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NEW CHALLENGES, STRATEGIES AND TRENDS IN TOURISM, HOSPITALITY AND MANAGEMENT

Proceedings of the TMS Algarve 2018 Conference

Editores:
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José António C. Santos
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UAlg ESGHT
UNIVERSIDADE DO ALGARVE
ESCOLA SUPERIOR DE GESTÃO, HOTELARIA E TURISMO

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Roesler, V. (2014). *Posso me aposentar "de verdade"*. E agora? Curitiba: Alteridade.

Sargent, L., Lee, M., Martin, B., & Zikic, J. (2013). Reinventing retirement: new pathways, new arrangements, new meanings. *Human Relations*, 66(3), 3-21.

Shultz, K., & Wang, M. (2011). Psychological Perspectives on the Changing Nature of Retirement. *American Psychologist*, 66(3), 170-179.

Silverstein, M., & Giarrusso, R. (2011). Aging Individuals, Families, and Societies: Micro–Meso–Macro Linkages in the Life Course. In R. Setterstein Jr. & J. Angel. (Eds.). *Handbook of Sociology of Aging*. (pp.35-49). Nova York: Springer.

Spedale, S., Coupland, C., & Tempest, S. (2014). Gendered ageism and organizational routines at work: the case of day-parting in television broadcasting. *Organization Studies*, 35(11), 1585-1604.

Szinovacs, M. (2003). Contexts and pathways: retirement as institution, process and experience. In G. Adams & T. Beehr (Eds.). *Retirement*: Reasons, Processes, and Results. (pp.6-52). New York: Springer Publishing Company.

Szinovacs, M. (2013). A multilevel perspective for retirement research. In M. Wang (Ed.). *The Oxford Handbook of Retirement*. (pp.152-173). New York (USA): Oxford Library of Psychology.

Van Solinge, H. (2013). Retirement adjustment. In M. Wang (Ed.) *The Oxford Handbook of Retirement*. (pp.402-430). New York: Oxford Library of Psychology.

Wang, M., Henkens, K., & Van Solinge, H. (2011). Retirement adjustment: A review of theoretical and empirical advancements. *American Psychologist*, 66(3), 204-213.

Wang, M., & Shi, J. (2014). Psychological research on retirement. *Annu Rev Psychol.* 65, 209-33.

Wang, M., & Shultz, K. (2010). Employee retirement: a review and recommendations for future investigation. *Journal of Management*, 36(1), 172–206.

Wind, A., Van der Pas, S., Blatter, B., & Van der Beek, A. (2016). A life course perspective on working beyond retirement - results from a longitudinal study in the Netherlands. *BMC Public Health*, 16, 499.

WHO – World Health Organization. (2005). *Envelhecimento Ativo*: uma política de saúde. Brasília: Organização Pan-Americana da Saúde.

Capítulo XXIII

Engines of International Trade Growth: An Examination of Dynamic Shift-Share Analysis of the Panama Exports to EU Before and After Its Accession to AACUE

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Abstract

The general objective of this work was to characterize the evolution of trade between Panama and the European Union, specifically analyzing Panama's exports to the European Union market. To achieve the objective, the dynamic Shift-Share analysis methodology was applied to the most recent data on the Panama-European Union trade available in the Statistical Office of the European Communities, in the period corresponding to the year 2011 to the year 2016. Based on the analysis conducted, it was possible to observe that exports from Panama to the European Union experienced a slight average annual growth of 9.23%. Relatively, to the dynamic Shift-Share analysis it was possible to know that, exports from Panama to Denmark, the Netherlands and the United Kingdom registered growths due to the effects of the regional component; Cyprus and France recorded growth due to the effects of the structural component. On the other hand, exports from Panama registered decreases in Germany, Spain, Greece, Italy and Sweden due to the effects of the regional component; and for Belgium and Poland for the effect of the structural component. Regarding the products exported by Panama to the European Union only the product other vegetables, fresh or frozen, fresh fruit registered a decrease due to the effects of the structural component.

Besides the evidence shown and discuses, this research can be regarded as a significant contribution to the existing statistics on exports from Panama to the European Union and can be more broadly used as a tool to delineate corporate or national strategies to boost trade between Panamá and European Union.

Keywords: International Trade, Panama, European Union, Shift-Share analysis, AACUE.

1. Introduction

Panama is a country located in Central America, bordered on the west by Costa Rica, on the east by Colombia, on the south by the Pacific Ocean and on the north by the Caribbean Sea. It has a total area of 75, 319.8 km2 and it is administratively divided into 10 provinces and 5 indigenous districts (INEC, 2017). According to the Department of Economic and Social Affairs of the United Nations (UN DESA) for 2017, the Panamanian population was estimated at 4,098,587 inhabitants. Historically, Panama is recognized worldwide for shortening the distances of maritime trade thanks to the Panama Canal, which represents the union between the two oceans since 1914 (ACP, 2018).

In this context, the Association Agreement between Central America and the European Union (AACUE), which was signed on June 29, 2012, and which includes not only trade issues, but also cooperation and political dialogue, marked the participation of Panama mainly to strengthen the process of Central American Integration. In Panama, the commercial pillar of this Agreement entered into force as of August 2013 and in this sense, Panama has the same conditions of access to the EU market as the countries that have a Free Trade Agreement with this economic bloc, due to that eliminates a number of tariffs to the main products that Panama exports. It is important to mention that, before the validity of the commercial pillar of the AACUE, Panama belonged to the Generalized System of Preference (GSP +) that allowed many products not to pay tariffs when they entered the EU (EEAS, 2016).

In this research work will be characterized the evolution of trade between Panama and the European Union, analyzing specifically the exports of Panama to the European Union market. The objective of this study is, in a first phase, to identify the main destination countries of Panama's exports, as well as the main products exported to the EU. And in a second phase, characterize and find explanatory factors of the differentiated behavior or evolution of exports from Panama to the EU.

To achieve the proposed objective, the dynamic Shift-Share analysis methodology will be applied to the most recent data on Panama-EU trade available in the Statistical Office of the European Communities (Eurostat), in the corresponding period between 2011 and 2016. This methodology is clearly exploratory and allows the growth of a variable to be broken down into three components: national, structural and regional.

