UNIVERSITAT POLITÈCNICA DE VALÈNCIA

Factores determinantes de las Medidas No Arancelarias aplicadas al comercio agroalimentario

TESIS DOCTORAL DEL PROGRAMA EN ECONOMIA AGROALIMENTARIA

Presentada por:
Lorena Tudela Marco

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José María García Álvarez-Coque
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AGRADECIMIENTOS

Agradezo a quienes me dieron la oportunidad de explorar y sumergirme en el mundo del comercio agroalimentario. En particular al equipo de profesionales del proyecto "Sustainable agrifood systems and rural development in the Mediterranean Partner Countries" (SustainMED, FP7 European Commission), así como a los compañeros del Departamento de Economía y Ciencas Sociales de la Universitat Politècnica de València (UPV), que con su trabajo diario y contantes reflexiones se convirtieron, desde el primer día que llegue al pasillo en excelentes anfitriones para adentrarme en el mundo de la investigación.

Al Profesor Víctor Matínez Gómez e Ibtissem Taghouti, componentes del grupo de investigación que planteó las hipótesis de trabajo, por su valiosa implicación durante todo el proceso de elaboración de la tesis.

A Emma Santarremigia, Teresa López-García, Rosmery Ramos y Amparo Blázquez, por haber sido unas compañeras de trabajo y experiencas inmejorables a lo largo de esta aventura.

Al Profesor Giovani Anania, por sus aportaciones en aspectos metodológicos y por sus provechosos consejos, que sin duda enriquecieron este trabajo y contribuyeron a su proyección.

A mi codirectora María Luisa Martí Selva por sus lecturas y consejos dedicados a esta investigación.

A mi director José María García Álvarez-Coque por haberse implicado en mi crecimiento personal tanto como en mi formación profesional. Su inestimable dedicación, guía y empuje me ha trasladado el deseo de seguir debatiendo, profundizando y replanteando el mundo agroalimentario. Sin su constante orientación este trabajo no hubiese sido posible. Gracias por darme la oportunidad de ver la realidad desde tantos angulos!

Y a mi madre, Amparo por su apoyo incondicional y a mi hermana Inés por sus constantes ánimos y fantástico diseño de la portada.

RESUMEN

Las Medidas No Arancelarias (MNA) incluyen una amplia gama de políticas que los países aplican a las importaciones y exportaciones, aquellas que abarcan la inocuidad de los alimentos, la sanidad animal y la protección fitosanitaria, son conocidas como Medidas Sanitarias y Fitosanitarias (MSF). Se trata de un elemento clave en el comercio agroalimentario y un importante desafío para la normativa alimentaria y las políticas de comercio. La aplicación de las MSF es un proceso dinámico y complejo por la diversidad de actores que intervienen así como por la heterogeneidad de motivos que persiguen: políticos, sociales, económicos y ambientales. La naturaleza cambiante del comercio agroalimentario entre países y las limitaciones metodológicas y de accesibilidad a información confiable y actualizada añaden dificultad en la estimación del impacto generado por la aplicación de las MNA. En este escenario global, con cada vez más organizaciones y normativas complejas que influyen en las reglas del comercio agroalimentario es necesario conocer más de cerca su funcionamiento.

La presente investigación tiene como objetivo mejorar la comprensión del funcionamiento de las MSF en el comercio agroalimentario. La investigación cuestiona que la aplicación de MSF esté directa o exclusivamente ligada a cuestiones técnicas o relacionadas con la inocuidad de los alimentos, por lo que busca estudiar otras motivaciones que influyan en su aplicación. Se ha planteado un análisis de los factores subyacentes que afectan la implementación de las MSF a través de dos preguntas de investigación: P1) si la profusión de MNA está relacionada con la eliminación de los aranceles para el comercio, en definitiva, la existencia de sustitución de políticas entre MNA y aranceles; P2) si la aplicación de MNA está motivada por una conducta sistemática, guiada por consideraciones económicas y políticas más allá de la aplicación de notificaciones alimentarias específicas y problemas de sanidad y salud. La P1 será estudiada en los Países Sur-Este Mediterráneos (PSEM) mientras que la P2 se analizara en países de la Unión Europea (UE).

