Perkins *et al. Economic Structures (2018) 7:10*
https://doi.org/10.1186/s40008-018-0109-z

Journal of Economic Structures

RESEARCH Open Access

Analysis of predictability and accountability transparency practices and FTA on trade growth in selected countries of the Asia-Pacific region: a descriptive-causal approach

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Abstract

Generally, trade policies exclude provision for predictability and accountability as transparency measures and facilitates trade consensus that enhance market access, reduce trading costs, and promote cooperation. In analyzing the trajectories on transparency, free trade agreement (FTA), and trade growth, many scholars investigate international trade norms on how countries play a proactive role to increase competition and improve transparency but limited in scope on the inter-linkages between these three variables that contribute to trade and economic growth. This paper intends to address this missing link by examining the causal relationships between the two transparency measures, FTA, and trade growth from a sample of 15 countries in the Asia-Pacific region using panel regression analysis. Results show a significant impact in trade growth affected by a percent changed in predictability and FTA measures. While increase in trade disputes, i.e., less accountability transparency measure tends to decrease trade growth. By determining the effects of transparency practices and FTAs in the international trade arena, the study concludes that these trade policy tools are important parameters to boost trade growth.

Keywords: Accountability, FTA, Predictability, Trade growth, Trade policy, Transparency

1 Background

Trade policy is a vital tool in structuring the rules of the international trade and important to nation's trade performance and at the same time serves as a crucial instrument in securing regional growth. To exemplify this key function in the international trade system, trade policy utilizes two critical policy measures: transparency practices and free trade agreement (FTA) (Collins-Williams and Wolfe 2010; Badinger 2008). Transparency refers the "degree to which trade policies and practices, and the process by which they are established, are open and predictable" (Collins-Williams and Wolfe 2010, p. 552). Consistently, FTA is a policy measure that diminishes trade barriers among trading partners and facilitates easier flow of trade and investment in each set of conditions agreed by the parties (Fukunaga 2015). While extant literature portrays transparency and FTAs

as essential elements for economic growth which force firms to create clear and open trade policies (see Lejárraga and Shepherd 2013; Plummer and Tafti 2014; Turnes and Ernst 2015; Fukunaga 2015), the inter-linkages between transparency practices and FTA in relation to trade growth are considerably missing in the existing literature.

The Asia-Pacific region have considerably noted the increasing level of demand of transparency practices and free trade consensus policy measures within trade partners and non-trade partners as nations function as implementer of trade policy. Trade volume in the region has been accelerating fast over the last few decades. The "growth rate of Asian export was 13% while imports increased by 9%, over 50% of export are carried out within the region and provided about 40% of global growth in 2012 (Nasreen and Anwar 2014, p. 83). Asia's merchandise trade growth has amounted to US $14 trillion in 2011." While global imports, "the region's share grew from 16% in 1985 to 23% in 1995 and more to 30% in 2013" (Kawai and Wignaraja 2014, p. 4). Transparency practices refer to predictability on the one hand, which indicates the degree of reliable and essential macroeconomic information, credible of finding in advance the relevant information to appropriate internal and external stakeholders supported by the advanced data and information; and on the other hand, accountability that presents clear responsibility of every country to safeguard private and principled public interest on trade, ability to adhere, act and enforce policy measures; and supply reliable information to all stakeholders.

This missing information on the inter-linkages of these policy measures will discount the advantage or benefits of increasing growth in trade and weaken the trade policy in implementing policy measures crucial for higher trade growth and for economic performance. In this paper, we question: how does trade policy address these transparency practices and FTA to trade growth when nations in Asia-Pacific region pursue for increasing this growth performance. Using panel regression analysis, covering a 17-year period from 2000 to 2016 from a sample of 15 countries in the Asia-Pacific region, we show how the trade policy in terms of transparency practices and FTA to possibly influence a positive increase to trade growth when giving provision to implement trade policy measures, specifically the function of predictability, accountability, and FTA policies to growth in trade.

In the next section, we identify the existing literature of trade policies on transparency and free trade agreements which reveals a limited understanding on their important function and significant inter-linkages to trade growth. Then, we describe the model specification on how to study the independent and dependent parameters from the panel data regression equation for our estimation and interpretation of the chosen variables. From this model specification, our results highlight the significant causal relationship of transparency measures and FTA trade policy tools to trade growth. We conclude that the effect of transparency practices and FTAs on trade flows comes from openness and responsiveness to lessen unpredictability, increase accountability, and give more importance on FTAs utilization. Our results suggest the importance of these trade policy measures to value and consider and offer significant information to boost trade policy and increase trade growth which open more debates on the inter-linkages of transparency practices and FTAs to trade growth.

2 Literature review

This section reviews the extant literature on the two aspects of transparency such as predictability and accountability practices and FTA trade policy measures. The discussion also explains how these measures are driving tools for growth. Transparency applies to the count of interconnected efforts, enclosing how policy is nurtured and implemented. Also, transparency can signify different things to various groups and perhaps essential for various causes (Williams 2015) and explain the "release of information by institutions that is relevant to evaluating those institutions" (Florini et al. 2000, p. 5). Thus, transparency is the obtainability of information about an institution or actor authorizing external actors to oversee the internal functioning or accomplishments of that institution (Grimmelikhuijsen and Meijer 2012). Further, transparency has been developed to impart information among border management agencies, traders, international manufacturers, importers, and international governments (Turnes and Ernst 2015). Transparency functions well in the trading process to which translucency supplements more aims in dispensing information as well as escalating ideas on the aim of trading policy rules (Collins-Williams and Wolfe 2010).

