in the erstwhile General Agreement on Tariffs and Trade and the present World Trade Organization (WTO), is characterised as a rules-based system (Mayer, 1981; Keohane, 1984; Jackson, 1989; Bagwell and Staiger, 1999, 2002; Khorana et al., 2014). At the regional level, the evolution of trade governance under regional trade agreements (RTAs) changed the focus of trade governance – from traditional reduction of tariffs to broad-based commitments that address the quality of institutions and promote participatory approaches. The emphasis in this form of trade governance includes deep commitments on investment, procurement, competition policy and IPR issues characterised by participatory and consensus-oriented accountability and transparency. The difference between global and regional trade governance is fundamental in that the former is largely rules-based whereas the latter can be characterised as relationship-based that provides for a degree of flexibility in the incorporation of rules (Sharma, 2010).

Literature examines a number of trade governance indicators. Hamanaka et al. (2015) construct an indicator of trade governance (proxied by quality of trade statistics at the 2-digit level) for 159 countries and global rankings with G-20 economies. The study concludes that trade governance is influenced by ‘factors outside the confines of trade governance issues’, which include the efficiency and soundness of government policy, especially customs. Others (see Brewer et al., 2007; Behar, 2010; Langbein and Knack, 2010) use the LPs and WGs to examine and test the level of consistency among indicators. While some report a positive relationship between trade openness and corruption, others focus on country-specific studies to test the significance of experience-based corruption in explaining corruption indices (Razafindrakoto and Roubaud, 2005; Kurtz and Schrank, 2007; Treisman, 2007).

There is mixed evidence on the relationship between governance indicators and economic performance, and how this affects countries' economic performance. Results show that the relationship with development varies across the dimensions of governance and the stage of a country's development. Studies that examine the connections between governance, economic growth and inequality (Zhuang et al., 2010) report a positive and robust relationship between democratic governance variables, economic growth and income levels (Gerring et al., 2005; Persson and Tabellini, 2006). Han et al. (2014) find a positive relationship such that government effectiveness, political stability, control of corruption and regulatory quality have a significantly greater impact on growth performance compared with voice and accountability and rule of law. This study reports that governance matters for development, and that better governance correlates with faster growth and higher income levels. Al Marhubi (2008) investigates the determinants of governance and reports that countries with a history of Western European influence and with British common law origins have better governance.

Studies highlight that the quality of institutions is a necessary condition and an important determinant of effective trade governance (Aron, 2000). Busse et al. (2007) use trade governance indicators and report that the quality of institutions is an important determinant of economic growth and income levels. Busse et al. identify three channels that contribute to positive linkages between trade and institutions, and suggest that trade influences institutions from a governance perspective. Busse and Hefeker (2007) examine the effect of governance indicators on FDI, and show that government stability, absence of internal and external conflicts, low presence of corruption and ethnic tensions, law and order, democratic accountability of the government and high quality of the bureaucracy are highly significant determinants of FDI inflows.

Recent academic debate has focused on the effectiveness of governance and regional trade (see Bagwell and Staiger, 2002; Cooley and Spryut, 2009; Sharma, 2010). Studies report that the regional governance mode, if designed in accordance with membership characteristics and priorities, is likely to facilitate the exploitation of key advantages of trade governance systems. Sharma (2013) concludes that regional trade governance leads to innovation of rules and other governance mechanisms, and negotiations generally involve a wider set of issues that are important to negotiating partners, which allows for more effective discussion and enforcement of resulting agreements.

### **3. Trade governance indicators: data and methodology**

The indicators employed are from the WGIs, the LPI and Doing Business obtained from the World Bank database, complemented with FDI information from UNCTAD and IPR payments and receipts from the WDI.

#### **3.1 Indicators**

##### ***3.1.1 World Governance Indicators***

The WGIs, constructed by Kaufmann et al. (2005) for the World Bank, are normalised onto a 0–100 scale (as in Berden et al., 2014). The six aggregate indicators are based on 31 data sources that report the perceptions of survey respondents and assessments worldwide. Each indicator (below) represents a different dimension of governance:

1. *Voice and accountability* measures the extent to which a country's citizens are able to participate in selecting their government, as well as the freedoms of expression, association and the media. This variable best captures most individuals' notions of how a democratic institution fosters voice and accountability.

2. *Political stability* measures the perceptions of the likelihood that a government will not be destabilised or overthrown by unconstitutional or violent means.
3. *Government effectiveness* measures the quality of public services, the civil service (and its degree of independence), the policy formation and implementation process and the overall commitment to implementing policies.
4. *Regulatory quality* indicates the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.
5. *Rule of law* measures the extent to which agents have confidence in and abide by the rules of society, with particular emphasis on the quality of contract enforcement, the police and the courts.
6. *Control of corruption* measures the extent to which public power is not exercised for private gain, including both petty and grand forms of corruption as well as the extent of 'capture' by elites and private interests.

Relevant literature substantiates that institutions and exports can directly affect the willingness of agents to trade abroad and impact on economic variables that may in turn affect the propensity of agents to trade (Méon and Sekkat, 2004). This suggests that, on the one hand, an improvement in the governance indicators of Commonwealth countries may increase exports and lead to a facilitative business environment, thereby facilitating trade and the 'Commonwealth Advantage'. On the other hand, an improvement in governance indicators may affect countries' comparative and competitive advantage, as well as existing trade relationships, with an ambiguous effect on exports. Within this context, this paper tests whether improved governance indicators result in an increase in exports from and between the Commonwealth countries.

### *3.1.2 Foreign direct investment*

The literature provides ample evidence on the trade and FDI (outward and inward) relationship. Studies reporting on the FDI–trade nexus suggest that foreign-invested firms import intermediate inputs for final production in the host country and export finished goods back to the FDI home country or to third-country markets (Wei and Liu, 2001; Cuyvers et al., 2008). Using bilateral panel data for 1984–1998 on China and 19 regions, Liu et al. (2001) examine the causal relationship between inward FDI and international trade and show that China's import growth led to inward FDI growth from a home country/region, which in turn increased Chinese exports to the home country/region, which in turn led to import growth. Using cross-sectional firm-level data, Lipsey and Weiss (1981) report a positive relationship between the output of US firms in foreign subsidiaries and the firms' exports from the USA to these subsidiaries. In other words, a higher level of output by a US firm leads to higher firms' exports from the USA. Min (2003) also shows positive effects of FDI (on Malaysia's exports), using industry-specific and FDI-investing country data.