In this work, after this introduction, a review of the literature on international trade agreements between Panama and the European Union and the Shift-Share analysis is carried out, then the methodology to be applied is proposed, and then the findings of the analysis, and it ends with the presentation of the discussion and the conclusion of the investigation. This study aims to contribute to the development of existing statistics on exports from Panama to the European Union and especially relevant for

the government (wealth creation, economic growth, etc.) since it can be a tool to delineate corporate or national strategies to promote trade between Panama and the EU region.

2. Theoretical Background

2.1. International Trade Agreements Panama – European Union

According to the context of events that marked the trade relations between Panama and the EU, the most important were: the incorporation of Panama to the Central American Integration System (SICA) and the signing of the Association Agreement between the European Union and Central America (ACCUE); This is because when Panama decides to join the SICA it accepts all the commitments reached by Central America during the negotiation of the Agreement with the European Union.

It should be noted that before the signing of the AACUE, Panama belonged to the Generalized System of Preferences (GSP) of the European Union, which was established in 1971 under the recommendations of the United Nations Conference on Trade and Development (UNCTAD) with the objective of promoting the economic growth of the developing countries.

The GSP allows beneficiary countries access to reduced tariffs or the total exoneration of tariffs for manufactured and semi-manufactured products exported to the European Union (Cuyvers & Soeng, 2012). For this the EU provides three schemes of commercial benefits: GSP standard, GSP+, EBA (Everything but Arms); where each of the beneficiary countries are located according to their needs. For example, Panama was located in the GSP+ scheme; which eliminates all tariffs in more than 66% of EU tariff lines (EC, 2017).

The Association Agreement between the European Union and Central America is a broad inter-regional instrument that not only involved trade issues, but went further on issues of cooperation and political dialogue. The negotiations of this agreement ended on May 19, 2010 at the VI Summit of the European Union and Latin America and the Caribbean, which took place in Madrid, after 7 rounds of negotiations that began in 2007 and two technical meetings. However, the parties involved signed the Agreement on June 29, 2012 at a meeting of the Presidents of SICA in Tegucigalpa, Honduras.

The Association Agreement has 8 general objectives encompassed in the first and the last one, which are: strengthen and consolidate relations between the Parties through an association based on three interdependent and fundamental parts: political dialogue, cooperation and trade, based on mutual respect, reciprocity and common interest; and encourage the increase of trade and investment between the parties, taking into consideration Special and Differential Treatment to reduce the

structural asymmetries existing between the regions. The Association Agreement establishes the Association Council as an institution that supervises the fulfilment of the objectives and their application, which is formed by the representatives of the EU and representatives of each CA country; which has the power to create any subcommittee it deems necessary to fulfil its functions. It also establishes a Parliamentary association committee and a Joint Consultative Committee as an institutional framework (EEAS, 2017). As mentioned above, Political Dialogue, Cooperation and Trade are interdependent parties that constitute the fundamental pillars of the Agreement between the EU and CA.

2.2. Shift-Share Analysis

The Shift-Share Analysis was originally developed in 1942 by Daniel Creamer in his work "Shifts of manufacturing industries" (Cited in Houston, 1967). However, several other authors (Artige and Neuss, 2013; Otsuka, 2017; Fernandes, 2015; Cerejeira, 2011) maintain that the Shift-Share Analysis was developed, applied and formally introduced in 1960 by Edgar S. Dunn in his work "A statistical and analytical technique for regional analysis".

This Shift-Share analysis is a descriptive statistical tool used for the analysis of economic, regional, sector, and political variables, among others; that decomposes the growth or total decline of the variable in terms of national, industrial and competitive exchange effects (Matlaba, Holmes, McCann, & Poot, 2014). It responds mainly to the following question: What factors explain the X percent of the growth or decline (behaviour) of an economic variable?

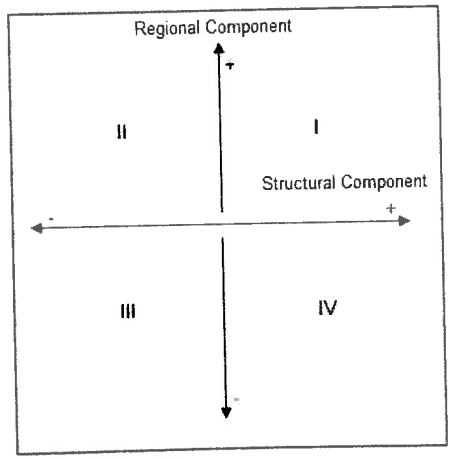
It should be noted that the first investigations in which the Shift-Share analysis was applied were aimed at analysing employment issues. However, over time the technique has been used to analyse tourism issues (Shi and Yang, 2008, Firgo and Fritz, 2016, Dogru and Sirakaya-Turk, 2017); electrical energy (Otsuka, 2017; Grossi and Mussini, 2018); International Trade (Markusen, Noponen and Driessen, 1991, Dinc and Haynes, 2005, Chiang, 2012); predictive purposes (Mayor, López, & Pérez, 2005); as well as topics on agriculture, industry, specialization and competitiveness, human development index (Fernandes, 2015), regional economy, planning, economic policies, transport (Ruiz, Peña and Jiménez, 2015), among others. The success and widespread use of Shift-Share analysis is essentially due to the fact that in the first place the data required for its application are easily accessible, simple, fast and reasonable (Stevens and Moore, 1980). Second, it has low costs, is logical, analytical and easy to interpret (Chiang, 2012).

Despite everything mentioned above, the technique of Shift-Share analysis since its introduction has been strongly criticized by several authors (Houston, 1967, Cunningham, 1969; Stevens and Moore, 1980; Bartels, Nicol and Duijn, 1982;

Loveridge and Selting, 1998, among others) mainly arguing its limitations in: lack of theoretical support content; aggregation problems; choice of variables and the year of comparison; instability of the regional or competitive component; interdependence between the structural component and the regional component (Richardson, 1978). It is important to express that, from these criticisms many authors were motivated to make revisions that concluded in the creation of extensions, reformulations and modifications to the traditional model (Sakashita, 1973; Berzeg, 1984, Patterson, 1991; Knudsen and Barff, 1991; Haynes and Dinc, 1997; Loveridge and Selting, 1998; Dinc and Haynes, 1999; Márguez, Ramajo and Hewings, 2009; Hirobe, 2015, among others) in order to eliminate the deficiencies, achieving their best adaptation for each case applied. For example: introduction of the assignment effect (Esteban-Marquillas, 1972); introduction of the effect of regional growth and the mixing effect of the regional industry (Aracelus, 1984); incorporation of information theory (Haynes and Machunda, 1987); expansion of the traditional model to consider the international effect (Sihag and Mcdonough, 1989) and inter-regional and international trade (Dinc and Haynes, 1998); introduction of probabilistic forms (Knudsen, 2000); introduction of the spatial structure (Nazara and Hewings, 2004); and the new decomposition of the Shift-Share analysis (Artige and Neuss, 2013).

