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The Effects of Asia-Pacific Countries' Trade Integration in the Context of Globalization and Regionalization

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Abstract. The aim of the research is to assess the trade effects of integration in the Asia-Pacific region, arising from the processes of globalization and regionalization, which is manifested in the functioning of trade agreements and their proliferation. It is shown that mutual trade barriers are reduced in the context of the formation of a sub-global network of bilateral and multilateral trade agreements as part of the regionalization process in the Asia-Pacific region. It is determined that the vast majority of free trade zones functioning in the world is concentrated in the Asia-Pacific region while the share of intraregional trade is tending to increase. The authors reveal general regularities of integration processes in the Asia-Pacific region based on the decomposition assessment of the effects of trade agreements in the framework of a synthesized modern approach to the assessment of gravitational dependencies. Integration processes in the Asia-Pacific region in the long term have been generating the effect of creating trade for the countries of the sub-global region that concluded trade agreements, and the effect of globalization contributed to an increase in the overall effect of integration. Based on the obtained estimates, it is determined that the contribution of the globalization effect to the overall effect of integration between the Asia-Pacific countries was higher than from the conclusion of trade agreements. The effects of globalization more than doubled the overall effect of integration for the Asia-Pacific countries that concluded trade agreements. It is clarified that for the Asia-Pacific countries that are carrying out the proliferation of trade agreements, the increase in the overall effect of integration was mainly due to regionalization. The obtained estimate confirmed the assumption that there is discrimination against the economies of the Asia-Pacific countries

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that do not expand the geography of concluded trade agreements in the region. Based on the obtained estimates, it is argued that the effective strategy for Russia is to increase the coverage of the Asia-Pacific countries to conclude trade agreements in order to diversify foreign trade and support export-oriented sectors of the economy.

Key words: trade, integration, regionalization, globalization, trade agreement, free trade zone, customs Union, overall effect of integration, effect of globalization, effect of concluding trade agreement, accumulated effect of integration, exporting country, importing country, Asia-Pacific region.

Introduction

Over the last quarter of a century, trade turnover between countries has increased by more than nine times; an average import duty has decreased by three times, a weighted average – by two times; the share of duty-free commodity groups in world import increased by more than two times, accounting for half of its value[1]. A significant expansion of trade relations between countries was made possible by integration processes in the global and sub-global economy.

First, the practice of multilateralism has spread [1] in international economic relations on the basis of common mechanisms that allow each country to enjoy privileges in relations with all partner countries. Agreements to liberalize trade between the world's leading economies within the General Agreement on Tariffs and Trade (GATT), followed by the accession to the World Trade Organization (WTO) of nearly all countries since 1994, contributed to a total reduction of the customs burden on trade and its intensification [1; 2].

Second, there is a process of regionalization, understood as the construction of trade and economic relations between certain countries and groups of countries on the basis of two- and multilateral interstate agreements initially caused by a significant increase of intra-industry and intra-firm trade in the global corporate sector [3; 4], and then – due to the lack of progress within the Doha WTO Round in 2001, which involves the reduction of tariff measures and non-tariff restrictions between developed and developing countries to facilitate mutual access to each other's markets. Regionalization processes and the lack of opportunities for finding a global compromise between developed and developing countries contributed to the independent conclusion of bilateral and multilateral trade agreements [1; 5]. Some groups of countries managed to move to more mature integration formats: to create a common market that involves relatively free movement of capital and labor resources; an economic union that consists of coordinating economic policies and unifying institutional norms. More mature formats may include the European Union within the "traditional" integration model [5; 6].

Other countries and associations are at the initial stage of bilateral/multilateral economic integration. Initially, they made partial scope agreements (PSA)[2], agreements on the creation of free trade zones (FTA)[3], and the Customs Union (CU)[4]. Inevitably, the

[1] Calculated according to UN and World Bank statistics.

[2] In accordance with PSA, the reduction of various restrictions applies only to certain product groups.

[3] FTA implies a significant liberalization of trade between member countries in terms of reducing tariff measures and non-tariff restrictions, as well as the right to determine the trade regime in relation to third countries.

[4] If CU is created, countries will introduce a single customs tariff and a single system for regulating non-tariff measures regarding third countries.

functional component of the PSA, FTA, and CU began to expand covering other areas of economic interaction between countries through the conclusion of economic integration agreements, including the liberalization of trade in services. As the result, there was an expansion of trade agreements, according to the "new regionalism" model [7], and original formats became mixed, characterized by some features of the common market. Therefore, a number of agreements, made in initial integration forms, began to exist in an expanded format. The mass conclusion of bilateral trade agreements contributed to the "domino" effect [8], which means the expansion of two- or multilateral trade agreements at the expense of new member countries in order to offset negative consequences of non-participation in this association. As the result, currently, there are 19 PSAs, 250 FTAs and 17 CUs functioning in the world: out of it, 1, 143, and 5, respectively, function in the expanded format.

Third, the regionalization process inevitably led to attempts to create large trade formats that can be joined by a large number of participating countries, which concluded trade agreements. As the result, existing bilateral and multilateral trade agreements were considered the basis for building larger forms of economic integration in the world [9].

Despite the general reduction of barriers in global trade, some researchers see risks to free trade in the regionalization process [10]. The simultaneous participation of countries in various trade agreements contributed to a significant complication and non-systemic fragmentation of the global economic space due to the distortion of free trade rules and discrimination [11]. On the other hand, it is noted that the mass conclusion of trade agreements, along with the GATT and WTO mechanisms, helps to reduce the tariff burden on the flows of goods between countries, increasing the scale of global trade [12], and it, in turn, contributes to strengthening peaceful relations between states, significantly increasing the costs of armed conflicts between them [13].

Integration processes within the framework of regionalization were most clearly manifested in the Asia-Pacific region, which accounted for more than half of global trade by 2018. Intraregional trade significantly increases in the APR due to the reduction of tariff measures and non-tariff restrictions, the expansion of the regional network of bilateral and multilateral trade agreements. It may be assumed that the economies of Asia-Pacific countries that did not conclude trade agreements are discriminated in the sub-global region. Now, Russia is among such states, since only one signed trade agreement with the countries of the sub-global region entered into force[5] – the expanded FTA agreement (hereinafter – FTA+) between Russia, as a member of the Eurasian Economic Union (EAEU), and Vietnam in 2016. On the other hand, the APR includes quite different economies and trade agreements, signed by them, may not be efficient enough. There are opinions [1] that the conclusion of trade agreements was a political act without any economic reasons in some cases. According to these points of view, it is important to assess the effects of the implementation of existing trade agreements in the Asia-Pacific region in order to understand whether integration processes within the regionalization framework have a positive impact on the trade of countries, involved in it, and how this impact relates to the impact of multilateralism or globalization.

[5] In 2019, an agreement was signed on the creation of FTA between the EEC and Singapore, which has not yet entered into force. Negotiations between Russia and New Zealand to sign expanded FTA agreement, announced in 2010, were suspended after 2014.