Studies examine whether FDI and trade are substitutes or complements (see Wei and Liu, 2001; Liu et al., 2001). Although traditional economic theory assumes that trade and FDI are substitutes (Mundell, 1957), trade and FDI can be complements under certain assumptions (e.g. Schmitz and Helmberger, 1970). Empirical evidence from regions worldwide highlights the existence of complementary effects between FDI and exports (Egger, 2001; Brouwer et al., 2008; Cheung and Qian, 2009; Chen et al., 2012).

Brouwer et al. (2008) estimate gravity models of trade and FDI for a sample of 28 European countries over 1990–2004. The study reports a positive and significant correlation between bilateral FDI and trade, when FDI is included as an explanatory

variable in the gravity model. Egger (2001) obtains similar results for 1988–1996. Chen et al. (2012) also analyse the relationship between outward FDI and exports, for 15 Taiwanese manufacturing industries over 1991–2007. The results, obtained using random and fixed effects estimators, confirm complementarity between FDI and exports. Finally, Cheung and Qian (2009) also report a positive relationship and observe that this gets stronger when the host countries are developing economies.

### *3.1.3 Intellectual property rights*

IPRs are a set of national laws and rules that protect the economic value of patents, copyrights and trademarks to offer incentives for the production of knowledge. The WDI collect information on charges for the use of intellectual property such as payments and receipts between residents and non-residents for the authorised use of patents, trademarks, copyrights, industrial processes and designs including trade secrets, and franchises. It also collects such information for produced originals or prototypes (such as copyrights on books and manuscripts, computer software, cinematographic works and sound recordings) through licensing agreements, and related rights (such as for live performances and television, cable or satellite broadcast).

Literature on IPR regimes reports that, from a static welfare perspective, the destination country loses from protection but the source country benefits (Deardorff, 1991; Helpman, 1993). However, from a dynamic point of view, an IPR regime stimulates innovation in the source country and fosters trade, benefiting both the trading partners, but the benefits are reaped as long as the social return on innovation exceeds private returns (Diwan and Rodrik, 1991).

This paper uses IPR payments and recipients, the number of patent applications as the sum of foreign and domestic patent applications and the total number of trademark applications

reported in the WDI. Given that IPRs are territorial, any differences in the national regulations and norms on IPR protection can distort international trade patterns. It is in this context that harmonisation of IPR rules is likely to have a positive effect on trade.

#### *3.1.4 Logistics performance indicators*

The LPI is an overall metric of supply chain efficiency that lists information on where a country is in terms of logistics and provides a broad indication of the problem areas. Covering 160 countries (in LPI 2014), the index is constructed from over 5,000 country assessments by more than 1,000 freight forwarders and logistics professionals worldwide. The respondents rate the logistics performance of their country and eight other countries on a scale of 1–5.

The LPI is published every two years and covers 2007, 2010, 2012, 2014 and 2016. Studies examining the LPI–trade nexus suggest that the LPI has a significant impact in terms of raising awareness and pushing for comprehensive ‘connectivity’ and logistics policies, as reported in the case of the Indonesia, Kazakhstan, the EU and Asia-Pacific Economic cooperation members. The 2007–2016 LPI report suggests that the gap between the ‘best’ and the ‘worst’ logistics performers is narrowing slowly, confirming that, although a country’s level of development plays an important role, logistics performance policies do matter. An example is Indonesia – an over-performing country in terms of the LPI that has initiated reforms to improve national logistics efficiency. In terms of trade facilitation, the customs in the country show an improvement but the other border control agencies still lag. Subsequent LPI reports also highlight that the main challenge is the initiation of reforms in more than one area in line with the needs of the country.

### *3.1.5 Doing Business Indicators*

Doing Business data provide objective measures of business regulations and enforcement across 190 economies and selected cities at the subnational and regional level. They capture several dimensions of the regulatory environment and measure the regulations that apply to firms through their life cycle. The data are based on a detailed reading of domestic laws and regulations as well as administrative requirements. The information is collected through several rounds of communication with expert respondents (both private sector practitioners and government officials), questionnaires, conference calls, written correspondence and visits by the team. Doing Business relies on four main sources of information: the relevant laws and regulations, Doing Business respondents, the governments of the economies covered and World Bank Group regional staff.

Here, the first indicator this paper uses is trade facilitation, accessing variables from the Doing Business database that measure the time and cost (excluding tariffs) associated with three sets of procedures – documentary compliance, border compliance and domestic transport – within the overall process of exporting or importing a shipment of goods. Studies assessing the impact of trade facilitation on trade use different definitions of trade facilitation. For example, Wilson et al. (2003, 2005) consider a broad definition, and quantify the impact of four different measures: port efficiency, customs environment, regulatory environment and e-business usage. Engman (2005) uses the WTO definition, which includes simplification and harmonisation of international trade procedures, and takes into account what happens around borders. Wilson et al. (2003, 2005) also focus on the effects of single measures of trade facilitation, such as information technology, port efficiency and institution quality.

Studies use the gravity model of trade augmented with ‘trade facilitation’ variables. Examples include Wilson et al. (2003, 2005), who examine the trade facilitation variables for a sample of countries in the Asia-Pacific region. Soloaga et al. (2006) focus on Mexican competitiveness. Djankov et al. (2010) use the World Bank’s Doing Business database but focus only on the effects of time delays in the exporting country. Nordas et al. (2006) examine how time delays affect probability to export and export volumes for imports from Japan, Australia and the UK. Persson (2007) studies the effect of time delays and transaction costs on trade flows using a sample selection approach and focuses on the specific effects for each of the six groups of African, Caribbean and Pacific countries negotiating economic partnership agreements with the EU. Martínez-Zarzoso and Márquez-Ramos (2008) analyse the effect of trade facilitation on trade volumes at a disaggregated level and focus on the simplification of ‘border procedures’.