La metodología empleada para abordar la P1, sustitución de políticas, se inicia con un análisis del estado del arte, prosigue con la clasificación de los paises en función del uso de MNA y aranceles y la aplicación de modelos de

regresión múltiple para contrastar la hipótesis. Para poder comparar los aranceles y las MNA, se ha trabajado con los Equivalentes Ad Valorem (EAV) establecidos por Kee et al. (2009) y el respaldo de una amplia literatura. En la P2 la fuente de información utilizada ha sido la base de datos RASFF (Rapid Alert System for Food and Feed). La metodología seguida comenzó con la construcción de una herramienta capaz de transformar la información descriptiva obtenida del RASFF en la codificación numérica del Sistema Armonizado (SA) de comercio, para posteriormente aplicar el modelo Binomial Negativo (NB) y el modelo Binomial Negativo Inflado con Zeros (ZINB) y así identificar los factores determinantes de las notificaciones incluidas en el RASFF por parte de varios países miembros. La tesis recoge cuatro artículos elaborados a lo largo de la investigación.

Los resultados obtenidos indican que: (i) Es necesario apostar por un nuevo planteamiento de las políticas de comercio agroalimentario, más allá del ámbito económico, para reforzar la asociación entre la UE y otros países, en particular los PSEM, y entre estos últimos entre sí; (ii) Los PSEM se encuentran en etapas muy diferentes de armonización de políticas comerciales, pero en general en el comercio agroalimentario muestran un nivel de protección bajo, aunque los niveles de aplicación de MNA son variables y se reconoce sustitución de políticas en algunos sectores específicos; (iii) Se ha encontrado una relación a nivel producto entre las notificaciones registradas un año y el número de notificaciones registradas el año siguiente (dependencia de senda y efecto reputación); (iv) Existe una tendencia entre los Estados Miembros (EM) estudiados de la UE en la adopción de comportamientos comunes en la aplicación de normas alimentarias en su comercio con países terceros, como caso particular de la aplicación de MSF.

Teniendo en cuenta las diferencias entre los países estudiados y las limitaciones en el cálculo de los impactos de las MNA, la investigación ha constatado que en los PSEM la aplicación de MNA no siempre responde a dinámicas de actitudes proteccionistas. Tampoco en los EM estudiados la aplicación en frontera de normas alimentarias parece perseguir un enfoque proteccionista.

El reto para las políticas comerciales agroalimentarias se centra en incluir y gestionar la aplicación de MSF que equilibren los intereses y cubran todos los aspectos que condicionan las normas alimentarias.

RESUM

Les Mesures No Aranzelàries (MNA) inclouen una àmplia gamma de temes, aquelles que abasten la innocuïtat dels aliments, la sanitat animal i la protecció fitosanitària, són conegudes com a Mesures Sanitàries i Fitosanitàries (MSF). Es tracta d'un element clau en el comerç agroalimentari i un important repte per a les polítiques de comerç i la normativa alimentària. L'aplicació de les MSF és un procés dinàmic i complex per la diversitat d'actors que intervenen, així com per l'heterogeneïtat de motius que persegueixen: polítics, socials, econòmics i ambientals. La naturalesa canviant del comerç agroalimentari entre països i les limitacions metodològiques i d'accessibilitat a informació fiable i actualitzada afegeixen dificultat en l'estimació de l'impacte generat per l'aplicació de les MNA. En aquest escenari global, amb cada vegada més organitzacions i normatives complexes que influeixen en les regles del comerç agroalimentari és necessari conèixer de més a prop el seu funcionament.

La present investigació té com a objectiu millorar la comprensió del funcionament de les MSF en el comerç agroalimentari. La investigació qüestiona que l'aplicació de MSF estiga directa o exclusivament lligada a qüestions tècniques o relacionades amb la innocuïtat dels aliments, per la qual cosa busca estudiar altres motivacions que influeixen en la seua aplicació. S'ha plantejat una anàlisi dels factors subjacents que afecten la implementació de les MSF a través de dues preguntes de recerca: P1) Si la profusió de MNA està relacionada amb l'eliminació dels aranzels per al comerç, en definitiva, l'existència de substitució de polítiques entre MNA i aranzels; P2) Si l'aplicació de MNA està motivada per una conducta sistemàtica, guiada per consideracions econòmiques i polítiques més enllà de la aplicació de notificacions alimentàries específiques i problemes de sanitat i salut. La P1 serà estudiada als Països Sud-Est de la Mediterrània (PSEM) mentre que la P2 s'analitzés en països de la Unió Europea (UE).