We can see these benchmarks that comprise transparency in two ways. First, transparency regards to the upswing quantity and quality of information accessible to public demand and other interested agencies. Second, transparency considers to the growing restraints on government officials to make them accountable for their deeds and the people (Williams 2015). The information and accountability linkage entail the necessity of creating information accessible, which involves the ability of the public to access and the authority to take measures on the matter (Lindstedt and Naurin 2010). Correspondingly, Lejárraga and Shepherd (2013) and Turnes and Ernst (2015) introduce one of the aspects of transparency that is predictability and accountability that is currently used as another aspect to consider in transparency. Florini et al. (2000, p. 5) emphasizes that "transparency is always literally related to accountability." On the first hand, predictability reduces the uncertainty to do international business. Any unforeseen policy, quota; material adjustment in the tariff rate applied; unpredictable rules and regulations, taxes or laws are all example issues of non-transparent practices that signify constraints for trading in the foreign land (Turnes and Ernst 2015). The predictability is preferred by private market actors with considerable international legitimate engagements (Frieden 2002). Primary to predictability are government policies regarding trade, which affects international costs (Mansfield and Reinhardt 2008). Several scholars attest that predictability, as one aspect of transparency practices, exhibits as an essential factor for international trade flows (Helble et al. 2009; Lejárraga and Shepherd 2013). For instance, the link between trade and predictability of exchange rate had been the subject of an extensive policy discourse over several decades. The change to free floating from fixed exchange rate regimes conveyed evident on unpredictability, and hence, this brought interest to various scholars to study and focus on this issue particularly on impacts of exchange rates unpredictability on trade flows. This effect of change in exchange rate reveals that higher exchange rate unpredictability steers to higher trade cost and it subsequently will decrease international trade (see Šimáková 2014). Hooper and Kohlhagen (1987) attest that in the event of movements in exchange rates are volatile it signifies

unpredictability regarding a firm's operations and decreases the advantages of international trade (Šimáková 2014).

The increase predictability transparency of trade policy is an essential contribution of trade agreement that have long been accepted by policy-makers (Osnago et al. 2015). Handley (2014) unveils that unpredictability generates an alternative of holding to enter new trade opportunity over future circumstances of trade, based on the paradigm of trade with heterogeneous firms, consequently persuading businesses to hold back in international trade activities. The uncertainty of a trade policy shift performs as an operating cost to go into foreign trade and hence disadvantage effect on trade (Osnago et al. 2015). What is missing here is the understanding of predictability in trade policy that simplify the safety of tariff shift and to reduce uncertainty and operating cost to venture in foreign market that foster growth in trade.

On the other hand, accountability concerning international trade refers to the capacity to implement the will and right to create the various entities responsible and accountable to agree guarantees in agreements (Turnes and Ernst 2015). Also, accountability is the power and ability to inflict and impose sanctions on violators of the rules and policies for both private and public sectors (Ocampo 2015). Meanwhile, Wolfe and Halle (2011) examine the use of accountability principles in the WTO membership both internally and externally after the 2008 financial crisis to ascertain the degree to which the accountability policy already in the position and the level to which protectionist measures were disseminated. The accountability transparency principle is an aspect to prevent protectionism and avoid escalation of disputes on policies among trading partners and is important for regime's implementation of trade policy measures and compliance with international treaties under the WTO context. The increasing number of disputes brought against by trading partners or of WTO members indicates the weak practice of clear accountability, on the enforcement toward violators and compliance of its commitment under WTO obligations (see Dong and Jayakar 2013). Also, insubstantial practices of accountability transparency to act against violators of trade policy measures at national level, any illegal acts such as infringement; breach of trade policy; and non-compliance will continue to escalate. Transparent information on the regimes' accountability to enforce its trade policy measures at domestic level and responsibility to comply its WTO commitments will help alleviate the number of disputes and safeguard its small-scale domestic traders against big firm's illicit trading activities and deter illegal acts from trading partners. The WTO dispute by agreements emphasizes that a dispute will arise when a member government has challenged specific trade policy measures of other government. In other words, any concerns expressed about loose agreements resulting from the safeguards or about threats to health and safety (Sanitary and Phytosanitary or SPS) standards amount to the likelihood that a measure thought to be unjust or inessential restriction could be challenged in dispute settlement. The possible occurrence of these disputes can be avoided by way of introducing and understanding the importance of accountability transparency practice, which is also crucial for the government's reliability in implementing new trade policy measures and compliance to its WTO obligations. This missing information and understanding is needed to prevent disputes among trader partners and likewise increase the flow of trade and access to foreign markets.

The transparency, which is one of the regarded fundamental rules in trading system, reduces trade transaction costs due to uncertainty of exchange rate that affects export and import activities and eliminates disputes caused by non-transparent trade policies. Transparency measures are key instruments for improving trade policy in sustaining effective trade rules and obligations and in the same way the FTA measure, which have revealed the rising direction toward expansion. While transparency measures in the form of predictability and accountability represent as important instruments to enhance trade policy, the FTA measure also constitutes as an essential instrument to advance trade policy that foster economic collaboration and integration in the sphere of international trade and contribute for trade liberalization. The FTA includes provisions to facilitate trade and investment and to enhance transparency in trade and investment relations (Fukunaga 2015) and to diminish tariff and non-tariff barriers among others. Notwithstanding as a latecomer to the FTA scene, significantly, economic growth in the region has manifested at the top of global and regional trade agreement. The increasing trade flows and the igniting of FTAs including Asian nations are plainly a regional response to the expanding global trend, while Doha Round negotiations have not successfully produced a multilateral trade round (Kim 2015). Kawai and Wignaraja (2010) documented the four main factors that induced the current growth of FTA initiatives in Asia such as intensifying market-driven economic integration in Asia; European and North American economic integration; the slow-moving development in the WTO Doha Round dialogue; and the 1997–1998 Asian financial crisis. The Asia-Pacific region began highlighting FTAs as an instrument for trade policy, and its emergence has a significant impact on region's trade.