The second indicator used is contract enforcement. On this, the *Doing Business* database records the time and cost associated with the logistical process of exporting and importing goods. For instance, the indicator measures the time and cost of resolving a commercial dispute through a local first-instance court and the quality of the judicial processes index, evaluating whether each economy has adopted a series of good practices that promote quality and efficiency in the court system. The most recent round of data, collected in June 2017, comes from the study of codes of civil procedure and other court regulations, as well as questionnaires completed by local litigation lawyers and judges. The ranking of economies on the ease of enforcing contracts is determined by sorting their distance to frontier scores for enforcing contracts.

A review of the literature brings up studies that examine how contract enforcement affects the volume of international trade. For example, Anderson and Marcouiller (2002) test for

the implications of contract enforcement for the volume of trade but do not make a distinction between different types of goods. Ranjan and Lee (2007) do makes this distinction, estimating a gravity-type equation for trade in different classes of goods and measuring how contract enforcement affects the volume of trade. They conclude that the impact is larger for differentiated goods.

### 3.2 Data and methodology

#### 3.2.1 Data

The databases used to construct the explanatory variables for the regression analysis are:

- The *WGI*s on governance – that is, voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, control of corruption;
- The *WDI* on IPR payments and recipients, the number of patent applications as the sum of foreign and domestic patent applications and the total number of trademarks applications;
- *UNCTAD data* on FDI inflows and outflows;
- *The LPI* database on number of days to export, cost to export a container and documents required to export/import;
- *The Doing Business database* on trade facilitation and contract enforcement.

Data from the *WGI*s are for 1998–2013. FDI data from UNCTAD are for 1996–2013. IPR data from the *WDI* is for 1996–2003, and we use a proxy for the level of protection in any given country. Contract enforcement and trade facilitation indicators are for 2007–2016.<sup>1</sup>

Bilateral trade data from UNCTAD are for 1996–2013.

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<sup>1</sup> This paper uses data from 2007 even though data from 2004 are available, as these are not comparable over time owing to changes in the data collection methodology. The contract enforcement regulation index consists of the following subcomponents: number of procedures in a court case involving bridging a contract and time in calendar days to resolve the dispute. The trade facilitation index uses number of days (documents) to import and export and overland transport costs.

### 3.2.2 Methodology

In line with recent empirical studies that investigate the determinants of bilateral trade flows (Head and Mayer, 2014), our modelling framework uses the gravity model of trade. The rationale for the selection of the gravity framework is that it provides a good statistical fit for most datasets and can be extended with policy variables.<sup>2</sup> We augment a gravity model for aggregated exports with governance indicators to determine the role of governance in trade flows. We hypothesise that each governance indicator has an impact on trade.

The model in its basic form assumes that trade between countries is directly related to a country's size and inversely to the distance between them. Exports from country  $i$  to country  $j$ ,  $X_{ij}$ , are explained by the economic size (i.e. gross domestic product, GDP), direct geographical distance and a set of dummies that include common characteristics such as common language, common border or colonial relationships. The specification of the gravity model of trade in its original multiplicative form for a single year is given by:

$$X_{ij} = \beta_0 GDP_i^{\beta_1} GDP_j^{\beta_2} DIST_{ij}^{\beta_3} A_{ij}^{\beta_4} u_{ij} \quad (1)$$

where  $GDP_i$  ( $GDP_j$ ) indicates the GDP of the exporter (importer),

$DIST_{ij}$  measures the distance between the two countries' capitals (or economic centres).

A high level of income in the exporting country indicates a high level of production, which increases the availability of goods for exports. Therefore,  $\beta_1$  is expected to be positive. The coefficient of  $Y_j$ ,  $\beta_2$ , is also expected to be positive since a high level of income in the importing country suggests higher imports. The distance coefficient is expected to be negative since it is a proxy of all possible trade cost sources.  $A_{ij}$  represents any other factors

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<sup>2</sup> For a review of the literature using gravity models applied to trade flows, see Anderson and Yotov (2010).

aiding or preventing trade between pairs of countries and  $u_{ij}$  is the error term. Usually,  $A_{ij}$  includes dummy variables for trading partners sharing a common language, colonial ties and a common border, as well as trading bloc dummy variables that evaluate the effects of preferential trade agreements. The coefficients of all these bilateral variables are expected to be positive.

When the gravity model of trade is estimated using panel data, a time dimension is incorporated into the model. For estimation purposes, equation (1), in log-linear form, is augmented with governance indicators and with the time dimension, and written as:

$$\begin{aligned} \ln X_{ijt} = & \beta_0 + \beta_1 \ln GDP_{it} + \beta_2 \ln GDP_{jt} + \beta_3 PC \ln GDP_{it} + \beta_4 \ln PC GDP_{jt} + \beta_5 \ln Area_i + \\ & \beta_6 \ln Area_j + \beta_7 LANDL_i + \beta_8 LANDL_j + \\ & \beta_9 (\ln DIST_{ij}) + \beta_{10} (CONTIG_{ij}) + \beta_{11} (COMLANG_{ij}) + \beta_{12} (COLONY_{ij}) + \beta_{13} RTA_{ijt} + \beta_{14} WTO_{ijt} \\ & + \beta_{15} VA_{it} + \beta_{16} PS_{it} + \beta_{17} GE_{it} + \beta_{18} RQ_{it} + \beta_{19} RL_{it} + \beta_{20} CC_{it} + \\ & \beta_{21} VA_{jt} + \beta_{22} PS_{jt} + \beta_{23} GE_{jt} + \beta_{24} RQ_{jt} + \beta_{25} RL_{jt} + \beta_{26} CC_{jt} + \delta_t + \varepsilon_{ijt} \end{aligned} \quad (2)$$

where the variables are as follows:

- $\ln GDP_{it}$  and  $\ln GDP_{jt}$  are as defined above;
- $\ln PC GDP_{it}$  and  $\ln PC GDP_{jt}$  are the GDP per capita of an exporter (importer);
- $\ln Area_i$  and  $\ln Area_j$  are the area of the corresponding country in square kilometres;
- $\ln LANDL_i$  and  $\ln LANDL_j$  are dummy variables that take the value of 1 if the country  $i$  ( $j$ ) is landlocked;
- $DIST_{ij}$  is the bilateral distance between the economic centres of  $i$  and  $j$ ;
- $CONTIG_{ij}$  is a dummy variable assuming a value of 1 if the two countries share a common land border (and 0 otherwise);
- $COMLANG_{ij}$  is a dummy variable that takes a value of 1 if the two countries share a common language;

- COLONY<sub>ij</sub> is a dummy variable that takes the value of 1 when countries *i* and *j* have ever had a colonial relationship, and 0 otherwise;
- RTA<sub>ijt</sub> takes the value of 1 if countries *i* and *j* belong to the same regional integration agreement;
- WTO<sub>ijt</sub> takes the value of 1 if countries *i* and *j* are members of the WTO in year *t*.