La metodologia emprada per abordar la P1, la substitució de polítiques, s'inicia amb una anàlisi de l'estat de l'art, prossegueix amb la classificació per categories en funció de l'ús de MNA i aranzels i l'aplicació de models de regressió múltiple per contrastar la hipòtesi. Per a poder comparar els aranzels i les MNA, s'ha treballat amb els Equivalents Ad Valorem (EAV)

establerts per Kee et al. (2009) i amb el suport d'una àmplia literatura. A la P2 la font d'informació utilitzada ha estat la base de dades RASFF (Rapid Alert System for Food and Feed). La metodologia seguida va començar amb la construcció d'una eina que transforma la informació descriptiva obtinguda del RASFF en la codificació numèrica del Sistema Harmonitzat (SA) de comerç, per a posteriorment aplicar el model Binomial Negatiu (NB) i el model Binomial Negatiu Inflat amb Zeros (ZINB) i així identificar els factors determinants de les notificacions incloses en el RASFF per part de diversos països membres. La tesi recull quatre articles elaborats al llarg de la investigació.

Els resultats obtinguts indiquen que: (i) Cal apostar per un nou plantejament de les polítiques de comerç agroalimentari, més enllà de l'àmbit econòmic, per reforçar l'associació entre la UE i altres països, en particular els PSEM, i d'aquests últims entre sí; (ii) Els PSEM es troben en etapes molt diferents d'harmonització de polítiques comercials, però en general en el comerç agroalimentari mostren un nivell de protecció aranzelària baixa, tot i que els nivells d'aplicació de MNA són variables i es reconeix substitució de polítiques en alguns sectors específics; (iii) S'ha trobat relació, a nivell producte, entre les notificacions d'un any respecte el nombre de notificacions esperades a l'any següent (dependència de senda i efecte reputació); (iv) Hi ha una tendència entre els Estats Membres (EM) estudiats de la UE en l'adopció de comportaments comuns en l'aplicació de normes alimentàries en el seu comerç amb països tercers, com a cas particular de l'aplicació de MSF.

Tenint en compte les diferències entre els països estudiats i les limitacions en el càlcul dels impactes de les MNA, la investigació ha constatat que als PSEM l'aplicació de MNA no sempre responen a dinàmiques d'actituds proteccionistes. Tampoc als EM estudiats l'aplicació de normes alimentàries sembla perseguir un enfocament proteccionista.

El repte per a les polítiques comercials agroalimentàries es centra en incloure i gestionar l'aplicació de MNA que equilibren els interessos i cobreixquen tots els aspectes que condicionen de normes alimentàries.

ABSTRACT

The Non-Tariff Measures (NTMs) include a wide range of issues; those that cover food safety, animal health and plant protection, are known as Sanitary and Phytosanitary (SPS). SPS are a key element in the agrifood trade and a major challenge for trade policy and food safety. The application of the SPS is a dynamic and complex process due to the diversity of actors involved and the heterogeneity of objectives pursued: political, social, economic and environmental. The changing nature between countries of agrifood trade and methodology limitations and access to reliable and updated information increase the difficulty of estimating the impact generated by the application of NTMs. In this global scenario, with increasingly complex regulations and organizations that affect the rules of agricultural trade, it is necessary to know more about its operation.

This research aims to improve the understanding of the implementation of SPS in the agrifood trade. It challenges the assumption that the application of MNA is directly or exclusively linked to technical issues or others related to food safety, aiming to investigate other drivers that influence its application. An analysis of the underlying factors that affect the implementation of SPS is carried out through two research questions: Q1) whether the implementation of NTMs is related to the elimination of trade tariffs, ultimately, the existence of policy substitution between NTMs and tariff; Q2) the application of NTMs is motivated by a systematic behaviour, guided by economic considerations and policies beyond the application of specific food notifications and health problems. The Q1 is studied in the countries of the South and East Mediterranean (SEMC) while Q2 is studied at the European Union (EU).

The methodology used to address the first hypothesis, the policy substitution, begins with an analysis of the state of the art, continues with the classification into categories based on the use of NTMs and tariffs, and finally applies multiple regression models to test the hypothesis. To compare tariffs and NTMs, the research works with the Ad Valorem Equivalents (AVEs) established by Kee et al. (2009) and supported by an extensive literature. To address the second hypothesis, the source of information used is the RASFF (Rapid Alert System for Food and Feed) database. The methodology applied begins with the construction of a tool able to transform

the descriptive information from the RASFF into the numerical coding of the Harmonized System (HS) of trade, to subsequently apply the Negative Binomial model (NB) and Zero-Inflated Negative Binomial model (ZINB), thus identifying the determinants of the notifications process included in the RASFF from several Member States (MS) studied. The thesis presents the four articles written throughout the investigation.