Traditionally [14], the effectiveness of trade integration occurs when the effect of the creation exceeds the effect of trade rejection[6]. Estimates of the effectiveness of trade integration in the APR for existing trade formats/agreements were built primarily in the second half of the 1990s within classical gravity models (see, for example: [15; 16; 17]), which, due to endogeneity of the parameters included in it, led to incorrect conclusions. While constructing more complex models, interest is shifted toward exclusively promising estimates of the effects of creating large trade formats in the APR [18; 19]. In modern studies of trade integration, using the correct methodology for estimating gravity dependencies [20; 21], sub-global components are usually not considered. Certain studies on some East Asian countries showed a positive impact of trade agreements on the economies of these states and third countries [22; 23]. However, for the APR as a whole, such assessments were not carried out. Based on everything mentioned, it is important to assess the effects of the implementation of trade agreements between the APR countries and to determine the contribution of globalization to the overall effect of trade integration based on the synthesis of modern approaches to the assessment of gravity dependencies.

Thus, the purpose of the study is to assess trade effects of integration in the APR, resulting from globalization, the functioning of trade agreements, and its proliferation. The following objectives are expected to be solved: analysis of the process of trade and economic integration in the APR; selection of an applied model for evaluation and generation of data set; evaluation of trade integration effects in the APR. The initial year for analysis was 1994 which is related to the creation of the modern global institute for regulating trade interactions – the WTO.

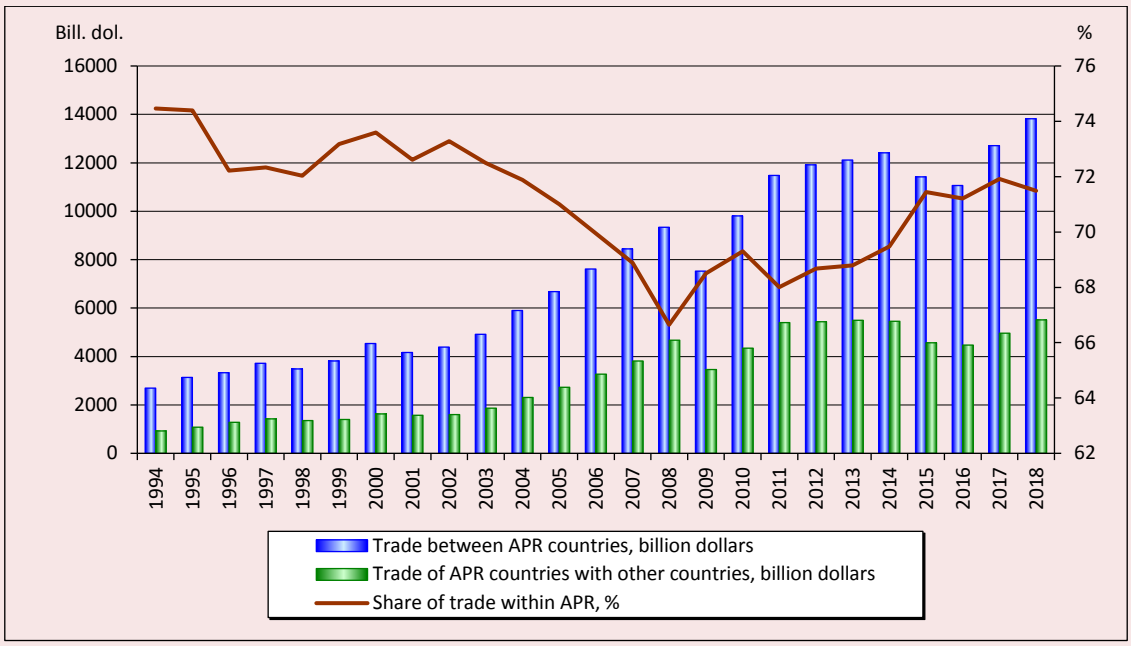
Trade integration process in the APR

In the 1990s, the main driving force of integration processes in the APR was a large sub-global (at the first stage, Japanese [24; 25]) and global corporate sector, which carries out the production process within the framework of vertical trade for the subsequent distribution of finished products around the world [26]. As the result, in the APR, the fragmentation of production in space became clearly visible as a characteristic element of the process of modern global integration [27]. In combination with the production spatial fragmentation, the distances, over which final and intermediate demand goods were distributed, significantly increased, which served as the basis for the integration of regional markets [28]. The growth of trade and production in the APR, primarily in East Asia, was achieved through the creation of assembly plants based on foreign direct investments (FDI) in developing countries with excess labor; increased returns on scale of production within the lowering of costs and levelling of barriers for intra-firm trade. As the result, in the 1990s, the share of intraregional trade in the APR was characterized by high values due to the gradual creation of a production structure of interaction between developed and developing countries located mainly in East Asia (*Fig. 1*).

Then, in the 2000s, the share of intraregional trade declined due to the mass transfer of industrial enterprises to China and Southeast Asian countries in order to increase exports of finished products produced with minimal costs around the world. Also, the decrease of its share

[6] The effect of trade creation reflects the reorientation of the national market from a less efficient source of supply to a more economically viable import of the country, or association of countries, with which trade liberalization is being implemented. The trade deflection effect refers to the reorientation of the domestic economy from the purchase of a certain number of goods on the world market to the purchase of products from the country or group of countries with which a preferential trade agreement is concluded.

Figure 1. Intraregional and foreign trade of the Asia-Pacific countries



Source: calculated according to the World Bank statistics.

was caused by high prices for energy resources supplied to the APR from the Persian Gulf countries, which accounted for up to a third of imports of oil and petroleum products in the sub-global region.

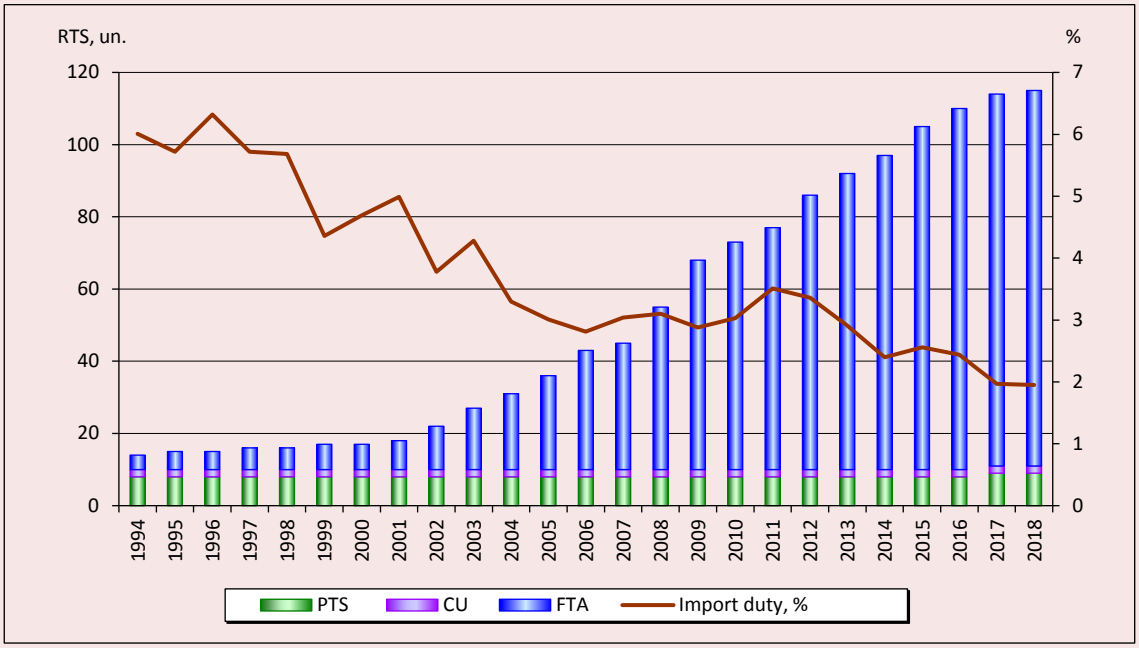
In the 2010s, the share of trade within the APR began to increase. Due to high rates of economic growth caused by direct or indirect participation in sub-global and global production links, the market capacity of most developing countries in the APR has significantly grown, stimulating trade with intermediate and final demand goods within the sub-global region [29]. The main generator of trade growth between the APR countries was the Chinese economy, which, by the mid-2010s, accounted for up to a quarter of intraregional trade, compared with 4% in the late 1980s. As the result, by 2018, trade between the countries of the APR accounted for more than 70% of a total trade turnover of the countries of the sub-global region.