The other variables include the six measures of the WGI from the World Bank:

- Voice and accountability (VA);
- Political stability (PS);
- Government effectiveness (GE);
- Regulatory quality (RQ);
- Rule of law (RL);
- Control of corruption (CC).

Each variable is specified in the model (2) with the subscripts <sub>*it*</sub> or <sub>*jt*</sub> denoting that these vary by exporter-and-time or importer-and-time. As in Berden et al. (2014), we standardise the WGI variables to range between 0 and 100 to aid interpretation of the results.

- RTA: As a proxy for regional governance, a dummy variable is used that takes the value of 1 when a pair of countries has an RTA in a given year, and 0 otherwise.
- WTO: As a proxy for global governance, we use a dummy variable that takes the value of 1 if a pair of trading countries both belong to the WTO, and 0 otherwise.

The model tests how the RTA and WTO ‘effects’ vary for Commonwealth countries and for intra- Commonwealth trade (i.e. all countries within the Commonwealth group) in comparison with non-Commonwealth countries to examine how and if there is an impact on the Commonwealth Advantage.

A similar comparison and analysis is carried out for the WGIs and for the FDI, IPR, LPI and Doing Business indicators.

#### 4. Empirical analysis

##### 4.1 Governance indicators and trade

Table 1 presents the results of the gravity model augmented with governance indicators from the WGI. The model is estimated for: All Countries – that is, Commonwealth (CW) and non-CW countries (column 1); CW Countries – that is, countries exporting to any other country (column 2); Intra-CW Trade Flows – that is, countries from within the CW group (column 3) for 1998–2013.

Column (1) (Table 1) shows that an increase in the GDP of exporting and importing countries increases trade flows, and the coefficients are close to the unitary theoretically expected magnitude. Distance has an expected negative and significant effect on exports, while common language, common border and colonial links positively affect exports. The income elasticities of CW exporters and intra-CW trade are slightly lower than the elasticity of all exporters, and income per capita shows a positive coefficient, indicating that higher income levels foster CW exports. With regard to the common language effect, it is slightly higher for the whole sample, whereas common colony shows a non-significant relationship for CW countries. RTA and WTO membership dummies also present the expected positive effect on exports. The results for the gravity variables, however, vary when the sample of exporters is restricted to CW exporting countries, as seen in column (2), and to intra-CW trade flows in column (3) of Table 1.

<Table 1. Exports and governance>

The RTA effect is positive and statistically significant in all three columns, but the magnitude varies substantially. In particular, exports are 115 per cent higher to a country's trading partners when there is a common RTA, compared with exports to countries outside the RTA. The results also show that the CW exporters trade twice as much as a result of the RTA effect and intra-CW trade is three times higher between countries with RTAs than between countries outside any RTA constellation. Moreover, the RTA effect is greater in magnitude than the trade effect of being a WTO member. Trade between Commonwealth members is more than three times higher when they belong to an existing regional trade agreement, highlighting the importance of effective regional integration for boosting the Commonwealth advantage.

WTO membership indicates the strength of global trade governance for a pair of countries. Results show that, when the trading partners belong to the WTO, they trade 20 per cent more than countries that are not WTO members. The same is the case for CW exporters (column 2), for which the WTO effect is over 30 per cent.

The Commonwealth Advantage is positive and significant. Results show that the CW pairs of countries trade 20 per cent  $[(e^{0.0.18}-1)*100]$  more than any other country pairs, keeping the other explanatory variables constant (column 1). In the second column, when only CW exporters are considered, the Commonwealth Advantage is even bigger – around 39 per cent  $[(e^{0.33}-1)*100]$ . This indicates that the CW countries export almost 40 per cent more to CW members than to other countries, holding constant all the other factors included in the gravity model – that is, accounting for other factors affecting trade, such as WTO membership, sharing a language or a border or colonial link.

The analysis of governance indicators shows that the coefficients obtained in column (1) are positive and significant for both exporter and importer countries. The results in columns

(2) and (3) show that, for CW exporters, the outcomes differ when compared with column (1) for voice and accountability, and a negative and significant coefficient for an exporter, indicating that an increase by 1 percentage point in the indicator decreases exports by 1 per cent. For the other five indicators (political stability, governance effectiveness, regulatory quality, rule of law, control of corruption), the coefficients remain positive in column (2) and are in general higher than in column (1), indicating that trade governance in an exporter and an importer country has a greater effect on exports for CW exporters. For example, according to the results in column (3), an increase of 1 percentage point on governance effectiveness in an exporter increases exports by 3.4 per cent ( $0.034 \times 100$ ) for a CW exporting country, whereas the increase for any world exporter is 2.4 per cent, holding all other factors constant.

All the CW developed countries have government effectiveness of above 90. However, for most CW developing countries, improvements in governance are gains in terms of higher exports. Assuming that all CW developing countries reach the level of governance effectiveness (=70 in 2016) of Malaysia, this translates into an average increase in the index of around 26 percentage points. When we consider the corresponding increase in the index for individual CW countries (for which the index is below 70), this translates into a predicted yearly average increase in exports for the CW countries to all destinations of around 5.6 per cent. This finding reiterates the importance of government effectiveness in trade.

#### **4.2 Foreign direct investment and exports**

Table 2 shows the results when the gravity model, for the same sample of countries for 1996–2013, is augmented with FDI variables. The results are for: All Exporters, CW Exporters and Intra-CW Trade, in columns (1), (2) and (3), respectively. This does not

present the coefficients for some gravity variables, including RTA, WTO and CW Advantage, given that these are similar to what is reported in Table 1.