The results indicate that: (i) there is need for pursuing a new approach in agrifood trade policies, beyond the economic sphere, to strengthen the partnership between the EU and other countries, particularly the SEMC, and among the countries belonging to the latter ; (ii) the SEMC are at very different stages of harmonization of trade policies, but in regards to agrifood trade SEMC countries generally show low level of tariff protection, although levels of implementation of NTMs are variable and substitution policy is recognized in some specific sectors; (iii) the EU MS studied show homogeneous implementation of food notifications regardless of the country of origin. At product level, a correlation has been found between the notifications applied one year and the expected number of notifications in the following years (path dependence and reputation effect); (iv) however, there is a tendency among the EU MS studied to adopt common behaviours in implementing food safety measures.

Though considering the differences among countries included in the research, as well as the limitations in the calculation of the impact of the NTMs, the research has found that in the SEMC the concepts of food security and the implementation of NTMs do not always respond to protectionist purposes and in the EU MS studied the implementation of food safety controls does not seems to follow a protectionist approach.

The challenge of the agrifood trade policy is to be able to include and manage the implementation of NTMs that balance the interests of different stakeholders and, at the same time, cover all food security aspects.

ACRÓNIMOS

AEM	Asociación Euro Mediterránea
AIC	Akaike Information Criterion
AVE	Ad Valorem Equivalents
BIC	Bayesian Information Criterion
CCM	Consejo del Comercio de Mercancías
CIAA	Confederation of the Food and Drink Industries of the EU
CIHEAM	Centre International Hautes Etudes Agronomiques Mediterraneennes
CINU	Centro de Información de las Naciones Unidas
DCFTA	Deep and Comprehensive Free Trade Area
EAAE	European Association of Agricultural Economists
EAV	Equivalentes arancelarios ad valorem
EFSA	Autoridad Europea de Seguridad Alimentaria (European Food Safety Authority)
EFTA	Asociación Europea de Libre Comercio (European Free Trade Association)
EM	Estado Miembro
ENPARD	European Neighbourhood Programme for Agriculture and Rural Development
ERDF	European Regional Development Fund
EU	European Union
FAO	Organización de las Naciones Unidas para la Alimentación y la Agricultura

GAFTA	Greater Arab Free Trade Area
GATT	Acuerdo General sobre Aranceles Aduaneros y Comercio
GDP	Gross Domestic Product
HS	Harmonized System
ICAE	International Conference of Agricultural Economists
ICTSD	International Centre for Trade and Sustainable Development
IEMed	European Institute of the Mediterranean
JCR	Journal Citation Report
LRT	Likelihood. Ratio Test
MFN	Most Favoured Nation
MNA	Medidas No Arancelarias
MS	Member State
MSF	Medidas Sanitarias y Fitosanitarias
MT	Millones de Toneladas
NA	No Available
NB	Negative Binomial
NTE	Non Tariff Equivalents
NTM	Non-Tariff Measures
OCDE	Organización de Cooperación y Desarrollo Económicos
OECD	Organisation for Economic Co-operation and Development
OMA	Organización Mundial de Aduanas

OMC	Organización Mundial del Comercio
OMS	Organización Mundial de la Salud
ONU	Organización de las Naciones Unidas
PEV	Política Europea de Vecindad
PIB	Producto Interior Bruto
PSEM	Países del Sur-Este del Mediterráneo
RASFF	Rapid Alert System for Food and Feed
SA	Sistema Armonizado de Designación y Codificación de Mercancías
SEMC	Southern and Easter Mediterranean Countries
SPS	Sanitary and Phitosanitary Measures
SUSTAINMED	Sustainable agri-food systems and rural development in the Mediterranean Partner Countries
TBT	Technical Barriers to Trade
TLC	Tratado de Libre Comercio
TRAINS	Trade Analysis and Information System
UE	Unión Europea
UMA	Unión del Magreb Árabe
UNCTAD	Conferencia de las Naciones Unidas sobre Comercio y Desarrollo
UpM	Unión por el Mediterráneo
UPV	Universitat Politècnica de València
USA	United States of America

VPM	Value of the Preference Margin
WITS	World Integrated Trade Solution
WTO	World Trade Organization
ZEMLC	Zona Euro-Mediterránea de Libre Comercio
ZINB	Zero-Inflated Negative Binomial

ÍNDICE DE CONTENIDOS

CAPÍTULO 1. INTRODUCCION Y OBJETIVOS

1. Introducción

La creciente globalización de la economía y la tendencia compartida por la mayoría de países hacia la liberalización comercial, enmarcadas dentro de los modos de producción capitalista, conforman los principales atributos que caracterizan el comercio agroalimentario actual. Desde que nació el Acuerdo General sobre Aranceles Aduaneros y Comercio (GATT)[1] en 1947, la tendencia general ha sido reducir los aranceles. Provocando que la atención se desplace hacia las Medidas No Arancelarias (MNA). No es casualidad que en el informe anual de la Organización Mundial del Comercio (OMC) del 2012, las MNA sean el tema central. ¿A qué se debe este protagonismo?.