In addition to trade with goods, the APR economy became the main accumulator and translator of foreign direct investment (FDI) in the world. With the exception of a few situations, from the mid-1990s to the present, the share of the APR countries, averagely, is 55–60% of a global volume of outgoing and incoming FDI[7]. Flows of horizontal, vertical, and export FDI in the APR started to be manifested in varying degrees and became known as "network" [30].

A number of countries in sub-global region do not directly participate in the production cooperation in the APR, playing a role of an exporter of commodities or provider of limited contingent workforce, because of the specific structure of the economy, the lack of surplus labor resources and technologies (Russia, Mongolia, some countries in Latin America), and political reasons (DPRK).

[7] Calculated according to UN and World Bank statistics.

Figure 2. Number of trade agreements and weighted average import duty in the APR



Note: values of the efficient applied weighted average import duty are shown; a number of trade agreements is shown as a cumulative total. PSA – partial trade agreement, CU – customs union, FTA – free trade zone. By 2018, there were 114 operating trade agreements in the APR: 9 PSA, 103 FTA, and 2 CU, out of which 1, 95, and 0, respectively, are in the expanded format,.

Source: statistical database of the WTO and the World Bank.

Significant results of the expansion of intraregional trade would not be possible without a significant reduction of various barriers due to globalization and regionalization. Since the second half of the 1990s, trade agreements have been actively concluded in the APR, which initially expanded the economic interaction of the countries of the sub-global region with each other and the outside world [31], mainly due to the reduction of trade barriers. The APR countries also actively concluded trade agreements with states not geographically related to the sub-global region. In the 2000s, nearly all APR countries joined the WTO[8]. In this regard, compared to the 1990s, the weighted average import duty of the APR countries decreased by almost three times by 2018[9] (*Fig. 2*).

Until the 1990s, there were no prerequisites for regionalization and fragmentation in the APR, and political motives for integration prevailed over economic ones: actions were taken to create an economic and political union in Latin America and Oceania, as well as to support developing countries (The Protocol on Trade Negotiations, Global System of Trade Preferences among Developing Countries, and the Asia-Pacific Trade Agreement). A trade agreement was also signed between the countries of Southeast Asia.

[8] With the exception of some small island states, DPRK and Russia, which became a full member of the WTO only in 2012.

[9] Import duties between APR countries were characterized by lower values compared to countries outside the sub-global region.

Further, development of economic interactions in the APR generated the emergence of integration forms between geographically close countries and between states belonging to a certain group of economies. In the 1990s, multilateral FTAs+ were concluded between the three largest economies in North America (NAFTA) and almost all countries in Southeast Asia (within ASEAN[10]) [5]. If a motive for creating NAFTA was the necessity to expand trade and economic ties, then the creation of the FTA+, based on ASEAN, was not initially characterized by such a goal without having any noticeable impact on trade between the association member countries. The situation changed after the 1997 crisis, when the FTA+ ASEAN mechanisms were used for deep trade integration and cooperation within the monetary policy, as well as the involvement of other major APR economies in the FTA mechanisms [32].

In the 2000s, countries with the largest economies located in the South Pacific (New Zealand, Singapore, Chile, and Brunei) signed an agreement on the establishment of the Trans-Pacific Strategic Economic Partnership in the FTA+ format [9]. At the same time, attempts were made to link the economies of Central and South American States to the NAFTA (The North American Free Trade Agreement) market. There was a rapprochement of the ASEAN countries with the Big three of Northeast Asia – China, Japan, and the Republic of Korea (hereinafter – the FTA ASEAN+3 format), and other key partners of the association – India, New Zealand, and Australia (hereinafter – the FTA ASEAN+6 format).

In accordance with the logic of events, by the end of the first decade of the 21st century, it seemed that conditions were being created in the APR for concluding a major multilateral trade and economic agreement within the framework of the Asia-Pacific economic cooperation, covering almost all national economies of the region, which could function in the ARP format. However, subsequent development of economic interactions in the APR generated a convergence of geographically close countries. In the 2010s, further prerequisites are being created for the formation of FTA+ between the NAFTA countries and the economies of Latin America (The Trade Agreements between Mexico and Central America, the Framework Agreement of the Pacific Alliance). Since the beginning of the 2010s, there have been active negotiations on the creation of FTA+ between three major countries of Northeast Asia. The activation of the USA role in integration processes initially made serious adjustments to the inertial expansion of trade agreements in the sub-global region, creating the basis for the formation of large trade formats in the APR. Also, the prerequisites for the creation of large trade formats in the APR were the growth of negative externalities due to the complexity of negotiating trade agreements and reducing the benefits of its exclusivity [33], the crises of the 2000s. This process, on the one hand, was the source for the emerging dualism between the USA and China in sub-global region, and, on the other hand, it has been able to bring trade and economic cooperation in the APR, at least for some countries in the region, to a more advanced level. Subsequently, the United States suspended its participation in the creation of the Asia-Pacific mega-format, and, in 2018, the Comprehensive and Progressive Agreement for Trans-Pacific Partnership agreement was concluded in the FTA+ format, without the American economy. Simultaneously,

[10] Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam.

negotiations were held on the conclusion of a Comprehensive Regional Economic Partnership, which is based on expanding the scope of trade and economic cooperation within the framework of the FTA ASEAN+6.

As the result, by 2018, almost 70% of the world's functioning FTZs+ were concentrated in the APR. The growing proliferation of FTA+ in the APR created conditions for the emergence of the "spaghetti bowl" effect [34], which is manifested in the costs of concluded agreements for a number of exporters [35]. At the same time, there is a growing trend of the share of intraregional trade. From this point of view, it is important to assess the trade effects arising from the process of globalization, the functioning of trade agreements, and its proliferation for exporting and importing countries of the APR.

Data and evaluation methodology

Evaluation methodology. Gravity modeling is one of the most common methods for evaluating integration effects, but clear methodological recommendations for solving such research problems were formulated only in the last decade. Despite the problem of endogeneity of trade policy [36], which led to a significant bias in estimates and, consequently, to incorrect conclusions, for a long time, the estimation of integration effects in gravity models was constructed by including a fictitious variable of the presence/absence of a trade agreement between countries in the right side of the equation, along with variables that are constant over time and have cost characteristics [15; 16; 17; 37; 38].