#### <Table 2. Exports and FDI>

We expect a positive correlation between inward and outward FDI stocks and trade. The results (Table 2) indicate that an increase of 10 per cent in the stock of inward FDI in an exporter country is associated with a 3 per cent increase in exports (column 1). This increase is slightly lower for CW exporters, at around 2.8 per cent, and for intra-CW exports, at 2.46 per cent.

Further, higher levels of inward FDI leads to an increase in importing countries' exports, but the elasticities are lower (0.19) for the whole sample, when compared with the CW exporters with an elasticity of 0.12.

Regarding outward FDI, higher outward FDI is associated with higher exports. Note that the magnitude of estimated elasticities is higher for intra-CW exports (column 3) than for the whole sample and for CW exporters as a group (see columns 1 and 2, respectively).

Finally, neither inward nor outward FDI for an importer country is statistically significant to explain intra-CW exports.

#### 4.3 Intellectual property rights and exports

Table 3 shows results for the gravity model augmented with IPR variables for 1996–2003. The results are for: All Exporters, CW Exporters and Intra-CW Trade in columns (1), (2) and (3), respectively. The coefficients of the other gravity variables, including RTA, WTO and CW Advantage, are not presented, given that these are practically the same as in Table 1.

#### <Table 3. Exports and IPRs>

The results indicate that higher payments and receipts for the use of proprietary rights in an exporter country (an importer) are positively correlated with exports in column (1), whereas in columns (2) and (3) this is only for the importer country.

Similar results are obtained for the number of patents and trademark applications, suggesting that higher innovation levels of the importing country increase exports from the CW countries and intra-CW trade.

#### **4.4 Doing Business indicators and exports**

Table 4 shows the results for the gravity model augmented with contract enforcement and trade facilitation variables for: All Exporters, CW Exporters and Intra-CW Trade, in columns (1), (2) and (3), respectively. As in previous cases, the coefficients for other gravity variables are not shown, since they are similar to in Table 1, with the exception of the Commonwealth Advantage, which is considerably higher when considering countries with similar levels of trade facilitation.

The first trade facilitation variable considered is the LPI score, which is positively correlated with bilateral exports in columns (1)–(3), indicating that an increase of 1 per cent on the index is associated with an increase of 1.7 per cent in exports. The coefficient is lower in column (2) for CW exporters and slightly higher in (3) for intra-CW trade. An increase in the index of 1 per cent increases exports more than proportionally, by 1.7 per cent for intra-CW trade.

With regard to number of days to export, the coefficients are statistically significant and negative, indicating that a reduction in the number of days needed to export will increase exports for the whole sample and for CW exporters. However, the coefficient is not statistically significant for intra-CW trade. The magnitude of the effect is considerably higher for CW exporters (column 2), indicating that a reduction in the number of days to

export of 10 per cent, equivalent to two days less needed for the average exporter, increases exports by 6.7 per cent in Commonwealth exporters (column 2), but only by 4.8 per cent in the whole sample (column 1).

The results for cost to export a container, with the expected sign, indicate that a reduction of 10 per cent in the costs incurred for goods to exit the country is associated with a 4.8 per cent increase in exports for the average exporter (4.9 per cent for CW exporters, column 2, and 3.5 per cent for intra-CW trade, column 3).

**<Table 4. Exports and Doing Business>**

Number of documents required to export has the expected negative coefficient, in columns (1)–(3). The results indicate that fewer documents required to export results in higher exports. The negative coefficient, as expected in column (2) for CW exporters, is slightly higher than in column (1), but much higher for intra-CW in column (3). Thus, if the number of documents required to export is reduced to two (equivalent to a 20 per cent reduction in CW countries), this will increase trade by 24 per cent [ $-1.228*20$ ], whereas in the all countries case (column 1) the increase will be only 8.4 per cent [ $-0.425*20$ ], substantiating that reduced document requirement enhances trade between CW countries.

Important differences emerge for number of days to enforce a contract. The elasticity is -0.426 for all exporters (column 1) and -0.648 for intra-CW trade (Col 3). The maximum number of days needed to enforce a contract is 1,785 for the whole sample and 1,442 for the CW countries, respectively. Thus, contract enforcement is more efficient among Commonwealth members, in general, and requires 20 per cent less time compared to the world average. If number of days to enforce a contract is reduced to the minimum (which is 120 days in Singapore), the corresponding average number of days to enforce the contract

for all countries and CW countries is 651 and 619, respectively. For intra-CW trade, total number of days to enforce a contract reduces to 499. Such a reduction will lead to higher exports for intra-CW exporters, and as a result intra-CW exports will increase by 6.4 per cent for each 10 per cent reduction in the number of days to enforce a contract.

## **5. Conclusion and the way forward**

Main findings with policy implications for Commonwealth member countries include: contract enforcement is more efficient among Commonwealth members, in general, and requires 20 per cent less time compared to the world average. Second, a 10 per cent reduction in the costs incurred for a good to exit a country can increase intra-Commonwealth exports by 5 per cent. Third, every 1 percentage point improvement in government effectiveness triggers a greater increase in exports from Commonwealth traders, at 3.4 per cent, compared to the rest of the world, at 2.4 per cent. Finally, trade between Commonwealth members is more than three times higher when they belong to an existing regional trade agreement, highlighting the importance of effective regional integration for boosting the Commonwealth advantage.

The overall analysis of interactions between the governance indicators, as defined in the WGI database, suggests a complementary relationship between the quality of domestic governance and exports. Results show that distance has an expected negative (and significant) effect on exports, unlike common language, common border and colonial links, which affect exports positively. RTA and WTO membership have a positive effect on exports, with the former greater than the latter.

However, the results suggest a negative (and significant) relationship with voice and accountability, implying that an increase on this sub-indicator affects exports adversely. For the remaining WGIs (i.e. political stability, governance effectiveness, regulatory quality,

rule of law, control of corruption), trade governance affects exports, especially for the Commonwealth exporters.

