



## ABSTRACT DELIVERABLE 2.2

# Complete report on patterns of economic interaction between the European Union and its neighboring countries

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### ABSTRACT

Deliverable 2.2. is a complete report on patterns of economic interaction between the EU and the ENP countries, submitted for review to the European Commission in line with the structure of Annex I to the Grant Agreement. Deliverable 2.2. includes the following Working Papers: a) WP2/06: Trade activity between the EU and the ENP countries: A “reproduction” of the “core-periphery” pattern? (author: Dimitris Kallioras); b) WP2/07: The geography of trade relations between the EU and the ENP countries: Emerging patterns and policy recommendations (authors: George Petrakos, Dimitris Kallioras and Panagiotis Artelaris); c) WP2/08: The determinants of trade activity among the EU and the ENP countries (authors: Dimitris Kallioras and George Petrakos); d) WP2/09: Mind your step: The heterogeneous effect of relatedness on the diversification process in EU and ENP countries (authors: Ron Boschma and Gianluca Capone); e) WP2/10: The European firms’ export activity to the neighboring countries (authors: Anna Maria Pinna, Fabiano Schivardi and Vania Manuela Licio); f) WP2/11: Has EU trade fostered economic growth in the ENP countries? A dynamic panel analysis (authors: Ageliki Anagnostou, Dimitris Kallioras and George Petrakos); g) WP2/12: MNEs location decisions in EU neighboring countries and economic institutions (authors: Andrea Ascani, Riccardo Crescenzi and Simona Iammarino); h) WP2/13: Origin of FDI and domestic productivity spillovers: Does European FDI have a “productivity advantage” in the ENP countries? (authors: Vassilis Monastiriotis and Mireia Borrell); i) WP2/14: Location choices of multinational companies in Ukraine (authors: Daria Zvirgde, Daniel Schiller and Javier Revilla Diez); j) WP2/15: Impacting innovation behavior of foreign and domestic firms: The case of Ukraine (authors: Daria Zvirgde, Daniel Schiller and Javier Revilla Diez); k) WP 2/16: Regional inequalities in the European Neighborhood Countries: The effects of growth and integration (authors: George Petrakos, Dimitris Kallioras and Maria Tsiapa); and l) WP2/17: The effect of FDI in regional inequality in the ENPs: Evidence from Israel (authors: Michal Beenstock Daniel Felsenstein and Ziv Rubin). Together, these Working Papers inform both the empirical direction and the theoretical underpinnings of WP2 of SEARCH Project.

WP2/06 offers a rough picture regarding the EU-ENP trade relations through the utilization of aggregate trade data, at the national level, that refer to EU-ENP trade activity. Following a macro-scope perspective, the aim is to verify whether or not (or to what extent) the trade component of the ENP, and, in particular, the DCFTAs, the main policy thrust of the ENP, contributes to the “reproduction” of the well-established “core-periphery” EU spatial pattern of development to the EU-ENP economic space. To establish an argument, relations of dominance, between the EU and the ENP countries, are detected (uncovered) through the introduction and the estimation of an Index of Domination. The Index of Domination is estimated separately for exports and imports flows, taking into account the exports (imports) flows of a country under consideration to (from) a partner country and the world as well as the imports (exports) flows of the partner country from (to) the country under consideration and the world, respectively. Depending on the conditions exist, it is possible for a country under consideration to dominate over a partner country, to be dominated by a partner country or to retain a neutral relation with a partner country (i.e. neither to dominate over nor to be dominated by a partner country), in an international trade relation.

WP2/07 studies in detail the EU-ENP trade relations through the utilization of disaggregated trade data, at the national level. Adopting the notion of geography as a common denominator of the size, the direction and the composition of trade flows, clear-cut, empirically-based, responses to a series of critical research questions are provided. Which is the impact of the gradual dismantling of economic borders between the EU and the ENP countries on the level of EU-ENP trade activity? Are there any geographical limits or barriers to the expansion of the EU market area? How trade affects the production structure in the EU and the ENP countries? Do EU-ENP trade patterns lead to a sustainable relationship that will be the ground justifying further integration in the future? Are there any other competing poles of attraction for the ENP countries? To this end, taking into consideration that trade indicators are, often, the most available input for evidence-based policy-making, providing information in a rather straightforward and reliable manner (probably because trade data themselves are widely available, relatively reliable and highly disaggregated), a series of trade indicators are estimated. In particular, extremely “popular”, trade indicators such as the Index of Trade Intensity (which assesses the importance of a trade partner in terms of the overall trade profile of a corresponding economy), the Index of Revealed Comparative Advantage (which calculates the relative (dis)advantage of a country under consideration, in a specific sector, against a partner country) and the Index of Intra-Industry Trade (which matches the value of the exports of a specific sector to the value of the imports of the same specific sector, for a country under consideration) are estimated. Even though each of the aforementioned indicators may subject to many considerations, the wide variety of indicators used offers a rather comprehensive picture of the EU-ENP trade relations.

