

# **The impact of the environmental policies' stringency on the Mediterranean agricultural trade. New evidence from a gravity model**

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## **Extended abstract:**

The Southern and Eastern Mediterranean countries (SEMC) had always presented a disturbing record when it comes to its capacity for food self-sufficiency (Abis, 2012). Today, it is an area with structural deficits, notably in terms of cereals, and imports from 40 to 80% of its food needs according to the country. The goal of self-sufficiency seems to be unachievable for economic reasons and agro-climatic constraints (pressures on soils and water resources accentuated by climate change). Nevertheless, agriculture remains a vital sector and plays a fundamental role in the balance of The Southern and Eastern Mediterranean national economies (9 to 13.7% of GDP and employs 35 to 40% of the rural population) , especially in Turkey, Morocco and Tunisia, which have undertaken policies to revive their production and agricultural exports (olive oil, fruits and vegetables, etc.), unlike their neighbors such as Algeria and Libya who have adopted a procurement strategy on international markets to ensure their food security; which highlights the divergence in terms of agricultural and food policies within this region. As a result, the strengthening of regional and international trade agreements is essential to ensure stable and well-priced supplies of strategic food products. Nevertheless, and at regional level, the place of agriculture in the process of gradual integration of the Mediterranean basin remained peripheral in the negotiations on the creation of a Euro-Mediterranean Free Trade Area. Intra-Mediterranean agricultural trade has therefore been limited to asymmetrical bilateral agreements between the EU and the SEMCs (Emlinger, Chevassus-Lozza and Jacquet, 2010). Moreover, the structure of intra-Mediterranean agricultural trade (in particular between the SEMCs and their European partners) is very asymmetrical (Hugon, 1999) given the rapid increase in food imports by SEMCs against their weak regional export orientation and their agricultural trade deficit (with the exception of Turkey and Morocco). Given this fracture that is growing between the North and South shores of the Mediterranean, the SEMCs have turned to the Asian powers, the Gulf countries (case of Egypt, Lebanon and Syria) or the American continent (Brazil, Argentina ...) which may shift food balances and trade flows in the region since the traditional European supplier's market shares are eroded by these new entrants (Cheriet and Rastoin, 2014) (Comolet, Madariaga and Mezouaghi, 2013)

It is in this context that our work seeks to explain the determinants of this diversion of agricultural trade flows to the new emerging powers in order to decide on the impact of the liberalization of agricultural markets on

security. SEMCs. Although the calculation of the commercial potential between the Mediterranean countries and their partners (in particular the EU) through the gravity approach is the subject of an abundant literature, this work has neglected the sectoral specification, in particular the agricultural sector. On the other hand, even if the theoretical foundations of the gravity model indicate that distance serves as a resistance factor and plays a negative role on the trade contrary to the economic mass (GDP), Anderson (2000), Costantini and Crespi (2008) and Koźluk and Timiliotis (2016) show that transport costs and tariff barriers are insufficient to explain trade and that other intangible factors such as environmental policies can achieve this significantly.

In this context, our work presents the new data and the evolution of agricultural trade SEMCs in a context of multilateralism while analyzing the impact of environmental policies and their heterogeneity on agricultural trade flows between SEMCs and their main trade partners. In other words, will the inclusion of the SEMCs in globalization and the entry of new emerging powers into the Mediterranean agricultural market jeopardize agricultural trade between the SEMCs and the EU? If so, do environmental policies have an impact on the diversion of Euro-Med agricultural trade for the benefit of these new entrants, in particular the BRICS, and will they confirm the hypothesis of the pollution haven since environmental standards of the new emerging powers and those of the SEMCs are relatively less restrictive compared to the European standards? Or rather, will they support Porter's theory (Porter, 1991, Porter and Van Der Linde, 1995) which says that environmental policy tightening does stimulate green technological innovations (such as organic farming, which has recently flourished in recent years in some SEMCs)?

## **Methodology and main results:**

Using the theoretical gravity model developed by Anderson and Van Wincoop (2003) and Baier and Bergstrand (2007), we will calculate the potential of bilateral trade in the agricultural sector between SEMCs and their main trading partners (EU, Ukraine, Russia, Argentina, Brazil) over the period 2002-2014. Our choice fell on the market of fruits and vegetables.