Results for the model augmented with FDI variables show a positive correlation between inward and outward FDI stocks and trade. On the IPR–trade relationship, the results suggest that higher payments and receipts from IPRs are positively correlated with exports. On trade facilitation and contract enforcement, we find that a reduction in the number of days and documents required promotes trade, suggesting that improved customs administration promotes trade between Commonwealth countries. Swifter contract enforcement is also important for fostering intra-Commonwealth trade.

Important policy implications can be derived to support Commonwealth countries in harnessing the ‘Commonwealth Advantage’. The analysis shows that an efficient border management between Commonwealth countries and robust contract enforcement for intra-Commonwealth trade fosters participation in trade. It is important to initiate policy reforms (for trade liberalisation) complemented by improved domestic regulatory governance to ‘unpack’ the positive effects of governance indicators to the fullest benefit of the Commonwealth countries.

Among proposed policy reforms, improving the availability of trade-related information, simplifying and harmonising documents, streamlining procedures and using automated processes are important as these will reduce trade costs. Trade facilitation is key to efficient transport logistics and competitiveness to enable countries to improve transit times, cut down the number of documents required for exporting and reduce costs will mean they are more able to remain ahead of the curve. Building the capacity of countries is required. The higher-income Commonwealth countries could support with capacity-building through the establishment of new IPR bodies, such as those that deal with the registration of patents, the

granting of rights, rights management and so on. In addition, efforts should focus on the promotion of the second generation of multilateral treaties to ensure that IPR regimes continue to remain beneficial for Commonwealth exporters. Thus, Commonwealth members with international partners can take several steps to strengthen certain aspects of their 21st-century trade governance frameworks in order to further reduce trade costs and trigger greater flows of intra-Commonwealth trade and investment.

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Table 1. Exports and governance

Dep. VAR: ln X Exp. VARIABLES	(1) All	(2) CW_EXP	(3) Intra_CW
Ln GDP exporter	1.352*** [0.0118]	1.315*** [0.0203]	1.244*** [0.0374]
Ln GDP importer	0.939*** [0.0114]	0.885*** [0.0228]	0.867*** [0.0393]
Ln GDP per head exporter	-0.173*** [0.0168]	0.111*** [0.0309]	0.217*** [0.0569]
Ln GDP per head importer	-0.187*** [0.0155]	-0.135*** [0.0318]	-0.0556 [0.0551]
Ln area importer	-0.0759*** [0.00942]	-0.107*** [0.0193]	-0.0891*** [0.0303]
Ln area exporter	-0.0928*** [0.0102]	-0.0721*** [0.0155]	-0.0596** [0.0296]
Importer is landlocked	-0.802*** [0.0364]	-0.874*** [0.0745]	-0.930*** [0.150]
Exporter is landlocked	-0.380*** [0.0373]	-0.835*** [0.105]	-0.904*** [0.174]
Ln geographical distance	-1.246*** [0.0193]	-1.267*** [0.0415]	-1.620*** [0.0695]
Common border	1.208*** [0.0940]	1.586*** [0.223]	1.023*** [0.278]
Common language	0.669*** [0.0408]	0.620*** [0.0751]	0.309*** [0.115]
Common colonial relationship	0.632*** [0.0612]	0.0542 [0.0871]	-0.236 [0.124]
RTA	0.768*** [0.0382]	1.193*** [0.0877]	1.517*** [0.159]
WTO membership	0.188*** [0.0306]	0.307*** [0.0700]	0.148 [0.174]
Commonwealth Advantage	0.187*** [0.0641]	0.331*** [0.0835]	
VA (exporter)	0.00619*** [0.000806]	-0.0161*** [0.00209]	-0.0182*** [0.00393]
VA (importer)	0.00643*** [0.000694]	0.00702*** [0.00151]	0.0115*** [0.00328]
PS (exporter)	0.0183*** [0.000909]	0.0118*** [0.00211]	0.0114*** [0.00394]
PS (importer)	0.00782*** [0.000790]	0.0115*** [0.00174]	0.0142*** [0.00362]
Governance Effectiveness (exporter)	0.0245*** [0.00121]	0.0343*** [0.00338]	0.0282*** [0.00608]
Governance Effectiveness (importer)	0.0124*** [0.00107]	0.0197*** [0.00229]	0.0154*** [0.00491]
RQ (exporter)	0.0190*** [0.00117]	0.0221*** [0.00332]	0.0154** [0.00600]
RQ (importer)	0.0101*** [0.00103]	0.0132*** [0.00224]	0.00700 [0.00504]
RL (exporter)	0.0158*** [0.00105]	0.0181*** [0.00264]	0.0121*** [0.00466]
RL (importer)	0.0111*** [0.000939]	0.0205*** [0.00209]	0.0212*** [0.00428]
CC (exporter)	0.0117*** [0.000898]	0.0129*** [0.00240]	0.0102** [0.00433]
CC (importer)	0.00869*** [0.000840]	0.0160*** [0.00182]	0.0171*** [0.00375]
Time FE	Yes	Yes	Yes

Dep. VAR: ln X	(1)	(2)	(3)
Exp. VARIABLES	All	CW_EXP	Intra_CW
Observations	245,375	62,227	18,179
R-squared	0.659	0.616	0.626

Note: Robust standard errors in brackets, clustered by ij. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Period 1998-2013 in all columns.

**Table 2. Exports and FDI (summary table)**

Dep. VAR: ln X Exp. VARIABLES	All		CW_EXP		INTRA_CW	
	(1)	(2)	(3)	(4)	(5)	(6)
Ln inward FDI (exporter)	0.307*** [0.0137]		0.281*** [0.0286]		0.246*** [0.0519]	
Ln inward FDI (importer)	0.192*** [0.0129]		0.124*** [0.0268]		0.0377 [0.0516]	
Ln outward FDI (exporter)		0.144*** [0.00923]		0.129*** [0.0184]		0.152*** [0.0359]
Ln outward FDI (importer)		0.114*** [0.00881]		0.126*** [0.0180]		0.0534 [0.0342]
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	268,638	207,208	69,274	50,899	20,592	13,625
R-squared	0.670	0.684	0.623	0.634	0.632	0.650

Note: The model includes the same regressors as in Table 1 apart from the WGs, which are replaced by the FDI variables. Robust standard errors in brackets, clustered by ij. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Period 1996-2013 in all columns.