Due to the problem of endogeneity in determining the effects of integration by including fictitious variables of trade agreements, the estimation of gravity dependence has its own peculiarities [20], since it does not explicitly include the distance, size of traded economies, and key institutional indicators. To explain this feature, we need to decompose the original gravity equation between countries *i* and *j* (1)

$$X_{ij} = \frac{A_i w_i^{-\theta} \tau_{ij}^{-\theta}}{P_j^{-\theta}} E_j \,, \qquad (1)$$

where: X_{ij} is export from country i to country j; E_j – total expenditure in country j on goods of various origins, including goods produced in j; the share of country j's expenditure is allocated to goods i and directly depends on three following factors: A_i – characteristics of production technologies available in the country i, w_i – amount of remuneration in i, τ_{ij} – trade costs of the "iceberg" type that occur when goods are sold from country i to country j. It is assumed that goods are imperfect substitutes, so the effect of trade and production costs on the trade depends on the constant elasticity of substitution in trade, i. d. $\theta>1$. All cost factors only affect the size of trade relative to the overall level of competition in the import market from country j, which is taken into account by summing in the denominator (1), i. e.: $P_j^{-\theta} = \Sigma_i A_i w_i^{-\theta} \tau_{ij}^{-\theta}$. Indicator $P_j^{-\theta}$ reflects internal multilateral resistance for the importing country (j) and external multilateral resistance for the exporting country (i) [39].

Then equation (1) is expressed in exponential form [40; 41], when time – t and the error vector are included – $\varepsilon_{ij,t}$:

$$X_{ij,t} = \exp\left[\ln A_{i,t} w_{i,t}^{-\theta} + \ln \frac{E_{j,t}}{P_{j,t}^{-\theta}} + \ln \tau_{ij,t}^{-\theta}\right] + \varepsilon_{ij,t} \,. \quad (2)$$

Equation (2) is solved by the Poisson quasi-maximum likelihood method in order to avoid the problem of heteroscedasticity [41] and to include "zero" trade flows [42]. In order to determine the impact of trade agreements on trade interactions, the vector of trade costs

($\ln\tau_{ij,t}^{-\theta}$) is decomposed into the following components [43]:

$$\ln\tau_{ij,t}^{-\theta} = Z_{ij}\delta + \beta_1 FTA_{ij,t} + u_{ij,t}\ , \quad (3)$$

where: Z_{ij} is a set of time-independent variables included in a total level of trading costs between *i* and *j* with a vector of coefficients δ; $FTA_{ij,t}$ is a dummy variable that reflects whether or not there is a trade agreement between i and j. Thus, the variable Z_{ij} includes geographical (distance, borders, etc.) and institutional (common language, colonial connections, etc.) characteristics. According to the recommendations [43], a set of time-independent variables is taken into account as fixed effects for trading pairs of countries, i.e. $\mu_{ij} = Z_{ij}\delta$, since δ is not a necessary parameter for evaluating the effects of trade agreements. Also to avoid problems of endogeneity [44] the cost characteristics in the right part of equation (1) for *i* and *j* are absorbed and taken into account when estimating fixed effects for the exporter/importer with respect to time, i.e.: $\pi_{i,t} = \ln A_{i,t} w_{i,t}^{-\theta}$, $\chi_{j,t} = \ln E_{j,t}/P_{j,t}^{-\theta}$.

Thus, the basic equation for estimating the effects of concluding trade agreements, which differs from the classical gravitational dependencies, has the following form:

$$X_{ij,t} = \exp\left[\pi_{i,t} + \chi_{j,t} + \mu_{ij} + \beta_0 + \beta_1 FTA_{ij,t}\right] + \varepsilon_{ij,t}, \quad (4)$$

where: π_i – fixed effects for the exporting country based on the year; χ_j – fixed effects for the importing country based on the year; μ_{ij} – fixed effects for trading country pairs. The estimation of equation (4) allows us to determine changes (in %) in bilateral trade flows of countries that concluded trade agreements ($[e^{\widehat{\beta}_{FTA}} - 1] \times 100$), as well as its tariff equivalent ($[e^{\widehat{\beta}_{FTA}/(1-\theta)} - 1] \times 100$)[11].

[11] Elasticity of substitution (θ) is selected in the range from 5 to 10 [39].

In addition to including the above-mentioned fixed effects in accordance with the recommendations [45], which allow getting unbiased estimates, it is necessary to use interval panel data with a lag of 3–5 years to adjust changes in trade policy and other trade costs, arising in the process of bilateral trade [46]; to include intra-country trade in the panel data [47].

The extension of the basic equation (4) for the problems of our study allows us to quantify other integration effects: in particular, the *effects* of deviation/creation of trade for exporting and importing countries from the *expansion of trade agreements* [21]:

$$X_{ij,t} = \exp\left[\pi_{i,t} + \chi_{j,t} + \mu_{ij} + \beta_0 + \beta_1 FTA_{ij,t} + \beta_2 FTA_{i,-j,t}^{out} + \beta_3 FTA_{-i,j,t}^{out}\right] + \varepsilon_{ij,t}, \quad (5)$$

where: $FTA_{i,-j,t}^{out}$ – a dummy variable that takes a value equal to one if the exporting country *i* has entered into a trade agreement with any trading partner country in the APR other than country *j*, and equal to zero otherwise; $FTA_{-i,j,t}^{out}$ – a dummy variable equal to one if the importing country *j* has entered into a trade agreement with any APR country other than *i*. $FTA_{i,-j,t}^{out}$ and $FTA_{-i,j,t}^{out}$ are the effects of deviating/creating trade for the exporting and importing countries from expanding a number of trade agreements at negative/positive values β_2 and β_3.

Next, the inclusion of lag values of the component $FTA_{ij,t}$ in the model (4) allows *evaluating the accumulated effect of trade agreements* [48]:

$$X_{ij,t} = \exp\left[\pi_{i,t} + \chi_{j,t} + \mu_{ij} + \beta_0 + \sum_{n=1}^{n=3} \beta_n FTA_{ij,t-(1-n)}\right] + \varepsilon_{ij,t}, \quad (6)$$

where: *n* is a number of lags.

Integration effects in (4–6) from the implementation of trade agreements can be significantly overestimated due to the inclusion

of globalization effects. In this regard, to distinguish between the *direct effect of a trade agreement conclusion and the effect of globalization*, a set of new variables should be included in (4–6), reflecting the presence of barriers between countries *i* and *j* for each year T [40]. This method is possible only if the estimated panel includes data reflecting a value of domestic trade volumes of the analyzed countries. Based on (4–6), these dependencies take the following form:

$$X_{ij,t} = \exp\left[\pi_{i,t} + \chi_{j,t} + \mu_{ij} + \beta_0 + \beta_1 FTA_{ij,t} + \right. \\ \left. + \sum_{T=1}^{T=n} \beta_T INTL(T)_{ij}\right] + \varepsilon_{ij,t}), \quad (7)$$

$$X_{ij,t} = \exp\left[\pi_{i,t} + \chi_{j,t} + \mu_{ij} + \beta_0 + \beta_1 FTA_{ij,t} + \right. \\ + \beta_2 FTA^{out}_{i,-j,t}\left] \times \left[\beta_3 FTA^{out}_{-i,j,t} + \right.\right. \\ \left. + \sum_{T=1}^{T=n} \beta_T INTL(T)_{ij}\right] + \varepsilon_{ij,t}, \quad (8)$$

$$X_{ij,t} = \exp\left[\pi_{i,t} + \chi_{j,t} + \mu_{ij} + \beta_0 + \right. \\ + \sum_{n=1}^{n=3} \beta_n FTA_{ij,t-(1-n)} + \\ \left. + \sum_{T=1}^{T=n} \beta_T INTL(T)_{ij}\right] + \varepsilon_{ij,t}, \quad (9)$$

where: $INTL(T)_{ij}$ is a dummy variable that takes a value equal to one for international trade for each year T and zero – for intra-country trade. Due to multicollinearity with other fixed effects, it is not possible to estimate cross-country border effects for all years in the array at once, i.e. you must select a year as the base indicator.