The econometric analysis is in panel data because it makes it possible to take into account the influence of unobservable and specific characteristics of the pairs of partner countries and we apply the Poisson pseudo maximum-likelihood (PSML) estimator. Our model introduces key but often overlooked variables, such as relative distance or dummies for regional groups, and a proxy variable for environmental policy rigor. To this end, we use external trade statistics extracted from the United Nations Comtrade and Cepii databases. Other data from the FAOSTAT database and the World Development Indicators database were also used.

The special achievement of our work lies in employing an Agri-environmental policies' stringency proxy variable which has been computed in a previous work using the Partial frontier efficiency (orderalpha) window analysis with undesirable output.

The main results show that the greater the gap in terms of **environmental policies' stringency** between the reporter (exporter) and the partner (importer) country, the greater the fruits and vegetables' exports quantity is between these two countries. In other terms, less restrictive agri-**environmental** standards are a key factor for the development of the SEMCs' fruits and vegetables exports. This outcome reconfirms therefore the pollution haven hypothesis which is an extension of the traditional theory of international trade and which indicates that the standards tightening in the industrialized countries may lead the least developed countries to specialize in the production of "polluting goods".

## Main references:

- Abis, S. (2012). Commerce agricole euro-méditerranéen. Déséquilibre des échanges et différenciation des relations. *Les Notes d'alerte du CIHEAM, N° 8 1*, p. 10.
- Anderson, J., & Van Wincoop, E. (2003). Gravity with gravitas: a solution to the border puzzle. *American Economic Review*, 93(1), 170-192.
- Anderson, J.-E. (2000). Why do nations trade (so little)? *Pacific Economic Review*, 5(2), 115-293.
- Baier, S.L., Bergstrand, J.H., 2007. Do free trade agreements actually increase members' international trade? *J. Int. Econ.* 71, 72–95.
- Cheriet, F., & Rastoin, J.-L. (2014). Les échanges agricoles et agro-alimentaires des pays méditerranéens : entre géants américains et émergents asiatiques. Dans S. A. Cosimo Lacirignola, *Mediterra 2014. logistique et commerce agro-alimentaires. Un défi pour la Méditerranée* (Vol. Cosimo Lacirignola, Sébastien Abis, Pierre Blanc, dir., pp. 89-110). Paris: FRA : Presses de Sciences Po.
- Comolet, E., Madariaga, N., & Mezouaghi, M. (2013, juin). Croissance et intégration commerciale EuroMed : peut-on parler d'un coût de la non-Méditerranée ? *Macroéconomie & Développement No 7*, p. 24.
- Costantini, V., & Crespi, F. (2008). Environmental Regulation and the Export Dynamics of Energy Technologies. *Ecological Economics*(66), 447-460.
- Emlinger, C., Chevassus-Lozza, E., & Jacquet, F. (2010, janvier). Libéralisation du commerce euro-méditerranéen : les tarifs douaniers ne sont pas le principal frein aux importations européennes de fruits et légumes. *Recherches en économie et sociologie rurales, INRA*, p. 4.
- Hugon, P. (1999). Les accords de libre-échange avec les pays du Sud et de l'Est de la Méditerranée entre la régionalisation et la mondialisation. *Région et développement N°9*, pp. 5-33.
- Koźluk, T., & Timiliotis, C. (2016). *Do environmental policies affect global value chains?: A new perspective on the pollution haven hypothesis*. OECD. Paris: OECD Publishing. Récupéré sur <http://dx.doi.org/10.1787/5jm2hh7nf3wd-en>
- Porter, M. (1991). America's Green Strategy. *Scientific American*, 264(4), 168-176.
- Porter, M., & Van Der Linde, C. (1995). Toward a New Conception of the Environment- Competitiveness Relationship. *Journal of Economic Perspectives*, 9(4), 97-118.
- Silva, J.M.C.S., Tenreyro, S., 2006. The log of gravity. *Rev. Econ. Stat.* 88, 641–658.