The views in the theoretical literature remain that trade policies influence the countries' economic standing and enduring trade flows. The predictability and accountability transparency and FTAs literature have perceived important evolution addressing adoption results and carrying out policies. The studies reveal that predictability and accountability transparency are effectively introduced functioning as trade policy instruments, and the importance and compliance of the guidelines have remained progressively valued and appeared highly regarded (see Collins-Williams and Wolfe 2010). In the soundness structure of trade industries show that first, predictability will reduce any unpredictable barriers to the entry of trade activities into new markets and more receptive and responsive to trade policy restrictions. Second, accountability transparency will increase trust of foreign investors to enter new trade ventures as well as increase responsibility of country to ward off protectionism, which is often the cause of disputes and to act on the binding trade policy commitments at the national level. Finally, the FTAs utilization increases economic cooperation among traders in the region and widens the gateway to international market that will heighten growth and increase economic development. The trade policy provision for the FTAs utilization promotes sustainable exchange of goods effecting to increase trade flows. Study shows that the rise of FTAs, to strive for their own bilateral and multilateral trade policies, comes from big economies such as Japan, People's Republic of China (PRC), and the Republic of Korea. ASEAN members are also prompted into FTAs to increase its trade activity (Kawai and Wignaraja 2010).

Various scholars have examined different measures of trade policies that exhibit an impact to trade flows and economic development, however commonly disregarded by

scholars the significant effect of the interconnections of the transparency measures and FTA utilization that impact trade growth. Collins-Williams and Wolfe (2010) state that the provision of trade policy for transparency measures can provide assertiveness for countries relating to what business trade collaborators perform in the global market. While the FTA as an important instrument of trade policy (Badinge 2008; Kawai and Wignaraja 2010) can reduce costs and increase access to international market, FTAs transpose market structure by way of healthy competition, freer trade, and stable commercial agreement. The analysis of the relationships between transparency practices, FTA, and trade growth that consider their significance on the stability of international trade and sustainable growth thus obtains at unbiased conclusions.

Equally important, trade activity and trade flows are affected by predictability and accountability transparency and FTA: First, the empirical literature of several studies shows different descriptions on the effects of unpredictability of exchange rate on the level of trade. For instance, Dell'Ariccia (1999) investigates the impact of exchange rate instabilities using several measures on trade, and the results show that the exchange rate uncertainty has a minimal but significantly negative impact on trade and both nominal and real exchange rate measures are highly connected. Moreover, various studies conducted exchange rate unpredictability and its effects find that unpredictability reduces trade (see Broda and Romalis 2003). The authors' analysis did not present a negative relationship between exchange rate unpredictability and trade when time-varying country fixed effects were permitted (Clark et al. 2004).

Second, on the accountability transparency indicator, the study presents that there has been a dramatic rise of disputes that urge transparency demand in the WTO. For instance, Wolfe and Halle (2011, p. 7) emphasize that, "country members are accountable for their overall WTO commitments and obligations to govern trading practice in order to prevent disputes among trading partners, to establish transparent practice, and to foster international trade welfare." The country disputants who progressively implore transparency accountability proposes non-compliance with WTO obligations undermines and decreases trade flows (Baccini 2014). Bown and Reynolds (2015) create a category of fundamental facts of the degree of trade output which was influenced by policies with which cause dispute on WTO obligation. Their empirical results find that there is a large fluctuation of status on affected trade with a range of summarized commodities on WTO conflicts.

Finally, the rising trend of the FTAs alerted several scholars, trade policy analysts, and influential economic leaders. The bilateral trade brought practical attribution to tariff transitions, and its substantial volume effects are ascribed to non-tariff cost shrinkages. Anderson and Yotov (2016) estimate the trade volume effects of the FTAs operation. Their empirical finding reveals that free trade consensus considerably raised production revenue of nearly all largest part economies in the globe. Moreover, various studies show that the result of FTAs impact and consensus between nations to reduce restrictions on trade among the involving regions, to the movements of trade activities, were varied. Ghosh and Yamarik (2004) reveal, through the common progressions that undertake efficient two-way causality, the FTA and trading blocs have a significant direct effect on the volume of bilateral trade among member nations comparative to non-member nations. Moreover, Baier and Bergstrand (2007) show that, on average, the FTAs give

rise to roughly a 100% increase in member nations' bilateral trade in comparison with non-member nations from their initiation within 10-year periods.

Subsequently, the predictability and accountability transparency practices and FTA are essential trade policy measures that provide benefits in international trade system, decrease uncertainty of unexpected rate change, prevent protectionist restrictions, and enhance regional trade and economic cooperation. In the next section, we will converse what trade policy measures may take after, and the model specification for its assessment and analysis.