Thus, values β_1 from (4), β_2 and β_3 from (5), $\sum \beta_n$ from (6) show *overall effect of integration*, and β_1 from (7), β_2 and β_3 from (8), $\sum \beta_n$ from (9) is a *direct effect of a trade agreement*. Respectively, difference between values β_1 from equations (4) and (7), β_2, β_3 from (5) and (8), $\sum \beta_n$ from (6) and (9) will show *globalization effect* for countries, which concluded trade agreements.

Data for evaluation. In total, there are 50 countries and economic territories in the APR whose mutual trade is reflected in the UN and World Bank statistics for 1994–2018. In accordance with the guidelines, in order to obtain unbiased estimates, it is necessary to include trade in the domestic market in the panel being evaluated. One of the ways to take into account the impact of the domestic market is to include an indicator that reflects the output of goods in the national economy with the exception of exports [40; 45]. The necessary components of this indicator were obtained from special CEPII and UN databases. However, the lack of reliable statistics describing the size of its domestic market is a limitation for including all countries and economic territories of the APR in the estimated panel. For this reason, 11 states and three economic territories (Overseas Territories of France) were excluded from further analysis: the DPRK and the APR small island economies (Vanuatu, East Timor, Kiribati, Marshall Islands, Nauru, New Caledonia, Palau, Samoa, Solomon Islands, Tuvalu, Wallis and Futuna, French Polynesia). The exclusion of these countries is not critical, since its share in trade within the APR was minuscule: 0.59% in 1994 and 0.12% in 2018. As the result, the panel included 36 countries and economic territories of the sub-global region: Australia, Brunei, Cambodia, Canada, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Fiji, Guatemala, Honduras, Hong Kong, Indonesia, Japan, Laos, Macau, Malaysia, Mexico, Mongolia, Myanmar, Nicaragua, New Zealand, Panama, Papua New Guinea, Peru, the Republic of Korea, Russia, Singapore, the United States, Thailand, Taiwan, Tonga, and Vietnam.

In accordance with the recommendations [21], data on the presence or absence of FTA and CU, which entered into force, should be used to assess the effects of integration as trade agreements, thus excluding PSA. Information from the WTO database was used to construct

Table 1. Results of the assessment to determine the effects of trade agreements between the APR countries

Variable	I		II		III		IV	
	1	2	1	2	1	2	1	2
FTA	0.105** (0.039)	**11.06/ -2.59**	0.083** (0.039)	8.61/ -2.04	0.083** (0.039)	8.63/ -2.05	–	–
FTA(exp)	–	–	0.323* (0.064)	**38.09/ -7.75**	–	–	–	–
FTA(imp)	–	–	–	–	0.319* (0.064)	**37.62/ -7.67**	–	–
FTA(cumul)	–	–	–	–	–	–	0.133** (0.055)	**14.21/ -3.27**
$INTL_{1994}$	-0.356* (0.057)	**-29.98/ 9.32**	-0.235* (0.058)	-20.92/ 6.04	-0.234* (0.058)	-20.87/ 6.03	-0.341* (0.065)	-28.88/ 8.89
$INTL_{1998}$	-0.332* (0.055)	**-28.22/ 8.64**	-0.215* (0.051)	-19.32/ 5.51	-0.216* (0.051)	-19.42/ 5.55	-0.316* (0.064)	-27.12/ 8.23
$INTL_{2002}$	-0.265* (0.051)	**-23.28/ 6.85**	-0.146* (0.047)	-13.54/ 3.70	-0.147* (0.047)	-13.65/ 3.74	-0.260* (0.052)	-22.86/ 6.70
$INTL_{2006}$	-0.121* (0.031)	**-11.40/ 3.07**	-0.103* (0.031)	-9.82/ 2.62	-0.104* (0.031)	-9.84/ 2.62	-0.115* (0.032)	-10.83/ 2.91
$INTL_{2010}$	-0.075** (0.030)	**-7.19/ 1.88**	-0.071** (0.029)	-6.85/ 1.79	-0.071** (0.029)	-6.86/ 1.79	-0.068** (0.031)	-6.56/ 1.71
$INTL_{2014}$	-0.004 (0.031)	–	-0.005 (0.030)	–	-0.005 (0.030)	–	-0.002 (0.031)	–
constant	-9.13* (0.443)	–	-0.97** (0.379)	–	-4.81* (0.599)	–	-1.34* (0.407)	–
log of quasi-maximum likelihood	-6.3E+03	–	-6.3E+03	–	-6.3E+03	–	-6.3E+03	–
Pseudo R^2	0.99	–	0.99	–	0.99	–	0.99	–

* p < 0,01, ** p < 0,05.

Robust values of standard errors are shown in brackets. Column 1 presents β coefficients and characteristics of the corresponding regression in general; column 2 shows the increase of mutual trade (%) / tariff equivalent of trade barriers (%), i. e. $\left[e^{\hat{\beta}_{FTA}} - 1\right] \times 100$ / $\left[e^{\hat{\beta}_{FTA}/(1-\theta)} - 1\right] \times 100$, with θ = 5. FTA(exp) and FTA(imp) corresponds to parameters $FTA^{out}_{i,-j,t}$ and $FTA^{out}_{-i,j,t}$ within model (8), FTA(cumul) – $\sum_{n=1}^{n=3} FTA_{ij,t-(1-n)}$. The base year for the INTL variable is 2018. Estimates of the obtained fixed effects are not given for the sake of brevity.

Source: own calculations.

dummy variables that reflect the existence of trade agreements with other countries in the sub-global region that entered into force. As the result, 102 trade agreements were selected to generate dummy variables[12]. In our study, in accordance with the recommendations, we used interval values of trade interactions with a four year lag: 1994, 1998, 2002, 2006, 2010, 2014 and 2018. The study covered 9072 observations.

[12] If the trade agreement between the countries entered into force in the first half of the current year, it was assigned to the current year, if in the second – to the next one.

Estimation results

In accordance with the described methodology, at the first stage, an estimate of direct effects (7–9) of concluding trade agreements between the APR countries was obtained by including a dummy variable of inter-country trade. Calculations showed that the APR that concluded trade agreements within the sub-global region increased mutual trade by 11.1%, while reducing trade barriers by 2.6% (*Tab. 1*).