WP2/08 detects the determinants of exports flows from the ENP countries to the EU countries. Moreover, the impact that irregularities in the geographical direction of the corresponding exports flows exert on the economic performance of the ENP countries is assessed. The gravity model assesses the impact of a series of explanatory variables (such as the level of GDP, the level of population, the geographical distance, the income differences, the existence of common land borders, the colonial relations in the past) on the value of the ENP exports flows to the EU, using the Panel Least Squares estimation technique. On the basis, of the results derived from the gravity model, a Coefficient of Irregularity in the Geographical Direction of Exports Flows (CIGDEF) is estimated in order to measure the degree to which the direction of exports flows from the ENP to the EU countries is diverging or is different from that predicted by the gravity model equation. Given that the ENP countries operate under conditions of “neighborhood Europeanization”, it is important to know whether (and to what extent) the ENP exports flows to the EU are largely driven by market forces or by a set of less detectable, but existing, political type of considerations.

Irregularities in the geographical direction of exports flows indicate that there is a bias in the geographical pattern of ENP exports to the EU. Plotting the figures of the CIGDEF against the figures of the ENP countries' per capita GDP, the possible implications of geographical irregularity for the economic performance of the ENP countries are detected.

WP2/09 investigates more specifically topics such as the degree of relatedness between export products, based on co-occurrence analysis, the extent to which new export products are related to existing export products, the degree of relatedness between imports and exports, and the possible benefits that countries exports sectors can derive from related import sectors and the productive structure of trade partners. In particular, it is investigated whether the path-dependent process of product diversification is driven only by each country past productive behavior (or it is, also, driven by its relationships with other countries, given that countries are embedded in several networks through different channels and are not isolated monads). Moreover, it is investigated whether the constraints of path-dependency are (not) equally binding for all countries (since capabilities may refer to very different domains, and, moreover, while some capabilities are important only for specific (groups of) products, there are, also, general-purpose capabilities that are relevant for all products, and are, also, country-specific). The concept of relatedness is employed as basic methodological element, for such kind of analyses. In particular, in order to measure relatedness, the Proximity Indicator is used. The latter is an *ex post* measure based on co-occurrence analysis and on the assumption that if some products occur repeatedly together in the exports of countries, this is not by chance, but because they share a similar set of capabilities.

WP2/10, unlike the vast majority of empirical trade literature, conducts an analysis of the EU-ENP trade relations, following a micro-scope perspective. In particular, firm-level trade data are employed. Firms' point of view is very useful to identify and to value in which way the increased world-wide integration of real and financial market has affected the overall economy. In fact, firms perform international operations and are the core of competitiveness. Hence, in order to know how nations can generate growth and increase their exports in order to get out from the crisis and to stay in a competitive way in the international markets, the firms' perspective may help to find the best policies. The correct answer that can address countries to a growth path can be found at the microeconomic level, studying firms and their characteristics. This makes it clear why to study firms is so important in understanding what happens at the macroeconomic level. Thus, EU firms' export decisions are investigated looking at their main destinations and at the intensive and extensive margin trying to address questions on the relative importance of EU with respect to alternative trade partners. The intensive margin refers to changes in diversification among a set of goods that are commonly traded over the period reflecting the inequality between the allocations of active export lines (i.e. it relates to higher volumes of existing products and destinations). The extensive margin, instead, takes account of the effect of newly traded (or disappearing) goods on diversification (simply, it refers on new products and destinations). Furthermore, the EU firms that decide to export in the ENP countries are compared to the EU firms which do not have the ENP countries as principal partner, in order to better understand their characteristics (such as level of employment and labor productivity).