3 Methodology

The paper seeks to examine causal relationships between predictability and accountability practices and FTA and trade growth using panel data of countries affected by several factors during the period 2000–2016. We examined the relationship among variables, that is at once a descriptive claim regarding practical data and a causal claim regarding the relationship between independent and dependent variables. Cooper and Schindler (2001) describe that the descriptive approach of research is to collect data regarding current occurring situation, while causal approach explains the causes and effect between two or more parameters. Our approach implies that we have a good conceptual reason to assume that there is a causal relationship between independent and dependent variables.

We performed panel regression to study the causality among the independent and dependent variables; the ordinary least square estimation (OLS) could be used to analyze the parameters. In examining the three measures of the relationship between transparency, FTA, and trade growth, the empirical approach draws benefits of dataset comprising trade exchange rate (ER), number of disputes (ND), and number of FTAs signed and in effect (NFTA) data from World Bank Organization (WB), World Trade Organization (WTO), and Asia Development Bank (ADB) databases. The assessment structure for examining the effect of predictability (ER), accountability (ND), and FTA (NFTA) is comprised of an econometric model where a schedule of common pooled, fixed effects, and random effects influences for all components of trade growth commonly embodied in panel regression model specifications. The relationships between transparency, FTA, and trade growth are likely explored with a common pooled, fixed effects, and random effects models. The variables in the study are ratio in nature, and the type of data set has a mixture of time-series component and cross sections; thus, panel data regression model is the tool to be utilized in the estimation of the parameters. Gujarati (2011) describes that, by combining time series of cross-sectional observations, panel data provide "more informative data, more variability, less collinearity among variables, more degrees of freedom and more efficiency." Moreover, by studying the repeated cross sections of observation, panel data are more fitted to study dynamics of change. It also detects and measures effects that cannot be observed in pure cross-sectional or time-series data. The panel data were called "balance panel" because the number of time observations (17 years) is the same for each cross section (15 selected countries of the Asia-Pacific region). The OLS estimation in the first differences of the variables can be used if all variables are stationary. The panel unit root is utilized to test the stationarity. Majority of the panel unit root tests are founded in the extension of the ADF test by

incorporating its component in regression equations. Nevertheless, the estimation procedure dealing with panel data is more complex that utilized in time series. The crucial factor in panel data estimation appears to be the degree of heterogeneity. It is important to realize that all the individuals in a panel may not have the same property that is they may not be all stationary or non-stationary. Using the Im, Pesaran, and Shin (IPS) tests, the variables are tested using the null hypotheses that all series are non-stationary processes and alternative that a fraction of the series in the panel are assumed to be stationary (Gujarati 2011). Further, cointegration test of the parameters is needed to evaluate whether the model is valid for policy formulation. The Pedroni test is used in this study to test whether spurious regression occurs because of the presence of non-stationarity. Pedroni proposed several tests for cointegration in panel data model that allow considerable heterogeneity.

The panel data modeling considers three models to address: pooled OLS regression, fixed effect model (FEM) or least square dummy variable (LSDV) and random effect model (REM) and to test which of these three models had the powerful estimators, we employed a devise by Hausman which is incorporated in EVIEWS 7. The null hypothesis in the Hausman test is that three models do not differ substantially. If the computed Chi-square value exceeds the critical Chi-square value for the given *df* and the level of significance, it can be concluded that the REM is not appropriate because the random error terms are probably correlated with one or more regressors. In this case, FEM is preferred than REM.

4 Model specification

The economic model on trade growth is:

$$T = f(P, A, \text{FTA}) \tag{1}$$

where T is trade growth, P is predictability transparency computed as percentage change in exchange rate (ER), A is accountability transparency computed as percentage change in number of disputes (ND) and FTA is free trade agreement computed as percentage change in number of free trade agreement (NFTA).

Since most of the parameters identified in the conceptual framework were not quantifiable in nature, indicators of these parameters at national level are used in testing the empirical model. In this study, the measure of ER, ND, and NFTA follows a percentage change measurement. In a proper term:

Percentage change in ER is computed as:

$$\%\Delta\text{ER} = \frac{\text{ER}_1 - \text{ER}_0}{\text{ER}_0} \times 100 \tag{2}$$

where $\%\Delta$ER is percentage change in ER, ER_1 is ER in the current year and ER_0 is ER in the previous year. Predictability is indicated by exchange rate. The exchange rate is predictable when the shift in exchange rate tends not to switch sign across the different sample periods and unpredictable when the shift bends sign across the different sample periods. Also, when exchange rate changes over time, it typifies the level of

unpredictability. Moreover, the measure of number of disputes and number of FTAs signed and in effect follows the same percentage measurements:

The percentage change in ND is computed as:

$$\%\Delta \mathrm{ND} = \frac{\mathrm{ND}_1 - \mathrm{ND}_0}{\mathrm{ND}_0} \times 100 \tag{3}$$

The percentage change in NFTA is computed as:

$$\%\Delta \mathrm{NFTA} = \frac{\mathrm{NFTA}_1 - \mathrm{NFTA}_0}{\mathrm{NFTA}_0} \times 100 \tag{4}$$

Regarding the trade growth, a dependent variable, this paper uses indicators for capturing trade growth changes. Initially, trade is measured by the import plus export divided by GDP.

Then, trade growth is computed as:

$$T = \frac{T_1 - T_0}{T_0}. \tag{5}$$

To test the relationships between transparency, FTA, and trade growth, this article uses a panel data analysis comprising 15 countries from 2000 to 2016. The assessing framework employs three models to explain the effect of the indicators on trade growth and to identify which model shows the powerful estimation for policy formulation. The relationship between independent and dependent variables is measured by a panel regression model in which the common pooled, fixed effects, random effects, and models for all predictors of trade growth commonly embodied in the panel regression model specifications. The assessment of the effect on trade growth caused by changes in the predictability (ER), accountability (ND), and free trade agreement (NFTA) is based on this specification.