Preliminary analysis showed that simultaneous inclusion of dummy variables $FTA^{out}_{i,-j,t}$ and $FTA^{out}_{-i,j,t}$ in dependence (8) is impossible due

to its close correlation, so these were evaluated within two dependencies (columns II and III in *Tab. 1*). According to the assessment, the expansion of trade agreements in the APR had the effect of creating trade for exporting and importing countries. On average, during the studied period, countries that carried out the proliferation of trade agreements with other APR economies exported 38.1% and imported 37.6% more, while reducing trade barriers by 7.8 and 7.7% for exports and imports, respectively.

As for the assessment of the accumulated effect of trade agreements (column IV in *Tab. 1*), applying the approach of total factor assessment [45], which implies the summation of lag and interval components, a statistically significant parameter was obtained, indicating that the APR countries that concluded trade agreements increased bilateral trade by 14.2% and reduced mutual trade barriers by 3.3%. As the result, an additional effect of the accumulated effect of trade agreements in the APR was the increase of the trade of countries, which signed agreements, by 3.2 p.p. and the reduction of trade barriers by 0.7 p.p. (the difference between the data, presented in columns 2 for IV and I in *Tab. 1*).

The inclusion of regression variables for trade between countries (INTL) for the respective years indicated the manifestation of globalization in the APR, which was primarily due to the general decline of tariff and non-tariff barriers, including in connection with the accession of most countries of the sub-global region to the WTO. As the result, over a quarter of a century, there has been a gradual reduction of trade barriers between the APR countries, which, in turn, led to a multiplication of trade in the sub-global region. However, there was the lack of statistical significance of INTL for 2014 that can be explained, on the one hand, by a slowdown of global economic growth in this period, on the other – by possible exhaustion of the contribution of globalization to the growth of trade in the APR. The results on the manifestation of the globalization effect in the APR are confirmed by the assessment of the

Table 2. Results of the assessment to determine the overall effect of integration between the APR countries

Variable	I		II		III		IV	
	1	2	1	2	1	2	1	2
FTA	0.249* (0.036)	**28.27/ -6.03**	0.131* (0.036)	13.97/ -3.22	0.131* (0.036)	13.99/ -3.22	–	–
FTA(exp)	–	–	0.506* (0.064)	**65.81/ -11.88**	–	–	–	–
FTA(imp)	–	–	–	–	0.503* (0.064)	**65.41/ -11.82**	–	–
FTA(cumul)	–	–	–	–	–	–	0.361* (0.044)	**43.44/ -8.62**
constant	-8.38* (0.455)	–	-2.04* (0.361)	–	-5.71* (0.673)	–	-11.08* (0.713)	–
log of quasi-maximum likelihood	-6.4E+03	–	-6.3E+03	–	-6.3E+03	–	-6.4E+03	–
Pseudo R^2	0.98	–	0.98	–	0.98	–	0.98	–

* $p < 0.01$.

Robust values of standard errors are shown in brackets. Column 1 presents β coefficients and characteristics of the corresponding regression in general; column 2 shows the increase of mutual trade (%) / tariff equivalent of trade barriers (%), i. e. $\left[e^{\hat{\beta}_{FTA}} - 1\right] \times 100 / \left[e^{\hat{\beta}_{FTA}/(1-\theta)} - 1\right] \times 100$, with $\theta = 5$. FTA(exp) and FTA(imp) corresponds to parameters $FTA^{out}_{i,-j,t}$ and $FTA^{out}_{-i,j,t}$ within model (8), FTA(cumul) – $\sum_{n=1}^{n=3} FTA_{ij,t-(1-n)}$. Estimates of the obtained fixed effects are not given for the sake of brevity.

Source: own calculations.

Table 3. Effects of trade integration in the APR

Trade effect	FTA		FTA(exp)		FTA(imp)		FTA(cumul)	
	1	2	1	2	1	2	1	2
Overall integration effect	28.28 [100.0]	-6.04 [100.0]	65.80 [100.0]	-11.87 [100.0]	65.40 [100.0]	-11.82 [100.0]	43.45 [100.0]	-8.63 [100.0]
Globalization effect	17.22 [60.9]	-3.45 [57.1]	27.72 [42.1]	-4.12 [34.7]	27.79 [42.5]	-4.15 [35.1]	29.23 [67.3]	-5.36 [62.1]
Effect of a trade agreement	11.06 [39.1]	-2.59 [42.9]	38.09 [57.9]	-7.75 [65.3]	37.61 [57.5]	-7.67 [64.9]	14.22 [32.7]	-3.27 [37.9]

Note: 1 – change in mutual trade (%); 2 – tariff equivalent of trade barriers (%).Square brackets indicate the contribution of the effects of globalization and the conclusion of a trade agreement to the overall effect of integration in the APR. FTA – effect of trade creation from the implementation of trade agreements; FTA(exp) – effect of trade creation for the exporting country; FTA(imp) – effect of trade creation for the importing country; FTA(cumul) – accumulated effect of implementing trade agreements.
Source: own calculations.

overall effect of trade integration between the countries of the sub-global region, excluding a dummy variable of trade between countries (*Tab. 2*).

Calculations showed that, taking into account the impact of the globalization process, the conclusion of a trade agreement between the APR countries led to the increase of their mutual exports by 28.3% and the reduction of trade barriers by 6%. Globalization also significantly multiplied the overall effect of integration with the proliferation of trade agreements with other APR countries. According to the assessment, the countries of the APR, which practice this policy, exported by 65.8% and imported by 65.4% more with the reduction of trade barriers for exports by 11.9% and by 11.8% for imports.

The assessment of the accumulated overall effect of integration in the APR indicated the increase of trade by 43.5% and the reduction in mutual trade barriers by 8.6% for countries that concluded trade agreements. These effects are comparable to estimates obtained for the global economy in an earlier period [21]. An additional overall effect of integration into the APR for 1994–2018 was the increase of trade between the countries that concluded trade agreements by 15.2 p.p. and the decrease of trade barriers by 2.6 p.p.

Thus, the obtained estimates allow us to decompose the overall effect of integration in the APR into two components: the effect of concluding a trade agreement and the effect of globalization (*Tab. 3*).

The comparison of effects showed that, for the APR countries implementing trade agreements, the overall positive effect of integration within the sub-global region was achieved mainly due to globalization, which was manifested in the liberalization of tariff and customs regulation and the reduction of non-tariff barriers. The contribution of the trade agreement effect to the overall effect of integration between the APR countries was less than that of globalization: by 1.6 times – without accumulated effects (FTA), and by 2.1 times – with it (FTA(cumul)). At the same time, it should be noted that trade agreements play a significant role in reducing trade barriers between the countries that concluded them (column 2 in *Tab. 3*). From this point of view, globalization in the APR became a necessary condition for increasing bilateral trade exchanges, and the conclusion of trade agreements played a rather auxiliary role.

However, for countries that practice the proliferation of trade agreements in the APR, the contribution of the effect from concluding a trade agreement to the overall integration

effect was predominant: approximately 58% for exporting and importing countries (FTA(exp) and FTA (imp)). At the same time, these agreements provided approximately 65% of a total reduction (100%) of bilateral trade barriers for exporting and importing countries. From this position, the estimation explains the motivation of leadership of several APR countries to increase a number of agreements, resulting in the "domino effect" in sub-global region.