WP2/11 assesses the impact of the EU-ENP trade relations on the economic growth of the latter. Has the EU-ENP trade activity stimulated the economic growth of the ENP countries, and (if yes) to what extent? Panel Cointegration techniques to test for causality between trade and economic growth and estimate the long-run equilibrium between real GDP and trade indicators are employed. In particular, according to the procedures mentioned in the empirical literature for causality, the ENP trade-growth nexus is examined in a series of stages. The first stage is to test for the order of integration in the GDP and trade openness proxies. The second one is to employ Panel Cointegration Tests to examine the long-run relationships among

the variables. The third one is to apply Dynamic Panel Causality Tests to evaluate the short-run cointegration and the direction of causality among variables. The fourth stage is to estimate a Panel VAR (PVAR) model for the ENP area in order to assess the qualitative and quantitative impact of trade liberalization on growth. Using Panel VAR techniques gives us the benefits from both taking advantages of a VAR approach and panel data techniques. This technique combines the traditional VAR approach, which treats all the variables in the system as endogenous, with the panel-data approach, which allows for unobserved individual heterogeneity.

WP2/12 studies the patterns of investment undertaken by EU MNCs, towards a wide set of locations that are geographically close to the EU. Investigating the location strategies of MNCs is an important task as the presence of foreign-owned firms is frequently claimed to be beneficial for domestic firms. Indeed, MNCs are thought to carry more advanced technology and skills, which are asserted to benefit domestic firms through increases in both local factors' productivity and innovative performance. Therefore, the occurrence of potential effects that MNCs exert on recipient economies represents a fair justification to investigate in depth the location strategies of these international actors. Of course, MNCs global activities are important by themselves. In fact, over the last twenty years, the volume of FDI has dramatically increased and the attraction of affiliates of MNCs has reached the core of the policy agenda in most countries. The methodology of Random-Coefficient Mixed Logit model is employed to study the location behavior of EU MNCs. This methodological choice is rarely employed in previous research despite its clear advantages (over more commonly used methods). Emphasis is given to the specific role played by economic institutions in shaping the patterns of MNCs behavior. This is rarely considered in the related literature, which mostly explores agglomeration forces and locational advantages mainly conceptualized in terms of factor endowments. Nonetheless, evaluating the relevance of economic institutions for foreign investors that undertake operations in transition and developing economies appears to be a crucial area for analysis.

WP2/13 estimates the productivity spillovers accruing to domestic firms by the presence of foreign investments and examines how these spillovers vary both for groups of countries belonging to different processes with respect to EU association and separately for investments of EU and non-EU origin. The localization of these spillovers is further investigated by examining how their intensity varies at different geographical scales (national – regional) and for different types of locations (capitals versus the rest). Thus, the study covers issues, which have attracted less attention in the transition literature, relating to questions of geography and space – albeit in different dimensions. The first issue concerns the role of the origin of foreign investments for the size of the observed spillovers and the second issue concerns the geography of spillovers within the recipient countries. A standard production function approach is applied, incorporating, in addition to the two main factors of production (capital, measured by fixed assets, and labor), the share of foreign presence in the sector where each firm is located. Additionally, the model includes various controls for the different dimensions of the sample (e.g. fixed effects for countries and years). The main independent variable of the model is horizontal spillovers, which is constructed using each individual firm's reported share of foreign ownership and information on country, sector and yearly output of each firm. The model is estimated using, alternatively, Ordinary Least Squares estimation technique and Fixed Effects estimators, the latter in order to correct for the non-independence of repeated observations (firms) over time. The Fixed Effects estimation controls for unobserved firm-specific characteristics (e.g. management quality) but effectively removes from the estimating sample all those firms that only appear in the sample once.