The fixed effect model (FEM) is estimated to cross-check the heterogeneity that may exist among the 255 observations. The term fixed effect is caused by the fact that while the intercept may differ across countries, the intercept does not vary over time that is time invariant. FEM considers the heterogeneity that exists as it allows each country to have its own intercept value, thereby introducing intercept dummies.

The model for FEM is:

$$\begin{aligned} \mathrm{TG}_{it} = {} & \beta_1 + \beta_2 D_{2i} + \beta_3 D_{3i} \cdots + \beta_{254} D_{254i} + \beta_{255} \mathrm{ER}_{it} + \beta_{256} \mathrm{ND}_{it} \\ & + \beta_{257} \mathrm{NFTA}_{it} + \beta_{258} \mathrm{NFTA}_{it} + \mu_{it} \end{aligned} \tag{6}$$

where $D_{2i} = 1$ for country 2, 0 otherwise; $D_{3i} = 1$ for country 3, 0 otherwise; and so on….i is cross-sectional unit; t is time; TG is growth rate; ER is percentage change in exchange rate; ND is percentage change in number of disputes; NFTA is percentage change in number of free trade agreements); μ is the error term. In the FEM, 254 dummies will be used to represent 15 countries to avoid the dummy variable trap (perfect collinearity). The first country will be treated as the benchmark or reference category. The random effect model (REM) suggested the expression of the said ignorance through the disturbance term, subject to a stochastic random error component and to account for the lack of representation and knowledge on the dummy variables. The individual

differences of each country are being reflected in the error term. REM considered both the time-series and cross-sectional component. The REM assumed that β_{1i} is a random variable with a mean value of β_1 and the intercept of any cross-sectional unit is expressed as $\beta_{1i} = \beta_1 + \varepsilon_i$ where ε_i is a random error term with mean 0 and variance $\delta_2\varepsilon$.

The random effect model:

$$\mathrm{TG}_{it} = \beta_{1it} + \beta_2\mathrm{ER}_{it} + \beta_3\mathrm{ND}_{it} + \beta_4\mathrm{NFTA}_{it} + \omega_{it} \tag{7}$$

where $\omega_{it}=\varepsilon_i+\mu_{it}$; ε_i is the cross section or the country-specific error term, which is the combined time-series and cross-sectional component i is cross-sectional unit; t is time; TG is growth rate; ER is percentage change in exchange rate; ND is percentage change in number of disputes; NFTA is percentage change in number of free trade agreements; μ is the error term. The common pooled regression (CPR) is considered to capture the aggregate effect of the regressors and assumed that the regressors are non-stochastic or if stochastic are uncorrelated with the error term. In CPR model, cross-sectional and time-series nature of the data is neglected.

The model for pooled regression:

$$\mathrm{TG}_{it} = \beta_{1it} + \beta_2\mathrm{ER}_{it} + \beta_3\mathrm{ND}_{it} + \beta_4\mathrm{NFTA}_{it} + \mu_{it} \tag{8}$$

$i = 1, 2, \ldots, 15, t = 1, 2, \ldots, 17$, where i is the cross-sectional unit; t is time; TG is growth rate; ER is percentage change in exchange rate; ND is percentage change in number of disputes; NFTA is percentage change in number of free trade agreements; μ is the error term.

5 Results and discussions

We based our examination on the econometric analysis of panel regression model using dataset of volume of trade, exchange rates, number of disputes, and number of FTAs signed and in effect for 15 countries in the Asia-Pacific region comprising a period of 17 years. Subsequently, we discuss the econometric results on the relationships between transparency, FTA, and trade growth.

Since the data are panel, estimation of the causal relationship utilizes common pooled regression, fixed effect model, and random effect model. The estimation starts with a panel unit testing, we performed to test if the variables taken collectively were stationary. The obtained annual data of merchandise trade, exchange rate, the number of disputes, and free trade agreement signed and in effect are from WB, WTO, and ADB for each of the 15 selected countries of the Asia-Pacific region. These countries include: Australia, Brunei, Cambodia, China, Indonesia, Japan, Lao PDR, Malaysia, Myanmar, Philippines, South Korea, Thailand, Singapore, Vietnam, and New Zealand (ASEAN + 5) and are chosen to represent sample with varied trade performance and economic development. They are first plotted at levels and are observed for the trending patterns that they exhibited. The data series demonstrated fluctuating trends which characterized non-stationary variables at levels. However, plotting at first difference, all the variables are found to be stationary.

Table 1 shows the unit root test utilizing Im, Pesaran, and Shin (IPS). At levels, all variables were deemed non-stationary as shown in the probabilities which exceeded the 5% level of significance. However, probability values were almost zero after first differencing,

Table 1 Summary of panel unit root test using the Im, Pesaran, and Shin

Variables	At level	Probability	At 1st difference	Probability
Trade growth (merchandise trade)	−1.29880	0.0970	−5.19925	0.0000
Exchange rate	−3.19170	0.0007	−2.92431	0.0017
Number of disputes	−0.20253	0.5803	−4.41812	0.0000
Free trade agreement	−0.49226	0.3113	3.06118	0.0011

thus exhibiting a stationary or stochastic trend. We performed regression on the variables, and since the variables were integrated of the same order, the regression results are levels remained fit.