Conclusion

As the center of global economic activity shifts to the Pacific region, mutual trade barriers in the APR are reduced in the context of the formation of a sub-global network of bilateral and multilateral trade agreements as part of the regionalization. As the result, currently, the vast majority of the world's functioning FTA+ is concentrated in the APR. With the trend of increasing the share of intraregional trade, the further expansion of a number of participating countries that concluded FTA+ in the APR created conditions for the emergence of "domino" and "spaghetti bowl" effects. It is likely that the regionalization process in the APR is being preserved due to the fact that, for a number of countries, the implemented trade agreements are mainly based on sensitive lists of traded industrial goods of intermediate demand, which, in the near future, will not significantly bring the region's economies closer together by reducing trade barriers for other traded goods. Despite several attempts, the creation of large trade formats in the APR, which can absorb numerous trade agreements in the region, has not yet been successful due to fundamental differences between potential participating countries. Discussion and creation of various trade formats, on the one hand, generates a process of systemic fragmentation of the sub-global trade and economic system, on the other – creates conditions for further trade liberalization, in terms of reducing non-tariff barriers, complementing the functions of the WTO.

The study revealed general patterns in the framework of integration processes in the APR using a decomposition assessment of the effects of trade agreements. Based on the synthesis of modern approaches to the assessment of gravity dependencies, it is determined that integration processes in the APR had a long-term positive impact on the trade of countries of the sub-global region that concluded trade agreements, generating the effect of creating trade for them. The obtained estimates indicated that the effect of globalization contributed to the increase of the overall integration effect in the APR. During the analyzed period, there was a gradual decrease of trade barriers between the APR countries due to the process of globalization, which caused the increase of trade in the sub-global region.

According to the obtained estimates, it was revealed that the contribution of the globalization effect to the overall integration effect between the APR countries was higher than from the conclusion of trade agreements, i.e. from regionalization. The obtained estimates provide reasons to say that the APR countries, involved in the integration processes, achieved a positive effect through the widespread practice of multilateralism, which was manifested in the general liberalization of tariff and customs regulation and the reduction of non-tariff barriers in sub-global region. As the result, globalization effects more than doubled the overall integration effect for the APR countries that concluded trade agreements. At the same time, it should be noted that trade agreements play an important role in reducing trade barriers between the countries of the APR which concluded them.

An important clarification concerns the APR countries that are engaged in the proliferation of trade agreements. For them, the effect of concluding trade agreements (regionalization), on the contrary, prevailed over the globalization effect. The resulting assessment suggests that the "spaghetti bowl" effect had a negligible impact on trade in the APR, thus explaining the practice of increasing the number of FTA+ in the sub-global region, which, in turn, was manifested in the "domino effect". From this point of view, one of the most efficient strategies for any economy in the region to expand trade with the APR countries was the conclusion of trade agreements with a wide range of countries in the sub-global region. Only in this case, the overall integration effect will be multiplied more by implementing trade agreements, rather than by globalization.

These estimations confirmed the assumption that hidden discrimination is evident in the sub-global region in relation to the APR economies that do not strengthen the liberalization of trade relations with the countries of the region by expanding the geography of concluded trade agreements. This circumstance indicates the need for the Russian side to significantly expand the geography of trade agreements, concluded with the APR countries, in order to geographically diversify foreign trade and support export-oriented sectors of the economy.

References

1. Baldwin R. The world trade organization and the future of multilateralism. *Journal of Economic Perspectives*, 2016, vol. 30, pp. 95–116. DOI: 10.1257/jep.30.1.95
2. Zagashvili V. WTO crisis as manifestation of globalization crisis. *Mirovaya ekonomika i mezhdunarodnye otnosheniya=World Economy and International Relations*, 2019, no. 6, pp. 5–12. DOI: 10.20542/0131-2227-2019-63-6-5-12 (in Russian).
3. Hummels D., Ishii J., Yi K.M. The nature and growth of vertical specialization in world trade. *Journal of International Economics*, 2001, vol. 54, pp. 75–96. DOI: 10.1016/S0022-1996(00)00093-3
4. Lancaster K. Intra-industry trade under perfect monopolistic competition. *Journal of International Economics*, 1980, vol. 10, pp. 151–175. DOI: 10.1016/0022-1996(80)90052-5
5. Whalley J. *Why Do Countries Seek Regional Trade Agreements?* NBER Working Paper 5552. April 1996. Available at: http://www.nber.org/papers/w5552.pdf (accessed: 10.04.2020).
6. Afontsev S.A. Common economic space: Conditions of the integration success. In: *Ekonomicheskaya svoboda i gosudarstvo: druz'ya ili vragi* [Economic Freedom and the State: Friends of Foes]. Ed. by A.P. Zaostrovtsev. St. Petersburg: MTsSEI «Leont'evskii tsentr», 2012. Pp. 141–155 (in Russian).
7. Dür A., Baccini L., Elsig M. The design of international trade agreements: Introducing a new dataset. *The Review of International Organizations*, 2014, vol. 9, pp. 353–375. DOI: 10.1007/s11558-013-9179-8
8. Baldwin R. *A Domino Theory of Regionalism*. NBER Working Paper 4465. September 1993. Available at: http://www.nber.org/papers/w4465.pdf
9. Baldwin R. *Multilateralising Regionalism: Spaghetti Bowls as Building Blocs on the Path to Global Free Trade*. NBER Working Paper 12545. September 2006. Available at: http://www.nber.org/papers/w12545
10. Bhagwati J. Regionalism and multilateralism: An overview. In: *New Dimensions in Regional Integration*. Ed. by J. De Melo and A. Panagariya. Cambridge University Press, 1993, pp. 22–51. DOI: 10.1017/CBO9780511628511
11. Bhagwati J. *Termites in the Trading System: How Preferential Agreements Undermine Free Trade*. New York: Oxford University Press, 2008. 139 p.
12. Cipollina M., Salvatici L. Reciprocal trade agreements in gravity models: A meta-analysis. *Review of International Economics*, 2010, vol. 18, pp. 63–80. DOI: 10.1111/j.1467-9396.2009.00877.x