El sector agroalimentario además de la función básica de producir alimentos tiene un papel estratégico desde el punto de vista económico, social, cultural y medioambiental. Junto con la sensibilidad creciente de los consumidores respecto a los aspectos sanitarios y relativos a la salud, el papel central de las finanzas internacionales en la economía y en las crisis económicas y los desafíos medioambientales que plantea el cambio climático, no sorprende que las normativas y regulaciones internacionales aplicables al comercio internacional de productos agroalimentarios hayan aumentado significativamente.

Ante este escenario, de comercio agroalimentario cada vez más globalizado y con una producción más fragmentada, el papel de las MNA es relevante para entender su funcionamiento. Las preocupaciones crecientes planteadas por los miembros de la OMC respecto al impacto y la influencia de las MNA relacionadas con Medidas Sanitarias y Fitosanitarias (MSF)[2] son evidentes. El 94% de las preocupaciones comerciales específicas relacionadas con medidas MSF afectan al sector agrícola (OMC, 2012).

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[1] Acuerdo General sobre Aranceles Aduaneros y Comercio abarca el comercio internacional de mercancías. El funcionamiento del Acuerdo General es responsabilidad del Consejo del Comercio de Mercancías (CCM) que está integrado por representantes de todos los países Miembros de la OMC.

[2] Medidas Sanitarias y Fitosanitarias conforman el marco normativo relacionado con la inocuidad de los alimentos, sanidad de los animales y preservación de los vegetales, se apoya en el "Codex Alimentarius" elaborado por la FAO y su intención es dar respuesta a las exigencias de atributos de calidad y seguridad alimentaria.

Los Países del Sur-Este del Mediterráneo (PSEM) y la Unión Europea (UE) no son una excepción y también para ellos las MNA adquieren un papel relevante en el proceso de integración de la zona Euro-Mediterránea. Este espacio de libre comercio está en vías de consolidación e implica un proceso gradual de apertura al libre comercio y cambio de las estructuras económicas.

La literatura sobre comercio internacional ha puesto énfasis reciente en el estudio de los factores determinantes de las MNA (Deardorf y Stern 1998; Ferrantino 2006; Kee et al., 2009). Esta investigación pretende contribuir a conocer mejor la incidencia de las MNA y favorecer la comprensión de las mismas, respondiendo a las preocupaciones comerciales en torno al uso de las MSF como herramienta proteccionista. La investigación propuesta contempla dos enfoques complementarios entre sí. Por un lado, un primer enfoque estudia la sustitución de políticas, para ello se analiza la relación entre aranceles y los equivalentes arancelarios ad valorem (EAV) estimados de las MNA. El segundo enfoque estudia los efectos de reputación en la emisión de notificaciones y analiza la armonización de medidas en materia de inocuidad de los alimentos en el proceso de aplicación de normas alimentarias en frontera, con intención de estudiar su funcionamiento y descartar o comprobar si el conjunto de normas se aplican con fines proteccionistas.

En resumen, el hilo conductor que guía esta investigación son las preocupaciones en torno al uso proteccionista de las MNA, aterrizando el estudio en las MSF en la región Euro-Mediterránea. Puede esquematizarse como sigue:

Figura 1. Líneas principales de la investigación
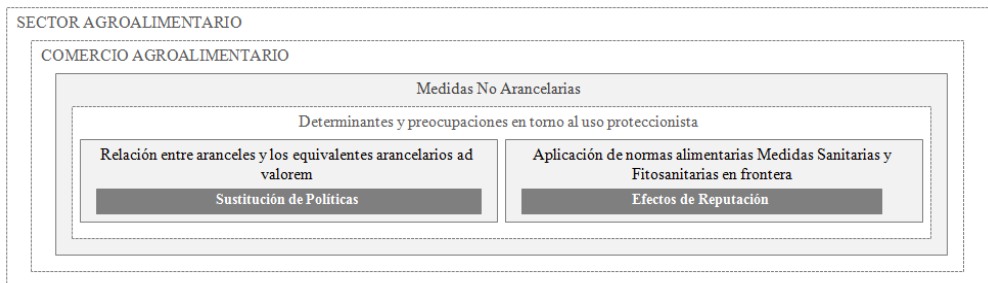
Fuente: Elaboración propia

Este primer capítulo se inicia con una descripción del contexto y del estado del arte en la materia de estudio. A continuacion, se exponen las preguntas de investigacion que marcan los principales objetivos e hipótesis de trabajo. Seguidamente se resume la metodología junto con las fuentes de información utilizadas y se expone un resumen de las publicaciones y de la estructura de la tesis. El segundo, tercer, cuarto y quinto capítulo se corresponden con los articulos publicados. El sexto capítulo reune la discusión general y finalmente el séptimo aborda las concluisones de la investigación.