The Shift-Share analysis can be represented by a graph where the axis of the abscissas represents the structural component and the one of the ordinates represents the regional component, allowing the regions under study to be classified according to the values obtained from the decomposition of their growth.

Figure 1 - Graph of analysis of the *Shift-Share* methodology



The first quadrant (I) represents the most favourable situation: the regional effect and the competitive effect present positive values. The second quadrant (II) represents an intermediate situation: the regional effect is positive (local advantages above the average) and the competitive effect is negative (unfavourable productive specialization). The third quadrant (III) represents the most unfavourable situation: both effects are negative which means that the region is not specialized and its growth is below the national average. Finally, the fourth quadrant (IV) also represents an intermediate situation contrary to that of the second quadrant: the regional effect is negative and the competitive effect is positive (Cerejeira, 2011).

2.1.1. Dynamic Model

The dynamic Shift-Share analysis is supported by the literature on the work done by Barff and Knight (1988) "Dynamic Shift-Share Analysis" in which they state that, the static Shift-Share analysis only considers the initial and final conditions of a period of time, which creates problems (for example: continuous changes), which can be eliminated by calculating the effects of the analysis annually. That is, the dynamic analysis continuously updates the variations or fluctuations (growth or decline) of the national, structural and regional components and therefore the total growth of a period of time dividing these into sub periods. Its use is important when the study period is extensive and is characterized by large variations between regional and national growth, and large changes between the sectoral and regional component.

The dynamic model uses the general formula of the Shift-Share analysis on an annual basis for the period of years under study in order to obtain a better analysis.

Adapted general formula of (2011):

$$\sum_k \Delta X_{ik} = \sum_k \left(X_{ik}^t - X_{ik}^{t-1}\right) = \sum_k \left(NX_{ik} + SX_{ik} + RX_{ik}\right) \qquad (1)$$

Where:

ΔX_{ik}: represents the variation observed in the variable X_{ik}.

X_{ik}^t: represents the economic variable X measures in the region i, in the sector k, and in the moment t.

NX_{ik}: represents the national component.

SX_{ik}: represents the sectorial or structural component.

RX_{ik}: represents the regional, competitive or differential component.

3. Methodology

In order to study the Trade Links between Panama and the EU, an analysis was made of the commercial exchange, specifically the exports, registered between Panama and each one of the 28 countries of the European Union for the period instated of 2011 to 2016. The data were obtained through the statistical source Eurostat (Statistical Office of the European Communities); since, the presentation format was more detailed than other existing statistical sources. The database extracted from Eurostat was built with the category of products with second-level codes, 52 products in total. However, for this study 46 were used that represented the products that Panama exported to the EU. To analyse exports in a more detailed way, the dynamic Shift-Share analysis methodology was applied.

4. Data Analysis And Findings

This section presents the results obtained from the application of the dynamic Shift-Share analysis to evaluate the growth and rate of change of exports from Panama to the European Union from 2011 to 2016. At first, the behaviour of the countries of EU destination of the exports of Panama was analysed as a result of the decomposition of the three components: national component (NX)[4], structural component (SX) and regional component (RX). And secondly, the behaviour of the main products exported from Panama to the European Union was analysed in consequence also of the components mentioned above.

4.1. Descriptive Analysis

From the results obtained from the descriptive analysis of Panama's general exports to the European Union (Table 1), it is concluded that, during the period from 2011 to 2016, exports recorded an average annual growth rate of 9.23%. Moreover, for the period 2011-2013 (before the validity of the AACUE), an average growth rate of 30.88% was recorded for the value of exports reached in 2014 and for the period 2014-2016 (after the AACUE) recorded an average growth rate of 14.55%. The two periods of time studied showed a growth in the value of Panama's exports; however, showed different growth rates.

Table 1 - Descriptive analysis of Panama's exports to the EU

Mean (Euro)	Median (Euro)	Standard Dev. (Euro)	Coefficient of Variation (%)	Maximum (Euro)	Minimum (Euro)	Mean Growth Rate (%)	Mean Growth Rate	
							2011-2013	2014-2016
511.080.991	509.173.883	110.327.274	21.59%	657.098.243	383.628.577	9.23%	30.88%	14.55%

[4] The term "national" in this context refers to the EU as a whole, with different countries being considered as "regions"

The Tables 2 and 3 are presented results of the analysis main destination countries and products that Panama exports to the European Union.

Table 2 - Top EU countries destinations of Panama's exports (values in Euros)

Countries	2011	2012	2013	2014	2015	2016	Total	%
BE - Belgium	19.323.985	55.174.254	61.364.847	72.648.833	49.894.161	7.693.888	266.099.968	8.68%
CY - Cyprus	421	4.192	30.966	16.614.214	16.548.269	34.171.366	67.373.217	2.20%
DE - Germany	56.609.810	17.794.424	40.863.980	44.993.822	51.582.490	23.810.735	235.655.261	7.68%
DK - Denmark	1.971.338	7.181.863	8.599.862	7.672.813	8.244.272	167.805.652	201.475.800	6.57%
ES - Spain	56.970.980	55.884.240	40.708.374	51.009.848	43.222.381	49.328.879	297.124.702	9.69%
FR - France	4.150.283	6.997.298	9.485.888	9.681.753	7.859.633	14.345.944	52.520.799	1.71%
GB - United Kingdom	18.214.329	20.547.349	35.446.845	22.172.741	26.931.843	32.618.514	155.931.621	5.09%
GR - Grecce	15.411.647	102.817.289	103.817.844	42.764.182	42.692.622	3.825.471	311.329.055	10.15%
IT - Italy	35.699.749	32.243.150	24.423.136	27.736.274	27.127.026	18.583.800	165.813.135	5.41%
NL - Netherlands	43.072.524	65.891.070	61.960.938	91.106.657	158.905.222	201.929.145	622.865.556	20.31%
PL - Poland	99.374.230	6.174.310	200.417.137	43.211.923	101.042.649	22.206.622	472.426.871	15.41%
SE - Sweden	26.193.662	29.553.301	14.532.874	18.108.296	17.593.715	3.937.354	109.919.202	3.58%
Other	6.631.830	10.681.168	55.445.552	6.818.178	12.163.949	16.210.081	107.950.758	3.52%
Total	383.628.577	410.943.908	657.098.243	454.539.534	563.808.232	596.467.451	3.066.485.945	100.00%