13. Martin P., Mayer T., Thoenig M. The geography of conflicts and regional trade agreements. *American Economic Journal: Macroeconomics,* 2012, vol. 4, pp. 1–35. DOI: 10.1257/mac.4.4.1
14. Viner J. *The Customs Union Issue*. Oxford University Press, 2014. 256 p.
15. Frankel J.A. *Regional Trading Blocs in the World Economic System*. PIIE, 1997. 388 p.
16. Rose A., Lockwood B., Quah D. One money, one market: The effect of common currencies on trade. *Economic Policy*, 2000, vol. 15, pp. 9–45. DOI: 10.1111/1468-0327.00056
17. Wei S.-J., Frankel J.A. Open versus closed trade blocs. In: *Regionalism versus Multilateral Trade Arrangements*. Ed. by T. Ito, A.O. Krueger. NBER-EASE, 1997, pp. 119–140. Available at: http://www.nber.org/chapters/c8598.
18. Bergsten C.F., Noland M., Schott J.J. *The Free Trade Area of the Asia-Pacific: A Constructive Approach to Multilateralizing Asian Regionalism*. ADBI Working Paper 336. 2011. Available at: http://www.adbi.org/working-paper/2011/12/22/4835.fta.asia.pacific.asian.regionalism/
19. Fergusson I.F., McMinimy M.A., Williams B.R. *The Trans-Pacific Partnership (TPP): In Brief*. Congressional Research Service. February 9, 2016. Available at: https://www.fas.org/sgp/crs/row/R44278.pdf.
20. Baier S.L., Yotov Y.V., Zylkin T. On the widely differing effects of free trade agreements: Lessons from twenty years of trade integration. *Journal of International Economics*, 2019, vol. 116, pp. 206–226. DOI: 10.1016/j.jinteco.2018.11.002
21. Dai M., Yotov Y.V., Zylkin T. On the trade-diversion effects of free trade agreements. *Economic Letters*, 2014, vol. 122, pp. 321–325. DOI: 10.1016/j.econlet.2013.12.024
22. Nguyen D.B. A new examination of the impacts of regional trade agreements on international trade patterns. *Journal of Economic Integration*, 2019, vol. 34, pp. 236–279. DOI: 10.11130/jei.2019.34.2.236
23. Park I. East Asian regional trade agreements: Do they promote global free trade? *Pacific Economic Review*, 2006, vol. 11, pp. 547–568. DOI: 10.1111/j.1468-0106.2006.00334.x
24. Akamatsu K. A historical pattern of economic growth in developing countries. *Journal of Developing Economies*, 1962, vol. 1, pp. 3–25. DOI: 10.1111/j.1746-1049.1962.tb01020.x
25. Kojima K. The "Flying geese" model of Asian economic development: Origin, theoretical extensions, and regional policy implications. *Journal of Asian Economics*, 2000, vol. 11, pp. 375–401. DOI: 10.1016/S1049-0078(00)00067-1
26. Ando M. Fragmentation and vertical intra-industry trade in East Asia. *North American Journal of Economics and Finance*, 2006, vol. 17, pp. 257–281. DOI: 10.1016/j.najef.2006.06.005
27. Fujita M., Mori T. Frontiers of the new economic geography. *Papers in Regional Science*, 2005, vol. 84, pp. 377–405. DOI: 10.1111/j.1435-5957.2005.00021.x
28. Yamamoto K. A two-region model with two types of manufacturing technologies and agglomeration. *Regional Science and Urban Economics*, 2005, vol. 35, pp. 808–836. DOI: 10.1016/j.regsciurbeco.2004.10.001
29. Thorbecke W. *Enjoying the Fruits of their Labor: Redirecting exports to Asian consumers*. RIETI Discussion Paper Series 15-E-016. February 2015. Available at: http://www.rieti.go.jp/jp/publications/dp/15e016.pdf.
30. Baldwin R., Okubo T. *Networked FDI: Sales and Sourcing Patterns of Japanese Foreign Affiliates*. NBER Working Paper No. 18083. 2012. Available at: http://www.nber.org/papers/w18083.
31. Feridhanusetyawan T. *Preferential Trade Agreements in the Asia-Pacific Region*. IMF Working Paper WP/05/149. July 2005. Available at: https://www.imf.org/external/pubs/ft/wp/2005/wp05149.pdf.
32. Pomfret R. Regional integration in East Asia. In: *International Handbook on the Economics of Integration*. Vol. I (General Issues and Regional Groups). Ed. by M.N. Jovanovic, E. Elgar. Cheltenham, UK; Northampton, MA, USA, Edward Elgar Publishing Limited, 2011, pp. 377–392.
33. Petri P.A. Multitrack integration in East Asian trade: Noodle bowl or matrix? *Asia Pacific Issues*, October 2008, no. 86. Honolulu: East-West Center. Available at: http://www.eastwestcenter.org/publications/multitrack-integration-east-asian-trade-noodle-bowl-or-matrix.

34. Hiratsuka D. East Asia's economic integration and institutional cooperation for further integration. In: *International Handbook on the Economics of Integration*. Vol. I (General Issues and Regional Groups). Ed. by M.N. Jovanovic, E. Elgar. Cheltenham, UK; Northampton, MA, USA, Edward Elgar Publishing Limited, 2011, pp. 393–415.
35. Hayakawa K., Jinji N., Matsuura T., Yoshimi T. *Costs of Utilizing Regional Trade Agreements*. RIETI Discussion Paper Series 19-E-054. July 2019. Available at: https://www.rieti.go.jp/jp/publications/dp/19e054.pdf.
36. Trefler D. Trade liberalization and the theory of endogenous protection: An econometric study of U.S. import policy. *Journal of Political Economy*, 1993, vol. 101, pp. 138–160. DOI: 10.1086/261869
37. De Rosa D. Gravity model analysis. In: *Maghreb Regional and Global Integration: A Dream to Be Fulfilled*. Ed. by G.C. Hufbauer, C. Brunel. Policy Analyses in International Economics 86, PIIE, 2008, pp. 47–68.
38. Shirono K. *Real Effects of Common Currencies in East Asia*. IMF Working Papers no. 07/166. 2007. Available at: https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Real-Effects-of-Common-Currencies-in-East-Asia-21166.
39. Anderson J.E., van Wincoop E. Gravity with gravitas: A solution to the border puzzle. *American Economic Review*, 2003, vol. 93, pp. 171–192. DOI: 10.1257/000282803321455214
40. Bergstrand J.H., Larch M., Yotov Y.V. Economic integration agreements, border effects, and distance elasticities in gravity equations. *European Economic Review*, 2015, vol. 78, pp. 307–327. DOI: 10.1016/j.euroecorev.2015.06.003
41. Santos Silva J., Tenreyro S. The log of gravity. *Review of Economics and Statistics*, 2006, vol. 88, pp. 641–658. DOI: 10.1162/rest.88.4.641
42. Santos Silva J.M.C., Tenreyro S. Further simulation evidence on the performance of the Poisson pseudo-maximum likelihood estimator. *Economics Letters*, 2011, vol. 112, pp. 220–222. DOI: 10.1016/j.econlet.2011.05.008
43. Baier S.L., Bergstrand J.H. Do free trade agreements actually increase members' international trade? *Journal of International Economics*, 2007, vol. 71, pp. 72–95. DOI: 10.1016/j.jinteco.2006.02.005
44. Bacchetta M., Beverelli C., Cadot O., Fugazza M., Grether J.-M., Helble M., Nicita A., Piermartini R. *A Practical Guide to Trade Policy Analysis*. WTO and UNCTAD co-publication. 2012. 200 p. Available at: https://www.wto.org/english/res_e/publications_e/wto_unctad12_e.pdf.
45. Yotov Y.V., Piermartini R., Monteiro J.-A., Larch M. *An Advanced Guide to Trade Policy Analysis: The Structural Gravity Model*. United Nations and World Trade Organization, 2016. Available at: https://www.wto.org/english/res_e/booksp_e/advancedwtounctad2016_e.pdf.
46. Olivero M.P., Yotov Y.V. Dynamic gravity: Endogenous country size and asset accumulation. *Canadian Journal of Economics*, 2012, vol. 45, pp. 64–92. DOI: 10.1111/j.1540-5982.2011.01687.x
47. Anderson J.E., Yotov Y.V. Terms of trade and global efficiency effects of free trade agreements, 1990–2002. *Journal of International Economics*, 2016, vol. 99, pp. 279–298. DOI: 10.1016/j.jinteco.2015.10.006
48. Piermartini R., Yotov Y.V. *Estimating Trade Policy Effects with Structural Gravity*. WTO Working Papers no. 2016/10. WTO, Geneva, 2016. DOI: 10.30875/2d235948-en.

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