1.1 Sector agroalimentario

A continuación, se describe brevemente la situación actual del sector agroalimentario a través de la relación demanda y oferta.

a) La demanda: El consumo mundial de alimentos

El consumo agroalimentario mundial está inevitablemente asociado a las transformaciones económicas, sociales y culturales a nivel global y local. Son múltiples y complejos los factores que ejercen su influencia sobre dicho consumo. Con afán de abordar el tema, es inevitable la necesidad de simplificar el escenario. En este arduo ejercicio se puede resaltar que el contexto actual se caracteriza por el auge de las economías de los países en desarrollo (destaca la creciente participación de las economías asiáticas en el mercado agroalimentario). El crecimiento sustancial de los países emergentes vinculado a los crecientes ingresos mundiales y los procesos de urbanización implican un consumo adicional**.** Ello desencadena cambios de

hábitos, estilos de vida y estructura en las dietas (Reardon y Barrett, 2000). Estas dinámicas desplazan la demanda hacia productos elaborados (Marks et al., 2004; Grunert, 2005). El último informe de la OMC revela que los productos elaborados crecieron un 6 por ciento al año entre el periodo de 1981 a 2001, frente al 3,3 por ciento en el caso de los productos primarios (OMC, 2014). Actualmente, los productos elaborados constituyen el 60 por ciento de las exportaciones agrícolas totales (OMC, 2014).

El consumo de alimentos procesados o preparados conlleva el aumento de la demanda de productos cárnicos. La expansión del sector ganadero altera la demanda habitual de cultivos. De acuerdo con el informe publicado sobre las Perspectivas Agrícolas (2014) la demanda de forrajes es un sector de rápido crecimiento. Se necesitaran casi 160 millones de toneladas de forrajes adicionales para el final de la década (OECD-FAO, 2014). Asimismo, la aparición de los biocombustibles y otros usos industriales añade una dimensión importante a la demanda de productos agrarios con fines no alimentarios, que seguirá siendo importante en el futuro (FAO, 2008).

Otros factores que afectan el comercio agroalimentario es la creciente especulación en los mercados a futuros de productos básicos, las políticas comerciales, ambientales y agrícolas nacionales y las derivadas de acuerdos internacionales.

b) La oferta: la producción mundial de alimentos

Según el Centro de Información de las Naciones Unidas (CINU) "En los últimos 50 años la producción mundial de alimentos ha aumentado de forma vertiginosa, incluso más que la tasa de la población mundial"[3].También la Organización de las Naciones Unidas para la Alimentación y la Agricultura (FAO)[4] en un informe de mercado añade "Los mercados mundiales de la mayoría de productos alimenticios se caracterizan por la abundancia de suministros y la menor incertidumbre con respecto a los últimos años" (OECD-FAO, 2014). Aunque la tasa de crecimiento de la producción se ve limitada por diversos factores, como el aumento de los costes de producción, una expansión limitada de tierras agrícolas, preocupaciones ambientales y

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[3] CINU, Ver:<*http://bit.ly/1K2LDDC #*> (Fecha de consulta: 02/02/2015)
[4] La Organización de las Naciones Unidas para la Alimentación y la Agricultura, creada el 16 de Octubre 1945 en Quebec (Canadá).

cambios en el entorno político, la oferta de productos agroalimentarios parece responder todavía, siendo las regiones en desarrollo (América Latina, África subsahariana, Europa del Este y partes de Asia) las protagonistas del crecimiento de la producción de alimentos (OECD-FAO, 2014).

Las economías de escala a nivel global han incentivado el desarrollo de cadenas de suministros con mayor coordinación vertical. También han estimulado inversiones en la innovación tecnológica y el control de las sucesivas etapas de producción, elaboración y comercialización.