We performed panel regressions to properly account the heterogeneity of the data. Three regression models were tested to determine which of the model was applicable to use as trade policy model. The common pooled regression assumed that the regressors are non-stochastic or if stochastic are uncorrelated with the error term. It is also presumed that the error term satisfies the usual classical assumptions (Gujarati 2011). The results of the common pooled regression show that the accountability (ND) and FTA are significantly related to trade growth while the predictability (ER) is not significantly related to trade growth. The fixed effect model is estimated to cross-check the heterogeneity that may exist among the 255 observations. This model allows each country to have its individual intercept value. The term fixed effect is caused by the fact that while the intercept may differ across countries, the intercept does not vary over time that is it time invariant. This process is done by introducing differential intercept dummies. The dummies for the countries and the time are represented as D2–D15 and T16–T32, respectively. The exchange rate that represents predictability transparency exerts positive result and statistical significance on trade growth at 1%, while the FTA exerts a negative result and statistical significance on trade growth at 5%.

The intercept values or the dummy variables accounted the differences in the exchange rate, number of disputes, free trade agreement, and growth in trade of each selected country. To account for the lack of representation and knowledge on the dummy variables, random effect model suggested the expression of the said ignorance through the disturbance term, subject to a stochastic random error component. The individual differences of each country are being reflected in the error term. The results of the random effect model show that the predictability (ER) and free trade agreement are statistically significance on trade growth at 1 and 5%, respectively.

The performed econometric estimation of the relationship between trade policy measures and trade growth is based on the model presented in Table 2 that supports a greater extent to infer the effects of transparency practices and FTA on trade growth in international trade. The econometric estimation is essential to manage for the number of parameters that affect the variables advantages, and its intention is to examine whether trade growth is influenced by the changes in indicators such as exchange rate, number of disputes, and number of FTA signed and in effect considering determinants of trade have been appropriately directed.

Table 2 presents the panel data regression analysis. The results show that predictability and accountability have a significant relationship with trade growth. Using OLS

Table 2 Panel data regression

Variables	Panel data regression			
	Common pooled	Fixed effect	Random effects	Hausman test (prob.)
Constant	68.10881*	92.07208*	93.59326*	
Exchange rate	0.000815	0.005092*	0.0044424*	0.1286
Number of disputes	−22.16008*	−0.678951	−0.693360	0.0047
Free trade agreement	6.191002*	−0.636211**	−0.571874**	0.8896
R-squared	0.126951	0.968761	0.062397	–
F-statistics	12.16609	432.3311	5.567958	–
Prob (*F*-statistics)	0.0000	0.0000	0.001030	–
Durbin–Watson	0.063482	0.411561	0.363200	–
Jarque–Bera (prob)	275.626	35.741	459.428	–

**Significant at 5%; *significant at 1%

estimation, results show that, first, predictability measured in exchange rate has a significant positive impact on trade growth, as the increase change by 1% it tends to increase in trade growth by 0.005%. Second, accountability transparency practices measured in the number of disputes have a negative impact on trade growth. The increase in the number of disputes tends to lower trade growth by 0.679%. Third, FTA measured in number of FTAs signed and in effect showed a negative effect on trade growth. Considering collectively the ASEAN+5 countries, an increase in FTA by 1% tends to increase by 6.19% in trade growth. However, in measuring FTA by individual country to trade growth result shows a negative effect. Some countries with less utilization of FTA have a negative impact to trade growth. Furthermore, results show that the impact of transparency practices and FTA on trade growth in the selected countries of the Asia-Pacific region was heterogeneous. Thus, in forecasting trade, transparency practices as trade policy measures are factors that must be considered. Policies directed toward exchange rate must be reviewed and carefully formulated. Finally, as this paper reveals, countries must be more open to free trade agreements utilization as its effects to growth in trade is considerable.

The Jarque–Bera result shows the coefficient of 35.741, thus showing normally distributed residuals. This result exhibits that the model is statistically significant and valid for trade policy formulation. Also, restricted test of the two models had been performed to test which model is best suited for policy formulation.

The Pedroni procedure was applied to validate the long-term equilibrium relationship among panel data variables. The result shows in Table 3 that the group PP-statistics was statistically significant at 5% level. The result suggests that this could not be a sufficient measure for long-term equilibrium. The result could have been evidenced by individual cointegration test performed.

Finally, Hausman test (Table 4) was used to determine the appropriate model to use for policy formulation. The null hypothesis of the Hausman test is that FEM and REM do not differ substantially. The Hausman test indicates that the null hypothesis that REM is the fitted model is rejected; therefore, FEM is the fitted model.

The study had determined that predictability, accountability transparency practices and FTA were significantly affecting trade growth. The findings showed that, first, the