**Table 3. Exports and IPRs (summary table)**

Dep. VAR: ln X Exp. VARIABLES	(1)	(2)	(3)
	All	CW_EXP	INTRA_CW
Ln IPR payments (exporter)	0.0564*** [0.00909]	0.0157 [0.0186]	0.0541* [0.0281]
Ln IPR payments (importer)	0.261*** [0.0108]	0.253*** [0.0187]	0.269*** [0.0310]
Ln IPR receipts (exporter)	0.0527*** [0.00706]	0.104*** [0.0147]	0.110*** [0.0213]
Ln IPR receipts (importer)	0.0431*** [0.00866]	0.0576*** [0.0148]	0.0874*** [0.0245]
Ln patent applications (exporter)	0.111*** [0.0135]	-0.0485 [0.0289]	0.221*** [0.0726]
Ln patent applications (importer)	0.325*** [0.0141]	0.672*** [0.0338]	0.618*** [0.0631]
Ln trademark (exporter)	0.153*** [0.0143]	-0.0533 [0.0297]	0.138* [0.0733]
Ln trademark (importer)	0.384*** [0.0174]	0.624*** [0.0390]	0.511*** [0.0726]
Time FE	Yes	Yes	Yes

Note: The model includes the same regressors as in Table 1 apart from the WGs, which are replaced by IPR variables. Robust standard errors in brackets, clustered by ij. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Period 1996-2013 in all columns.

**Table 4. Exports and Doing Business (summary table)**

Dep. VAR: ln X Exp. VARIABLES	(1) All	(2) CW_EXP	(3) INTRA_CW
Ln LPI	1.722*** [0.0600]	1.173*** [0.132]	1.710*** [0.304]
Ln days needed to export	-0.478*** [0.0605]	-0.669*** [0.110]	-0.220 [0.252]
Ln days needed to import	0.128*** [0.0455]	0.232*** [0.0744]	-0.00298 [0.141]
Ln cost to export a container	-0.483*** [0.0545]	-0.490*** [0.106]	-0.355* [0.195]
Ln cost to import a container	-0.0700 [0.0544]	-0.239** [0.0943]	-0.270 [0.186]
Ln documents needed to export	-0.425*** [0.0695]	-0.436*** [0.132]	-1.228*** [0.398]
Ln documents needed to import	-0.254*** [0.0629]	-0.650*** [0.144]	-0.624** [0.263]
Ln days to enforce a contract (exporter)	-0.426*** [0.0422]	-0.534*** [0.0800]	-0.648*** [0.159]
Ln days to enforce a contract (importer)	-0.409*** [0.0432]	-0.403*** [0.0800]	-0.368** [0.150]
Commonwealth Advantage	0.550*** [0.0806]	0.709*** [0.0965]	

**Note:** The model includes the same regressors as in Table 1 apart from the WGs, which are replaced by trade facilitation variables. Robust standard errors in brackets, clustered by country pair. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Period 2007-2016.

## Appendix 1: List of countries (Commonwealth countries in bold)

Afghanistan	<b>Dominica</b>	<b>Lesotho</b>	Senegal
Albania	Dominican Republic	Liberia	<b>Seychelles</b>
Algeria	Ecuador	Libya	<b>Sierra Leone</b>
Angola	Egypt	Lithuania	<b>Singapore</b>
<b>Antigua and Barbuda</b>	El Salvador	Madagascar	Slovakia
Argentina	Equatorial Guinea	<b>Malawi</b>	Slovenia
Armenia	Eritrea	<b>Malaysia</b>	<b>Solomon Islands</b>
<b>Australia</b>	Estonia	Maldives	Somalia
Austria	Ethiopia	Mali	<b>South Africa</b>
Azerbaijan	FS Micronesia	<b>Malta</b>	Spain
<b>The Bahamas</b>	Faeroe Islands	Marshall Islands	<b>Sri Lanka</b>
Bahrain	<b>Fiji</b>	Mauritania	Sudan
<b>Bangladesh</b>	Finland	<b>Mauritius</b>	Suriname
<b>Barbados</b>	France	Mexico	<b>Swaziland</b>
Belarus	French Polynesia	Mongolia	Sweden
Belgium	Gabon	Morocco	Switzerland
<b>Belize</b>	The Gambia	<b>Mozambique</b>	Syria
Benin	Georgia	Myanmar	TFYR of Macedonia
Bermuda	Germany	<b>Namibia</b>	Tajikistan
Bhutan	<b>Ghana</b>	Nepal	Thailand
Bolivia	Greece	Netherlands	Togo
Bosnia Herzegovina	Greenland	New Caledonia	<b>Tonga</b>
<b>Botswana</b>	<b>Grenada</b>	<b>New Zealand</b>	<b>Trinidad and Tobago</b>
Brazil	Guatemala	Nicaragua	Tunisia
<b>Brunei Darussalam</b>	Guinea	Niger	Turkey
Bulgaria	Guinea-Bissau	<b>Nigeria</b>	Turkmenistan
Burkina Faso	<b>Guyana</b>	Norway	Turks and Caicos Islands
Burundi	Haiti	Oman	<b>Tuvalu</b>
Cambodia	Honduras	<b>Pakistan</b>	USA
Cameroon	Hungary	Palau	<b>Uganda</b>
<b>Canada</b>	Iceland	Panama	Ukraine
Cape Verde	<b>India</b>	<b>Papua New Guinea</b>	United Arab Emirates
Cayman Islands	Indonesia	Paraguay	<b>United Kingdom</b>
Central African Republic	Iran	Peru	<b>United Republic of Tanzania</b>
Chad	Iraq	Philippines	Uruguay
Chile	Ireland	Poland	Uzbekistan
China	Israel	Portugal	<b>Vanuatu</b>
Colombia	Italy	Qatar	Venezuela
Comoros	<b>Jamaica</b>	Republic of Korea	Viet Nam
Congo	Japan	Republic of Moldova	Yemen
Costa Rica	Jordan	Russian Federation	<b>Zambia</b>
Croatia	Kazakhstan	<b>Rwanda</b>	Zimbabwe
Cuba	<b>Kenya</b>	<b>St Kitts and Nevis</b>	
<b>Cyprus</b>	<b>Kiribati</b>	<b>Saint Lucia</b>	
Czech Republic	Kuwait	<b>St Vincent and the Grenadines</b>	
Côte d'Ivoire	Kyrgyzstan	<b>Samoa</b>	
DPR Korea	Lao PDR	San Marino	
Denmark	Latvia	São Tomé and Príncipe	
Djibouti	Lebanon	Saudi Arabia	