In order to identify the main destination countries and products that Panama exports to the European Union, a first analysis of the database was carried out using the following criterion: select all countries and products (two-digit level) representing 95% of the exports of Panama and group the remaining in a category with the name of other EU countries and other products. 12 countries and 11 products were selected, the rest of countries and products were grouped.

Table 3 - Main products exported from Panama to the EU (values in Euros)

Eurostat Code	Products	2011	2012	2013	2014	2015	2016	Total	%
3	Other vegetables, fresh or frozen, fresh fruit	126.913.340	146.156.978	158.230.390	182.099.278	139.411.221	119.886.947	872.698.154	28.46%
12	Beverages	11.334.719	26.611.296	20.697.897	19.912.636	22.452.686	23.788.120	124.797.354	4.07%
13	Stimulants and spices	6.285.297	5.282.579	4.089.657	4.628.492	6.013.005	7.268.353	33.567.383	1.09%
14	Perishable foodstuffs	39.463.546	421.56.642	36.613.256	46.176.269	42.052.950	46.974.799	253.437.462	8.26%
17	Animal feedingstuffs and foodstuff waste	1.655.536	7.287.842	2.282.739	3.390.459	7.630.134	4.047.344	26.294.054	0.86%
18	Oil seeds and oleaginous fruit and fats	3.754.575	12.493.931	16.552.308	5.509.951	9.060.637	10.028.752	57.400.154	1.87%
91	Transport equipment	160.854.252	114.005.764	304.567.156	100.751.299	218.527.739	226.992.371	1.125.698.581	36.71%
93	Other machinery apparatus and appliances, engines, parts thereof	6.739.995	9.859.763	21.186.715	14.328.399	11.520.505	26.546.790	90.182.167	2.94%
96	Leather, textiles and clothing	6.167.860	8.345.036	7.242.049	12.639.547	14.748.099	7.784.446	56.927.037	1.86%
97	Other manufactured articles	9.325.413	13.563.631	25.000.203	40.852.128	67.814.250	90.823.265	247.378.890	8.07%
99	Miscellaneous articles	2.594.125	10.551.495	5.339.785	3.038.240	3.099.625	5.986.764	30.610.034	1.00%
	Other	8.539.919	14.628.951	55.296.088	21.212.836	21.477.381	26.339.500	147.494.675	4.81%
	Total	383.628.577	410.943.908	657.098.243	454.539.534	563.808.232	596.467.451	3.066.485.945	100.00%

4.2. Application of dynamic Shift-Share analysis to EU countries Panama's export destinations

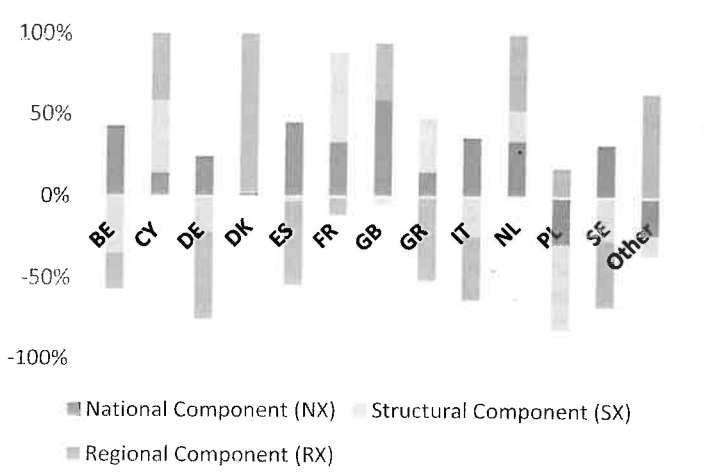
The Table 4 presents the results of the application of the dynamic Shift-Share analysis for the countries of the EU destinations of the exports of Panama. It was found that the highest growth was recorded by Denmark (€ 165.840.500) followed by the Netherlands (€ 158.772.441); Cyprus (€ 34.167.156); United Kingdom (€ 14.404.515); France (€ 10.232.094) and other countries (€ 9.578.251). On the other hand, the largest decrease was recorded by Poland (€ 77.142.835) followed by Germany (€ 32.805.262); Sweden (€ 22.256.308); Italy (17.056.542 €); Belgium (€ 11.630.097); Greece (€ 11.586.176) and Spain (€ 7.678.864).

Table 4 - Application of dynamic Shift-Share analysis to the destination countries of Panama exports (values in Euros)

Countries	Total Growth	National Component (NX)	Structural Component (SX)	Regional Component (RX)
BE - Belgium	-11.630.097	35.863.212	-29.421.015	-18.072.295
CY - Cyprus	34.167.156	4.945.804	14.961.760	14.259.592
DE - Germany	-32.805.261	15.855.977	-14.446.983	-34.214.254
DK - Denmark	165.840.500	4.153.181	994.483	160.692.836
ES - Spain	-7.678.864	39.655.608	-2.628.107	-44.706.365
FR - France	10.232.094	4.424.327	7.290.909	-1.483.142
GB - United Kingdom	14.404.515	9.583.008	-888.574	5.710.081
GR - Greece	-11.586.176	43.409.250	94.917.846	-149.913.272
IT - Italy	-17.056.542	22.589.513	-15.361.491	-24.284.564
NL - Netherlands	158.772.441	544.865.423	29.976.355	74.309.543
PL - Poland	-77.142.835	-34.709.368	-63.708.833	21.275.366
SE - Sweden	-22.256.308	20.459.745	-17.310.751	-25.405.301
Other	9.578.251	-7.877.925	-4.375.599	21.831.775

Figure 2 represents the percentage comparison of the effects of the national, structural and regional components of the dynamic Shift-Share analysis in relation to each destination country of Panama's exports.