Table 3 Pedroni cointegration residual test

	Statistic	Prob.	Weighted statistic	Prob.
Alternative hypothesis: common AR coefs. (within-dimension)				
Panel *v* statistic	0.199166	0.4211	0.201886	0.4200
Panel rho-statistic	1.558817	0.9405	1.023193	0.8469
Panel PP-statistic	0.870046	0.8079	−0.394907	0.3465
Panel ADF-statistic	0.218342	0.5864	−0.547730	0.2919
			Statistic	**Prob.**
Alternative hypothesis: individual AR coefs. (between-dimension)				
Group rho-statistic			2.318638	0.9898
Group PP-statistic			−2.307841	0.0105
Group ADF-statistic			−1.272429	0.1016

predictability aspect of transparency practices is a significant parameter to increase trade growth. Our result shows that trade growth increases by a percent changed in predictability; hence, this aspect of transparency reduces unpredictability on different factors affecting trade activity. In addition, the relation between predictability and trade growth is driven by validated causality, in which predictability helps raise trade growth, thus reduces unpredictability. In fact, several scholars attest that predictability, as one aspect of transparency practices, exhibits as an essential factor for international trade flows (Helble et al. 2009; Lejárraga and Shepherd 2013). Meanwhile, various studies conducted exchange rate unpredictability and its effects find that unpredictability reduces trade (see Broda and Romalis 2003). Šimáková (2014) states that the effect of change in exchange rate reveals that higher exchange rate unpredictability steers to higher trade cost, and it subsequently will decrease international trade. Further, Hooper and Kohlhagen (1987) attest that in the event of movements in exchange rates are volatile it signifies unpredictability regarding a firm's operations and decreases the advantages of international trade. Nicita (2013) mentions that according to UNCTAD 2013, the exchange rate represents a vital function in the nation's trade flows; the comparative evaluations of currencies and their unpredictability frequently have essential effect on global trade and the whole economic standing and accomplishment (Nicita 2013). The increase predictability transparency of trade policy is an essential contribution of trade agreement that have long been accepted by policy-makers (Osnago et al. 2015). Second aspect of transparency practices is the accountability that we found to have an important influence on trade growth. This aspect of transparency practices constricts countries from implementing protectionist trade policy rules and reduces the number of disputes among trade partners. The increase number of disputes brought against by trading partners or of WTO members indicates weak practice of transparent accountability, on the enforcement against violators and non-compliance of its commitment on trade terms under WTO obligations (see Dong and Jayakar 2013). The transparent accountability practice of government's implementation of trade policy measures and compliance of international treaties under the WTO context is an important aspect to avoid escalation of disputes on trade policy measures among trading partners. Lastly, the FTA policy measures exhibits significant effect on trade growth. The increase utilization of FTA supports the countries aspiration to expand its trading activities by diminishing tariff barriers, open new foreign entrance

Table 4 Hausman test

Correlated random effects—Hausman test				
Equation: untitled				
Test cross-section random effects				
Test summary		**Chi-sq. statistic**	**Chi-sq. *df***	**Prob.**
Cross-section random		19.525372	3	0.0002
Variable	**Fixed**	**Random**	**Var (diff.)**	**Prob.**
Cross-section random effects test comparisons				
ER	0.005092	0.004424	0.000000	0.1286
FTA	− 0.636211	− 0.571874	0.000518	0.0047
ND	− 0.678951	− 0.693360	0.010774	0.8896
Cross-section random effects test equation:				
Dependent variable: TG				
Method: panel least squares				
Date: 04/21/18 Time: 17:32				
Sample: 2000 2016				
Periods included: 17				
Cross sections included: 15				
Total panel (balanced) observations: 255				
Variable	**Coefficient**	**SE**	***t* statistic**	**Prob.**
C	92.07208	3.612049	25.49026	0.0000
ER	0.005092	0.001208	4.214637	0.0000
FTA	− 0.636211	0.262329	− 2.425242	0.0160
ND	− 0.678951	1.468072	− 0.462478	0.6442
Effects specification				
Cross-section fixed (dummy variables)				
R-squared	0.968761	Mean dependent var	102.5514	
Adjusted *R*-squared	0.966520	SD dependent var	87.27988	
SE of regression	15.97006	Akaike info criterion	8.447282	
Sum squared resid	60445.16	Schwarz criterion	8.697253	
Log likelihood	− 1059.028	Hannan–Quinn criter	8.547831	
F-statistic	432.3311	Durbin–Watson stat	0.411561	
Prob (*F*-statistic)	0.000000			

for trade, and strengthen trade and economic collaboration. As Baldwin (1993) mentions that the rapidly increasing FTAs will eventually contribute to trade liberalization and by conforming to FTA rules will drive traders to pressure regimes to coordinate the rules existing in FTAs. Thus, the rising proliferation of FTAs and its utilization can be a welfare enhancing for trade system.

Moreover, study found that there is a significant relationship between trade growth and predictability transparency and FTA. The exchange rate that represents predictability transparency exerts positive result and statistical significant relationship to trade growth at 1% level and the number of FTAs signed and in effect exerts negative result and statistical significant relationship to trade growth at 5% level. While findings show

no significant relationships between trade growth and accountability transparency measures, hence, the study fails to reject the null hypothesis that there is no significant relationship between trade growth and accountability. Table 5 shows the statistic test that the *p* value of 0.6442 exceeds 5% significance level regarding accountability measured in number of disputes. This result is noticeable as it shows that not much of the selected countries in the Asia-Pacific region have number of disputes recorded within the period covered in this paper—in this case only 7 countries out of 15 countries have dispute issues as respondents which may have a contributing factor on the result. With regard to this effect, countries with less transparent practices and fewer utilization of FTA measure may find it hard to pursue growth in trade.

The findings show significant results that guarantee a country's preference of trade measures and reforms strategies to reduce opacity and increase bilateral consensus in trade policy in the conditions of withstanding international trade. In effect, these can collectively have significant positive results on continuous trade growth. Though the study is limited to aspects of transparency, namely Predictability and Accountability, and Free Trade Agreement that emerge from Trade Policy, findings show that their influence on trade flows has a substantial importance to increase growth and advance the economic development of the countries in the region. Nevertheless, there appears to be a further scope of Trade Policy for the country to increase trade growth by considering other aspects and predictors such as trade openness, FDI, terms of trade, and any other factors affecting trade.