1.2 Sector agroalimentario y las Medidas No Arancelarias

El sector agroalimentario representa el 6,6 por ciento de las exportaciones mundiales del comercio total de mercancías (OMC, 2014). Como consecuencia de los acuerdos preferenciales y de las reformas del comercio multilateral, la tendencia general impulsa la reducción o eliminación de los aranceles y el aumento de las MNA (Gallezot y Bureau, 2005). Sin embargo, las MNA no constituyen una novedad. La agricultura ha formado parte del ámbito del GATT desde sus inicios y las MNA han estado presentes desde su establecimiento en 1947. Desde la culminación de las negociaciones multilaterales de la Ronda de Uruguay[5] (1986-1993) y la posterior entrada en vigor en 1995 de la OMC, el sistema mundial de comercio agroalimentario se caracteriza por una reglamentación cada vez más extensa y compleja, donde el papel de las MNA es cada vez más notable. En un marco donde se tiende a exigir más transparencia de las políticas comerciales (Bifani, 2007), no es de extrañar que el comercio agroalimentario sea el que conlleva las negociaciones internacionales más controvertidas. La UNCTAD revela que en los diez años transcurridos desde la conclusión de la Ronda los requerimientos gubernamentales de pruebas y certificaciones se han multiplicado por siete (UNCTAD, 2006). Otro argumento para probar el incremento de las MNA es el aumento de las preocupaciones percibidas en la OMC a través del sistema de presentación de notificaciones sobre las MSF entre 1995 y 2010 (OMC, 2012).

Este escenario evidenció la necesidad de definir, clasificar y cuantificar las MNA en un sistema común. En 2009 el grupo de expertos sobre las MNA

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[5] La Ronda Uruguay hace referencia a la octava reunión entre países con el fin de negociar la política de aranceles y la liberalización de mercados a nivel mundial, que se abrió en Punta del Este (Uruguay)en 1986 y concluyó en Marrakech (Marruecos) el 15 de diciembre de 1993.

del Secretario General de la UNCTAD[6] acordó la siguiente definición, siendo actualmente la más acetapa:

> *"Las MNA son medidas de política, distintas de los aranceles aduaneros ordinarios, que pueden tener repercusiones económicas en el comercio internacional de bienes, modificando el volumen de las transacciones, los precios o ambas cosas."*

Esta última actualización clasifica las MNA en 16 categorías principales (Figura 2). En esta investigación se combina el análisis del efecto conjunto de las MNA con el examen específico de un tipo concreto de medidas, las medidas técnicas MSF.

Figura 2. Sistema de clasificación de las Medidas No Arancelarias

Medidas aplicadas a la importación	Medidas Técnicas	A. Medidas sanitarias y fitosanitarias (MFS)
		B. Obstáculos técnicos al comercio (OTC)
	Medidas no Técnicas	C. Inspección previa a la expedición y otras formalidades
		D. Medidas de defensa comercial
		E. Cuotas, prohibiciones, licencias no automáticas y otras medidas cuantitativas
		F. Medidas de control de precios, tasas y sobrecargas
		G. Medidas financieras
		H. Medidas que afectan la competencia
		I. Empresas comerciales del Estado
		J. Medidas comerciales relacionadas con la inversión
		K. Restricciones de distribución
		L. Restricciones en servicios de post-venta
		M. Restricciones a las compras públicas
		N. Medidas relacionadas con la propiedad intelectual
		O. Reglas de origen
Medidas aplicadas a la exportación		P. Medidas relacionadas con la exportación (incluidas las subvenciones a la exportación)

Fuente: Elaboración propia a partir de UNCTAD (2010)

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[6] Ver UNCTAD, 2012. Non-tariff measures in trade, Economic and policy issues for developing countries. Developing Countries in International Trade Studies (Medidas no arancelarias en el comercio. Problemas económicos y de política de los países en desarrollo. Estudios de los países en desarrollo en el comercio internacional).

1.3 Medidas Sanitarias y Fitosanitarias

Las Medidas Sanitarias y Fitosanitarias conforman el marco normativo relacionado con las siguientes categorías: (i) seguridad alimentaria, (ii) sanidad animal, (iii) protección de la planta, (iv) protección de las personas frente a enfermedades, y (v) proteger el territorio de otros daños causados por plagas. Se apoya en el "Codex Alimentarius" elaborado por la FAO y su intención es dar respuesta a las exigencias de atributos de calidad y seguridad alimentaria.

Los cambios en el comercio internacional conllevan un aumento de requisitos sanitarios y fitosanitarios principalmente en alimentos frescos y elaborados (en general listos para el consumo). Alimentos que están más expuestos a formas de contaminación microbiológica que los productos secos. A este fenómeno, se suma la exigencia cada vez mayor de los consumidores por información fidedigna y oportuna sobre los productos que adquiere (Caswell y Mojduszka, 1996); junto con la preocupación creciente por la trazabilidad, la prevención de riesgos y la presencia de residuos de síntesis, lo que se traduce en nuevos y mayores requisitos sanitarios y fitosanitarios.