Figure 2 - Components of dynamic Shift-Share Analysis: Panama's Export Destination Countries



As can be seen in Figure 2 that for Cyprus, Denmark and the Netherlands, both the national component and the structural and regional component were positive, contributing to the growth of Panama's exports. For France while the national and structural components were positive, they contributed to the growth of Panama's exports, the regional component registered a negative value. For other EU countries, the regional component was positive, contributing to the growth of exports from Panama; and the national and structural components presented negative values. On the other hand, for the United Kingdom the national and regional components were positive, contributed to the growth of Panama's exports and the structural component registered a negative value.

Regarding the decrease of exports from Panama to Germany, Belgium, Spain, Italy and Sweden, the national component registered a positive value; however, it was affected by the negative contribution of structural and regional components. For Greece, although the national and structural components were positive, Panama's export to this country was affected by the negative contribution of the regional component. For Poland, although the regional component registered a positive value, Panama's exports registered a decrease due to the negative contribution of the national and structural components.

Table 5 presents the results in percentages of the application of the dynamic Shift-Share analysis of the EU countries of Panama's export destinations. These rates were calculated by dividing the total growth of exports of each component of the analysis

on the initial basis, in this study, the exports of Panama registered from each of these countries in the year 2011.

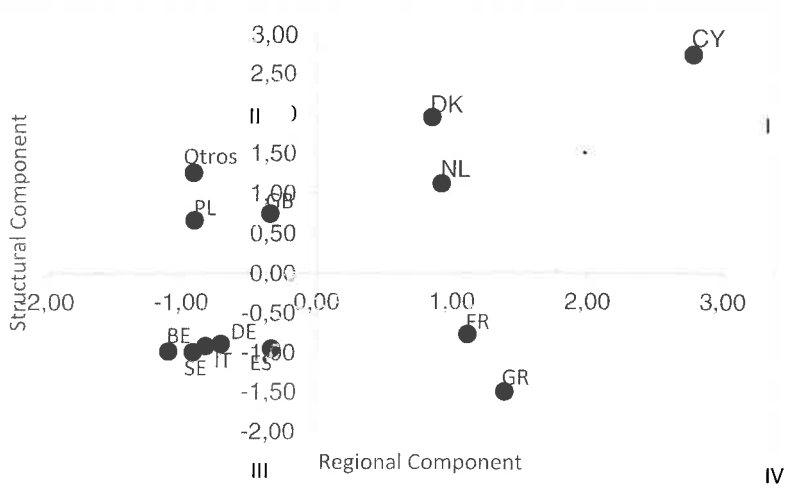
Table 5 - Application of the dynamic Shift-Share analysis to the destination countries of Panama's exports

Countries	Exchange Rate	National Component (NX)	Structural Component (SX)	Regional Component (RX)
BE - Belgium	-60.18%	185.59%	-152.25%	-93.52%
CY - Cyprus	811571.40%	117477.52%	355386.23%	338707.65%
DE - Germany	-57.97%	28.02%	-25.53%	-60.46%
DK - Denmark	8324.70%	208.48%	49.92%	8066.31%
ES - Spain	-13.49%	69.69%	-4.62%	-78.57%
FR - France	242.54%	104.88%	172.83%	-35.16%
GB - United Kingdom	79.08%	52.61%	-4.88%	31.35%
GR - Greece	-75.18%	281.67%	615.88%	-972.73%
IT - Italy	-47.86%	63.38%	-43.10%	-68.14%
NL - Netherlands	368.11%	126.33%	69.50%	172.28%
PL - Poland	-77.63%	-34.93%	-64.11%	21.41%
SE - Sweden	-84.97%	78.11%	-66.09%	-96.99%
Other	144.43%	-118.79%	-65.98%	329.20%

It was observed that the highest exchange rate was recorded by Cyprus (811571.49%), this great percentage growth was due to the fact that exports to this country at the beginning of the study were very small compared to the final value. Cyprus is followed by Denmark (8324.70%); Netherlands (368.11%); France (242.54%); other EU countries (144.43%) and the United Kingdom (79.08%). On the other hand, the lowest exchange rate was registered by Sweden (84.97%) followed by Poland (77.63%); Greece (75.18%); Belgium (60.18%); Germany (57.97%); Italy (47.86%) and Spain (13.49%).

The Figure 3 shows the characterization, in terms of structural component and regional component, of the EU countries of Panama's export destinations in the Shift-Share analysis graph.

Figure 3 - Dynamic Shift-Share analysis chart for the destination countries of Panama exports (with logarithmic base 100 Scale)



In the first quadrant (most favorable situation) of Figure 11 were Denmark (DK), Cyprus (CY) and Netherlands (NL), where the regional component and the structural component were positive; in the second quadrant there were other EU countries, Poland (PL) and the United Kingdom (GB) where the regional component was positive and the structural component was negative. In the third quadrant (most unfavorable situation) was Germany (DE), Belgium (BE), Spain (ES), Italy (IT) and Sweden (SE), both components were negative. Finally, in the fourth quadrant was France (FR) and Greece (GR) where the regional component was negative and the structural component was positive.

In summary, with the application of dynamic Shift-Share, it was obtained that from 2011 to 2016 Panama's exports were maintained at a positive exchange rate to countries such as Cyprus, Denmark, France, Netherlands, other EU countries and United Kingdom. And they decreased (negative exchange rate) to destinations such as: Belgium, Germany, Spain, Greece, Italy, Poland and Sweden.