## Appendix 2: Variable definitions

Variable name	Description	Source
Ln GDP_exp	Exporting country GDP at current prices	WDI
Ln GDP_imp	Importing country GDP at current prices	
Ln pop_exp	Population of exporting country in number of inhabitants	
Ln pop_imp	Population of importing country in number of inhabitants	
Ln IPRp_exp (Ln IPRr_exp)	IPR payments done by exporting country (receipts)	
Ln IPRp_imp (Ln IPRr_imp)	IPR payments done by importing country (receipts)	
Ln pat_exp (imp)	Number of patent applications in exporting (importing) country	
Ln TM_exp (imp)	Number of trademark applications	CEPII
Ln DIST	Distance between capital cities	
Ln area_imp	Area of importer	
Ln area_exp	Area of exporter	
landlocked_imp	Dummy variable takes value of 1 if importing country is landlocked	
landlocked_exp	Dummy variable takes value of 1 if exporting country is landlocked	
CONTIG	Dummy variable takes value of 1 if partner countries share a border	
COMLANG	Dummy variable takes value of 1 if partner countries share a common language	
COLONY	Dummy variable takes value of 1 if partner countries have ever had a colonial relationship	
WTO	Takes the value of 1 if country i or country j is a WTO member and 2 if both are members	
RTA	Dummy variable takes value of 1 if partner countries have an RTA	World Bank
Ln LPI	LPI	
Ln iFDI_exp (Ln iFDI_imp)	Inward FDI stock in exporting (importing) country	UNCTAD
Ln oFDI_exp (Ln oFDI_imp)	Outward FDI stock in exporting (importing) country	
Ln daysx_exp	Days for exports for exporting country	World Bank Doing Business
Ln daysm_imp	Days for imports for importing country	
Ln docx_exp	Number of documents for exports for exporting country	
Ln docm_imp	Number of documents for imports for importing country	
Ln costxusd_exp	Costs to export (in US dollars) for exporting country	
Ln costmusd_imp	Costs to import (in US dollars) for importing country	
Ln enforc_imp	Number of days needed to enforce contract in importing country	World Bank WGI
Ln enforc_exp	Number of days needed to enforce contract in exporting country	
VAstd_exp	Exporting country's standardised value (0-100) of VA	World Bank WGI
PSstd_exp	Exporting country's standardised value (0-100) of PS	
GEstd_exp	Exporting country's standardised value (0-100) of GE	
RQstd_exp	Exporting country's standardised value (0-100) of RQ	
RLstd_exp	Exporting country's standardised value (0-100) of RL	
CCstd_exp	Exporting country's standardised value (0-100) of CC	
VAstd_imp	Importing country's standardised value (0-100) of VA	
PSstd_imp	Importing country's standardised value (0-100) of PS	
GEstd_imp	Importing country's standardised value (0-100) of GE	
RQstd_imp	Importing country's standardised value (0-100) of RQ	
RLstd_imp	Importing country's standardised value (0-100) of RL	
CCstd_imp	Importing country's standardised value (0-100) of CC	

### Appendix 3: Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
lnX	303,515	14.881	3.879	0	26.634
lnGDP_exp	601,209	23.567	2.472	16.328	30.451
lnGDP_imp	597,080	23.523	2.484	16.328	30.451
lnPCGDP_exp	601,209	8.081	1.605	4.284	11.541
lnPCGDP_imp	597,080	8.082	1.603	4.284	11.541
larea_imp	625,968	11.306	2.675	3.401	16.654
larea_exp	625,968	11.373	2.614	3.401	16.654
landlocked_imp	625,968	0.185	0.388	0	1
landlocked_exp	625,968	0.185	0.388	0	1
lnDIST_ij	625,968	8.757	0.827	0.651	9.899
CONTIG_ij	625,968	0.015	0.123	0	1
COMLANG_ij	625,968	0.158	0.364	0	1
COLONY_ij	625,968	0.117	0.322	0	1
RTA	625,968	0.089	0.285	0	1
WTO	653,484	0.536	0.499	0	1
VAstd_exp	527,929	55.344	25.543	0	100
PSstd_exp	488,785	61.909	22.263	0	100
GEstd_exp	524,119	49.592	22.020	0	100
RQstd_exp	524,313	55.067	21.875	0	100
RLstd_exp	527,929	53.261	23.121	0	100
CCstd_exp	524,119	41.388	23.695	0	100
lnifdist_exp	579,852	8.391	2.623	-1.347	15.415
lnifdist_imp	589,982	8.385	2.605	-1.347	15.415
lnofdist_exp	459,837	6.854	3.628	-4.605	15.649
lnofdist_imp	466,125	6.807	3.647	-4.605	15.649
lnIPRp_exp	404,407	17.307	3.328	-0.991	24.561
lnIPRp_imp	413,778	17.312	3.328	-0.991	24.561
lnIPRr_exp	308,557	16.340	3.786	4.804	25.576
lnIPRr_imp	315,899	16.344	3.786	4.804	25.576
lnpat_exp	307,704	7.064	2.273	1.099	13.623
lnpat_imp	311,585	7.059	2.282	1.099	13.623
lnTM_exp	420,149	8.677	1.781	0	14.430
lnTM_imp	420,658	8.703	1.787	0	14.430
llpi	157,620	-1.566	0.459	-5.389	-0.131
lndaysx_exp	138,276	2.849	0.493	1.792	4.625
lncostx_exp	138,276	6.890	0.395	5.966	8.269
lnndoc_exp	186,830	1.707	0.333	0.693	2.639
lnenforc_exp	200,018	6.386	0.425	4.787	7.487

Note: The definition of variables is provided in Appendix 2. For the governance indicators and the trade facilitation variables, only the summary statistics for the exporting countries are provided. Those coincide with the corresponding values for the importing countries, since there are no missing data for these indicators.