In the recent decade, Asia economies have considerably liberalized foreign trade authorities with the substructure of the WTO. The economic growth fueled by the growing in size of trade and investment in the region despite the various results of the performance of nations become visible in recent years. These comprise the results of global financial crisis in 2008–2009, the risk of protectionism, the tenacity of remaining behind-the-border regulatory barriers, the failure to conclude WTO multilateral trade negotiations, and corresponding exclusion of small- and medium-sized enterprises (Kawai and Wignaraja 2014). These global issues prompted Asia economies to embark on various inventiveness, economic collaborations and integration in the sphere of trade and investment, innovation, and became interdependent among each other. An essential element of the regions' policy reaction must do with an advance trade policy focused on FTA to underpin the enabling of Asia-Pacific region and transparency which is believed to furnish good governance (de Graaf and van der Wal 2010). The extant literature shows that efforts to investigate the impact of trade agreements and economic cooperation on trade growth are exerted. Among them is the evaluation of the level of economic

Table 5 Fixed effect

Variable	Coefficient	SE	*t* statistic	Prob.
C	92.07208	3.612049	25.49026	0.0000
ER	0.005092	0.001208	4.214637	0.0000
FTA	−0.636211	0.262329	−2.425242	0.0160
ND	−0.678951	1.468072	−0.462478	0.6442

integration, the transfer of trade and commodities, resources and people between trade partner nations (Kawai and Wignaraja 2014).

6 Conclusions

The study finds that the two transparency aspects and free trade agreement policies are widely commencing to generate good results, i.e., increasing trade growth. The results uncover the deepening importance of transparency practices and free trade consensus utilization in the international trade and economic development. The magnifying usefulness of these trade policies should not be ignored. They are regarded a beneficial trade policy tools not just in advancing competition and improving transparency, but also in robust transparent practices of predictability and accountability and productive utilization of free trade agreements in making international trading process to share trade with other countries.

The evidence shows that higher predictability and accountability transparency practices in trade policy measures and increased in free trade consensus have an impact on trade growth upshot. The thorough practices of these two aspects of transparency and the increasing number of FTAs are significant factors to combat the difficult challenges of opacity and a determinant to intensify market-driven economic integration, respectively. These trade policies will help to achieve the sustainability of increase growth in trade. In the lack of transparency practices in aspiring policy change, international trade unpredictability and imbalances will emerge that could weaken growth, and this is highly detrimental to countries in the Asia-Pacific region's trade activity. However, trade policy change that adheres deeply to transparency practices raises long-term favorable impact to trade growth and economic performance of the countries in the region. It reduces the risks of bigger disorders to the trading system and increases sustainability to the region's trade flows and boosts trade growth.

The increase in trade activity is fostered by the key elements. Those are predictability and accountability transparency practices, and the number of FTAs signed and in effect. The role of international trade organizations, regimes, and policy-makers in this matter is essential as trade policy is vital to channel for the international trade market for modern governance. It has been revealed in this empirical work that predictability aspect of transparency and the increase in free trade agreement have a significant contribution to trade growth. The result appears to imply that transparency practices and FTA policy will not steer to significant and crucial trade flows reductions, and rather they will push forward the Asia-Pacific region as the leading trade giant to continue to thrive in the world—succeeding both trade growth and economic performance. The empirical model suggests that transparency is a contributing factor for growth as well as free trade agreement in the selected countries of the Asia-Pacific region. Therefore, for a country to increase growth in trade, the policy must be directed toward increasing transparency practices and induce free trade agreement in their trading activity.

The inter-linkages of the transparency practices and FTA exhibit their significance in trade policy, which are important for trading countries in advancing their trade activity by including provision for these policy measures that have a major influence to heighten growth in trade. As can be seen, the trade policy measures play an important function

in trade where correspondingly increase in trade growth is a feature of increase in transparency and FTA collectively while decrease in trade growth is a feature of decrease in transparency measure specifically the accountability and lesser utilization of FTA.

Nevertheless, the econometric findings may not be enough to guarantee the region's trade policy measures to increase growth in trade particularly in the context of accountability transparency as the result shows that accountability has no significant relationship to trade growth. It will be considerably worthwhile for future research to investigate the same trade policy issue and to consider other indicators on accountability measures that may represent a significant relationship to trade growth. The study also suggests the need for further thorough research to derive conclusions about the impact and relationship between transparency aspects and FTA policy and trade growth.

Authors' contributions
RP is involved in conception and design of the study, acquisition of data, performed analysis and interpretation of data, wrote draft manuscript and revised it critically for important intellectual content. MCC supervised development of work and manuscript evaluation. CM helped to evaluation and revision of the manuscript. All authors read and approved the final manuscript.

Acknowledgements
The authors gratefully appreciate Jenny Beb Ebo for the technical help on this paper. We highly acknowledged Exequiel Cabanda for the comments and suggestions on the previous drafts of this paper. We are also very grateful for the comments and suggestions of the editor and anonymous reviewer.

Competing interests
The authors declare that they have no competing interest.

Availability of data and materials
The datasets and appendices supporting the conclusions of this paper are presented in the additional supporting files.

Consent for publication
Not applicable.

Ethics approval and consent to participate
Not applicable.

Funding
Not applicable.

Publisher's Note

Received: 3 May 2018 Accepted: 8 May 2018
Published online: 24 May 2018

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