4.3. Dynamic Shift-Share analysis applied to products exported by Panama to the EU

The Table 6 presents the results of applying dynamic Shift-Share analysis to the products exported by Panama to the EU. It was found that the highest growth of exports was registered by the product other manufactured articles (€ 81.497.852) followed by transport equipment (€ 66.138.119); other machinery devices and

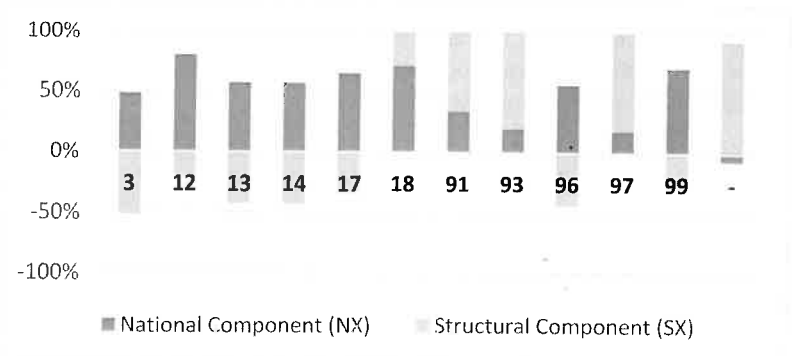
appliances (€ 19.806.795); other products (€ 17.799.582); beverages (€ 12.453.401); perishable foodstuffs (€ 7.511.253); oil seeds and oleaginous fruit and fats (€ 6.274.177); miscellaneous articles (€ 3.392.639); Animal feedingstuffs and foodstuff waste (€ 2.391.808); leather, textiles and clothing (€ 1,616,586) and stimulants and species (€ 983.056). The only product that registered a decrease in exports was other vegetables, fresh or frozen, fresh fruit (€ 7.026.393).

Table 6 - Application of dynamic Shift-Share analysis to products exported by Panama to the EU (Values in Euros)

Eurostat Code	Products	Total Growth	National Component (NX)	Structural Component (SX)
3	Other vegetables, fresh or frozen, fresh fruit	-7.026.393	99.658.889	-106.685.283
12	Beverages	12.453.401	16.454.254	-4.000.853
13	Stimulants and spices	983.056	3.812.066	-2.829.010
14	Perishable foodstuffs	7.511.253	30.311.607	-22.800.354
17	Animal feedingstuffs and foodstuff waste	2.391.808	5.036.625	-2.644.817
18	Oil seeds and oleaginous fruit and fats	6.274.177	4.498.121	1.776.056
91	Transport equipment	66.138.119	22.734.271	43.403.848
93	Other machinery apparatus and appliances, engines, parts thereof	19.806.795	3.966.612	15.840.183
96	Leather, textiles and clothing	1.616.586	7.098.145	-5.481.559
97	Other manufactured articles	81.497.852	14.830.783	66.667.069
99	Miscellaneous articles	3.392.639	5.768.896	-2.376.257
-	Other	17.799.581	-1.331.394	19.130.975

The Figure 4 represents the percentage comparison of the effects of the national, structural and regional components of the dynamic Shift-Share analysis in relation to each product exported from Panama to the EU.

Figure 4 - Static Shift-Share analysis components: products exported by Panama to the EU



As can be seen in Figure 4 for products such as: oil seeds and oleaginous fruit and fats; transportation equipment; other equipment and appliances of machinery and other manufactured articles both components, national and structural were positive, contributed to the growth of exports from Panama. For products such as: beverages; stimulants and species; perishable foodstuffs; animal feedingstuffs and foodstuff waste; leather, textiles and clothing and miscellaneous articles, the national component was positive, contributed to the growth of exports, and the structural component was negative. The union of other products registered a negative national component and a positive structural component that contributed to the growth of Panama's exports. On the other hand, the product other fresh and frozen vegetables, fresh fruits, the national and structural components registered negative values that affected exports by Panama.

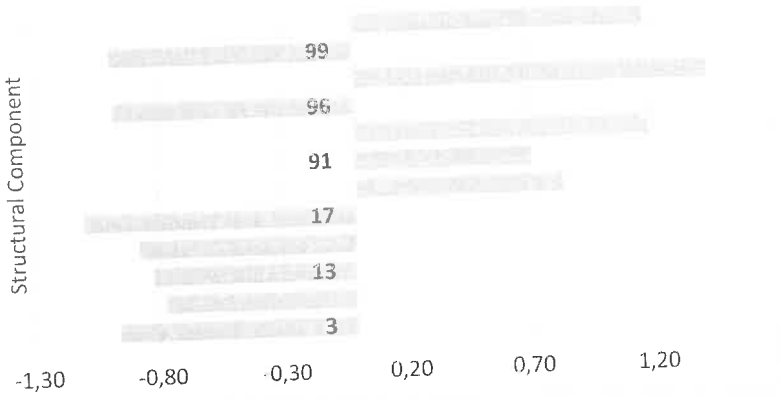
The Table 7 presents the results in percentages of the application of the dynamic Shift-Share analysis of the products exported by Panama to the EU. These rates were calculated by dividing the total export growth of each component of the analysis on the initial basis, in this study, the exports recorded by each of the products in the years 2011. It was observed that the highest exchange rate was recorded for the product: other manufactured articles (873.93%) followed by other machinery devices and appliances (293.87%); other products (208.43%); oil seeds and oleaginous fruit and fats (167.11%); animal feedingstuffs and foodstuff waste (144.47%); miscellaneous article (130.78%); beverages (109.87%); transport equipment (41.12%); leather, textiles and clothing (26.21%); perishable foods (19.03%) and stimulants and species (15.64%). The negative change rate was registered by the product other vegetables, fresh or frozen, fresh fruits with 5.54%.

Table 7 - Application of dynamic Shift-Share analysis to products exported by Panama to the EU

Eurostat Code	Products	Total Growth	National Component (NX)	Structural Component (SX)
3	Other vegetables, fresh or frozen, fresh fruit	-5.54%	78.53%	-84.06%
12	Beverages	109.87%	145.17%	-35.30%
13	Stimulants and spices	15.64%	60.65%	-45.01%
14	Perishable foodstuffs	19.03%	76.81%	-57.78%
17	Animal feedingstuffs and foodstuff waste	144.47%	304.23%	-159.76%
18	Oil seeds and oleaginous fruit and fats	167.11%	119.80%	47.30%
91	Transport equipment	41.12%	14.13%	26.98%
93	Other machinery apparatus and appliances, engines, parts thereof	293.87%	58.85%	235.02%
96	Leather, textiles and clothing	26.21%	115.08%	-88.87%
97	Other manufactured articles	873.93%	159.04%	714.90%
99	Miscellaneous articles	130.78%	222.38%	-91.60%
-	Other	208.43%	-15.59%	224.02%

The Figure 5 shows a representation of the structural component of dynamic Shift-Share analysis for the products exported by Panama to the EU.