WP2/14 utilizes primary data based on empirical enterprise survey of 153 foreign-owned firms, carried out in 3 Ukrainian regions (namely: Kyiv, Lviv, and Kharkiv), and provides empirical answers to a number of research questions. What are the motives of foreign investors coming to different regions of Ukraine? What are the region-specific factors that determine the location choices of foreign firms in Ukraine? How does regional institutional quality in Ukraine impact the propensity of foreign firms to invest in certain regions in Ukraine? The conceptual framework of the study deals not only with place-specific characteristics of the receiving country, but takes a broader look at the motives of foreign firms to invest in local capabilities in the host region, covering, also, in such a way, the management perspective of investors with regard to the value added of their managerial investment decision making. Moreover, the link between initial aims of MNCs and their strategic orientation in the host region is uncovered. This approach provides a comprehensive picture of patterns of location decisions for FDI in transition economies and more specifically in Ukraine. In particular, a thorough theoretical framework on location choices of MNCs is provided by integrating institutional and proximity components within the empirical results on traditional economic factors that attract FDI to certain localities within transition economies, specifically Ukraine, and institutional and proximity parameters of regions that attract or distract MNCs in order to determine the impact of the institutional environment and proximity advantages of certain regions on the propensity of foreign firms to invest in certain regional host markets. Data derived from the questionnaire are elaborated using a descriptive statistical analysis. Then, a Multinomial Logit Regression model, with the regional dummy being the dependent variable, is compiled in order for the probability of a foreign firm to enter each of the Ukrainian regions considered to be estimated.

WP2/15 couples the empirical survey on foreign firms operating in Ukraine with an empirical survey for the corresponding domestic firms. In particular, an empirical survey is conducted for 305 domestic firms operating in the exact same Ukrainian regions (i.e. Kyiv, Lviv, and Kharkiv). The study aims at explaining the location choices of MNCs in a transition economy, namely Ukraine, by traditional economic factors as well as by institutional quality. In particular, empirical answers to a number of research questions are provided. Are there regional, ownership and sectoral differences in the way firms innovate? What determines the innovation behavior of foreign-owned and domestic firms? How does local institutional quality impact innovative activities of firms? The study considers 3 forms of innovation: product innovation, process innovation, marketing and organizational innovation. Product innovation represents a significant change of the characteristics of a product or process or an introduction of an absolutely new good or service. Process innovation represents significant changes in the production or delivery methods. Organizational innovation leads to the implementation of new organizational practices i.e. business methods, workplace organization, and firm's external relations. Marketing innovation involves realization of new marketing methods, such as new product designs, new packaging, new ways of product placement and promotion, pricing of goods and services. Data derived from the questionnaire are elaborated using a descriptive statistical analysis. Together, with the data derived from the survey for domestic firms the corresponding data derived from the survey for foreign firms are utilized. Then, 3 Binary Logit Regression models are compiled in order to identify the absorptive capacity and the innovation behavior of the foreign and domestic firms operating in Ukraine.

WP2/16 conducts a comprehensive analysis testing for the impact of growth and integration with the EU on the regional balances of the ENP countries. First, regional inequalities in the ENP countries are estimated, in per capita GDP terms, using the Weighted (by the level of population) Coefficient of Variation. Then, capitalizing on earlier work on EU countries and examining empirically the role of growth dynamics and the international environment on regional disparities, an empirical model is compiled aiming at providing insight to a series of research questions. What are the drivers behind the increase of

regional inequalities in the ENP countries? Why the process of growth has been so unbalanced in a number of countries, especially in the ENP East? What can be expected in the future? The model uses Panel Least Squares estimation technique. WP2/17 focuses on Israel, the most developed ENP country. Providing evidence from Israel, the study investigates whether FDI polarizes regional inequality in host countries. In the absence of FDI data at the regional level, a method for estimating the effects of FDI on regional inequality is proposed. This method is presented for Israel. With the use of time series data, it is shown that regional capital stocks vary directly with the stock of national FDI and other variables, and that the sensitivity of regional capital stocks to FDI varies by region. Then, with the use of regional panel data, it is shown that regional wages vary directly with regional capital-labor ratios. In this way, a link is established between FDI and regional wages via regional capital. Finally, the factors driving regional wage inequality, as measured by the variance of regional wages, are decomposed. One of the factors is the polarizing effect of FDI on regional wages.

Each Working Paper has a Policy Notes addendum i.e. a 2-3 pages text consisting of 3 parts: a) objectives of research in reference to policy; b) scientific/research methods; and c) policy value-added. Each Policy Notes text has contributed to the preparation of the Policy Brief texts, which refer to the Tasks of Deliverable 2.2. The Policy Brief texts incorporate the policy implications of the research findings, easing, thus, the (effective) communication with the policy-makers.