Figure 5 - Structural component graph of the static Shift-Share analysis for exported products (with logarithmic base 100 Scale)



According to Figure 5, the product with the greatest contribution in the structural component was other manufactured articles and is followed by other machinery devices and appliances; other products; oil seeds and oleaginous fruit and fats and

transport equipment. Conversely, the product that recorded the highest negative contribution in the structural component was animal feedingstuffs and foodstuff waste, followed by miscellaneous articles; leather, textiles and clothing, other vegetables, fresh and frozen vegetables, fresh fruits; perishable food; stimulants and spices and beverages.

In summary, with the application of dynamic Shift-Share, it was obtained that from 2011 to 2016 the products exported from Panama to the EU that maintained a positive exchange rate (growth) were: beverages; stimulants and species; perishable food; animal feedingstuffs and foodstuff waste; oil seeds and oleaginous fruit and fats; transportation equipment; other machinery apparatus and appliances; leather, textiles and clothing; other manufactured articles; miscellaneous articles and other products. Only the product other vegetables fresh and frozen, fresh fruit registered a negative rate of change (decrease).

5. Discussion and Conclusions

The principal aim of this research was to identify the main destinations and products of Panama's exports to the EU. As well as characterizing and finding explanatory factors for the evolution of Panama's exports over the period 2011 to 2016, using statistical information available from the Statistical Office of the European Communities (Eurostat), and through the application of the model traditional Shift-Share analysis.

From the results obtained from the descriptive analysis of Panama's general exports to the European Union, it is concluded that, during the period from 2011 to 2016, exports recorded an average annual growth rate of 9.23%. For the period 2011-2013 (before the entry into force of the ACCUE) an average growth rate of 30.88% and for the period 2014-2016 (after the AACUE) recorded an average growth rate of 14.55%. That is, Panama's exports to the EU declined after the ACCUE was in force.

On the other hand, it is concluded that the destination countries that represent 96.48% of the exports were: Germany, Belgium, Cyprus, Denmark, Spain, France, Greece, Netherlands, Italy, Poland, United Kingdom and Sweden. And the products that represent 95.19% of the exports were: beverages; stimulants and spices; perishable foodstuffs; animal feedingstuffs and foodstuff waste; other machinery apparatus and appliances, engines, parts; leather, textiles and clothing; other manufactured articles; miscellaneous articles; other vegetables, fresh or frozen, fresh fruit; oil seeds and oleaginous fruit and fats and transport equipment.

Relatively, to the dynamic Shift-Share analysis it was possible to know that, exports from Panama in the period from 2011 to 2016, to Denmark, the Netherlands and the United Kingdom registered growth due to the effects mainly of the regional

component (growth of exports from Panama to that country); Cyprus and France recorded growth due to the effects of the structural component (growth in products exported by Panama). On the other hand, exports from Panama registered decreases in Germany, Spain, Greece, Italy and Sweden due to the effects of the regional component, Belgium and Poland registered a decrease due to the effect of the structural component.

As for the products exported by Panama to the European Union, it can be stated that the beverages; stimulants and species; perishable food; animal feedingstuffs and foodstuff waste; oil seeds and oleaginous fruit and fats; leather, textiles and clothing and miscellaneous articles registered growth due to the effects of the national component. The transport equipment; other machinery devices and appliances registered growth due to the effects of the structural component. Finally, only the product other vegetables fresh and frozen, fresh fruits registered a decrease due to the effects of the structural component.

In short, it can be expressed in accordance with the dynamic Shift Share analysis that Panama's exports to the European Union were affected by the decreases in exports to countries such as: Germany, Belgium, Spain, Greece, Italy, Poland and Sweden; and in the decrease of exports of the product other vegetables fresh and frozen, fresh fruits.

In addition, it is important to conclude that according to this analysis, the pace of growth between the years before and after the signing of the ACCUE experienced a slowdown. Most of the exports are concentrated in only 12 countries out of the 28 that make up the EU. Most of the products exported to the EU could be of re-export origin because they are not produced in Panama. And finally, that Panama makes more imports from the EU than exports to the EU. However, it is considered that since the entry of AACUE, imports into Panama from the EU have declined and, as mentioned above, Panama's exports to the EU have continued to grow. To this extent, it can be said that the validity of the trade pillar of the AACUE has allowed to balance Panama's trade balance.

Despite the fact that Panama has rich soils for agriculture, infrastructure, equipment and labour for the production of goods and services not only to meet the demands of the domestic market but also the international market stops at just keeping what is and unnecessarily import goods and services that are already owned rather than exploited. In the same manner, it can be said that people (associations, entrepreneurs, etc.), and especially the government, do not have innovative strategies and programs to promote exports, for example support to the Panamanian agro-industry which is one of the products that can be exported to the EU. In summary, it can be said that in Panama, exports are not seen as a priority /

opportunity despite the resources and infrastructure that are unequalled compared to the Central American region. It is therefore important to suggest increasing the production and processing of products of interest to the countries that make up the EU and, in that sense, to take advantage of the market that was opened by the EU-CA.

Finally, this work is presented as a contribution to existing statistics on Panama's exports to the European Union and it can be used a tool for delineating corporate or national strategies to boost trade between two regions.

References

ACP. (2018). *Autoridad del Canal de Panamá*. Obtenido de https://www.pancanal.com/eng/fn/index.html

Aracelus, F. J. (1984). An Extension of Shift-Share Analysis. *Growth and change, 15*(1), 3-8.

Artige, L., & Neuss, L. (2013). A New Shift-Share Method. *Growth and Change, 45*(4), 667-683.

Barff, R. A., & Knight, P. L. (1988). Dynamic Shift-Share Analysis. *Growth and Change, 19*(2), 1-10.

Berzeg, K. (1984). A Note on Statistical Approaches to Shift-Share Analysis. *Journal of regional science, 24*(2), 277-285.

Cerejeira, J. (2011). A Análise de Componentes de Variação (Shift-Share). En J. S. Costa, T. P. Dentinho, & P. Nijkamp, *Compêndio de Economía Regional, Vol. II - Métodos e técnicas de análise regional* (págs. 65-78). Princípia.

Chiang, S.-H. (2012). Shift-share analysis and international trade. *The Annals of Regional Science,*, 1-18.

Cunningham, N. J. (1969). A Note on the Proper Distribution of Industry. *Oxford Economic Papers, 21*(1), 122-127.

Cuyvers, L., & Soeng, R. (2012). El Impacto de los cambios en el Sistema Generalizado de Preferencias de la Unión Europea en países Asiáticos y Latinoamericanos. *Cuadernos de Economía, 31*(57), 65-85.

Dinc, M., & Haynes, K. (2005). Productivity, International Trade and Reference Area Interactions in Shift-Share Analysis: Some Operational Notes. *Growth and Change, 36*(3), 374-394.

Dinc, M., & Haynes, K. E. (1998). International Trade and Shift-Share Analysis: A Specification Note. *Economic Development Quarterly, 12*(4), 337-343.

Dogru, T., & Sirakaya-Turk, E. (2017). Engines of tourism's growth: An examination of efficacy of shift-share regression analysis in South Carolina. *Tourism Management, 58*, 2005-2014.

EC. (2017). *European Commision*. Recuperado el 29 de Noviembre de 2017, de Generalised Scheme of Preferences (GSP): https://goo.gl/1gsQ5a

EEAS. (2016). *European External Action Service*. Recuperado el 20 de Marzo de 2018, de Delegación de la Unión Europea en Costa Rica: https://goo.gl/YifVes

EEAS. (2017). *European External Action Service*. Recuperado el 19 de Diciembre de 2017, de Versión en Español del AdA: https://goo.gl/rtxiD7

Esteban-Marquillas, J. M. (1972). A reinterpretation of shift-share analysis. *Regional and Urban Economics, 2*(3), 249-255.

Fernandes, A. (2015). Dinâmicas Recentes Nas Sub-Regiões Portuguesas: Uma Aplicação Dométodo Shift-Share. *Revista Portuguesa de Estudos Regionais, 38*, 59-70.

Firgo, M., & Fritz, O. (2016). Does having the right visitor mix do the job? Applying an econometric shift-share model to regional tourism developments. *The Annals of Regional Science, 58*(3), 469-490.

Grossi, L., & Mussini, M. (2018). A spatial shift-share decomposition of electricity consumption changes across Italian regions. *Energy Policy, 113*, 278-293.

Haynes, K. E., & Dinc, M. (1997). Productivity Change in Manufacturing Regions: A Multifactor/Shift-Share Approach. *Growth and Change, 28*(2), 201-221.

Haynes, K. E., & Machunda, Z. B. (1987). Considerations in Extending Shift-Share Analysis. *Growth and Change, 18*(2), 69-78.

Haynes, K. E., & Parajuli, J. (2014). Shift-Share analysis: descomposition of spatially integrated systems. En R. J. Stimson, *Handbook of Research Methods and Applications in Spatially Integrated Social Science* (págs. 315-344). Edward Elgar Publishing, Inc.

Hirobe, T. (2015). Economic shift-share effects and spatial agglomeration regarding inter-regional disparities of labour market in the USA. *Regional Science Policy & Practice, 7*(3), 103-117.

Houston, D. B. (1967). The Shift and Share Analysis of Regional Growth: A Critique. *Southern Economic Journal, 33*(4), 577-581.

Knudsen, D. C. (2000). Shift-share analysis: further examination of models for the description of economic change. *Socio-Economic Planning Sciences, 34*, 177-198.

Lombaerde, P. D., Kingah, S., & Rettberg, A. (2014, Mayo-Agosto). Presentación: Procesos de integración política, social y económica. *Colombia Internacional*(81), pp. 19-24.

Loveridge, S., & Selting, A. C. (1998). A review and comparison of shift-share identities. *International Regional Science Review, 21*(1), 37-58.

Márguez, M. A., Ramajo, J., & Hewings, G. J. (2009). Incorporating sectoral structure into shift–share analysis. *Growth and Change, 40*(4), 594-618.

Markusen, A. R., Noponen, H., & Driessen, K. (1991). International Trade, Productivity, and U.S. Regional Job Growth: A Shift-Share Interpretation. *International Regional Science Review, 14*(1), 15-39.

Matlaba, V. J., Holmes, M., McCann, P., & Poot, a. J. (2014). Classic and Spatial Shift-Share Analysis of State-Level Employment Change in Brazil. *Applied Regional Growth and Innovation Models*, 139-172.

Mayor, M., López, A., & Pérez, R. (2005). Escenarios de empleo regional. Una propuesta basada en análisis shift-share. *Estudios de economía aplicada., 23*(3), 863-887.

Nazara, S., & Hewings, G. J. (2004). Spatial Structure and Taxonomy of Decomposition in Shift-Share Analysis. *Growth and Change, 35*(4), 476-490.

Otsuka, A. (2017). Determinants of Regional Energy Demand: Dynamic Shift-Share Analysis. *In Regional Energy Demand and Energy Efficiency in Japan*, 23-40.

P. A. Bartels, C., R. Nicol, W., & Duijn, J. J. (1982). Estimating the impact of regional policy: A review of applied research methods. *Regional Science and Urban Economics, 12*(1), 3-41.

Richardson, H. W. (1978). The state of regional economics: a survey article. *International regional science review, 3*(1), 1-48.

Ruiz, J., Peña, A. R., & Jiménez, M. (2015). Análisis de la competitividad de las exportaciones agroalimentarias españolas a nivel regional ante la crisis actual. *Revista de Estudios Regionales, 101*, 71-99.

Sakashita, N. (1973). An axiomatic approach to shift-and-share analysis. *Regional and Urban Economics, 3*(3), 263-272.

Shi, C.-Y., & Yang, Y. (2008). A Review of Shift-Share Analysis and Its Application in Tourism. *International Journal of Management Perspectives*, 21-30.

Sihag, B. S., & Mcdonough, C. C. (1989). Shift-Share Analysis: The International Dimension. *Growth and Change, 20*(3), 80-88.

Stevens, B. H., & Moore, C. L. (1980). A critical review of the literature on shift-share as a forecasting technique. *Journal of Regional Science, 20*(4), 419-437.