Esta situación ha potenciado que la preocupación por las normas alimentarias gane cada vez más peso y espacio en las negociaciones y debates nacionales e internacionales. Y provoca que el debate no se acote a los foros y organizaciones responsables de la salud y la producción de alimentos (OMS[7] y FAO) sino que sea un tema controvertido y de debate en las organizaciones mundiales relacionadas con el comercio (OMC, UNCTAD[8]). Esto explica porqué las normativas alimentarias son un tema que adquiere creciente complejidad.

El Acuerdo sobre MSF[9] recoge estas preocupaciones relacionadas con la inocuidad de los alimentos (OMC, 1998). En virtud de este acuerdo, el

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[7] La Organización Mundial de la Salud (OMS) creada el 7 de abril de 1948, es la autoridad directiva y coordinadora de la acción sanitaria en el sistema de las Naciones Unidas.
[8] La Conferencia de las Naciones Unidas sobre Comercio y Desarrollo (UNCTAD) creada en 1964, por iniciativa de la ONU para promover el comercio de los países en desarrollo, estabilizar los precios de sus exportaciones y eliminar las barreras de entrada a los países industriales.
[9] El Acuerdo sobre la Agricultura de la Ronda de Uruguay entró en vigor al quedar establecida la OMC el uno de enero de 1995.

compromiso principal que deben cumplir los países miembro de la OMC es proporcionar informacion anticipada[10] sobre la intención de introducir una modificación o una nueva MSF que pueda afectar significativamente al comercio.[11]

En este escenario global, con cada vez más organizaciones y normativas complejas abarcando la extensión de las normas sobre inocuidad y calidad de los alimentos es necesaria una clara comprensión de las MSF, lo que incluye establecer un equilibrio adecuado entre las MSF y los objetivos sanitarios y fitosanitarios, para evitar que restrinjan el comercio o excedan los criterios de referencia. Debe tenerse en cuenta, a su vez, que la adopción de estos acuerdos se ajuste a las necesidades sociales y no interfiera en las opciones democráticas legítimas de los ciudadanos.

1.4 Proteccionismo y Medidas No Arancelarias

En general se entiende que los Estados recurren a la aplicación de MNA como instrumentos eficaces para hacer frente a las desigualdades económicas y sociales y para alcanzar objetivos deseables de políticas públicas, no susceptibles de lograrse por el libre juego de las fuerzas del mercado (Bagwell y Staiger, 2001; Staiger y Sykes, 2011).

No obstante, parte de la literatura coincide en afirmar que, como consecuencia de la reducción de los aranceles, las MNA han contribuido a imponer nuevas restricciones sobre el comercio agroalimentario (Hoekman y Nicita, 2011; Lloyd et al., 2010; Manole y Spatareanu, 2010). En este contexto, distintos autores argumentan, además, que las MNA más estrictas provocan repercusiones desiguales según los países, según su nivel de desarrollo (Jaffee y Henson, 2004; Anders y Caswell, 2009). A su vez, los acuerdos MSF han suscitado preocupación por la posibilidad de que a través de estas MNA se interfiera en las opciones democráticas legítimas de los ciudadanos de los países miembros de la OMC (Howse, 2000; Sykes, 2002).

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[10] El artículo 7 y el Anexo B del Acuerdo MSF, recoge las Obligaciones de transparencia del Acuerdo MSF, donde se exige que los Miembros notifiquen aquellas medidas cuyo contenido no es sustancialmente el mismo que el de una norma internacional, directriz o recomendación, y/o cuando la medida pueda tener un impacto significativo sobre el comercio.

[11] El Sistema de gestión de la información MSF permite acceder a los documentos y registros pertinentes al Acuerdo sobre la Aplicación de MSF de la OMC. Para obtener más información: <*http://spsims.wto.org/*> (Fecha de consulta: 27/07/2015).

Es evidente que estas medidas desempeñan diversas funciones y obedecen a múltiples motivos políticos, sociales y ambientales que, además, se encuentran en constante transformación. Por tanto, el uso de las MNA responde a varios motivaciones. Y la naturaleza cambiante del comercio agroalimentario entre unos países y otros dificulta su comparación. Además existen limitaciones metodológicas y de accesibilidad a información confiable y actualizada que añaden dificultad en la estimación del impacto generado por la aplicación de las MNA. Ello es debido, en parte, a la falta de transparencia en el uso de las MNA y su complejidad intrínseca. Y en parte también depende de la precisión de los modelos econométricos y la dificultad de estimar un equivalente arancelario referido a una medida concreta. La realidad es una amplia y compleja gama de medidas con funciones compartidas que provocan numerosos impactos.

No sorprende, por tanto, que el uso de MNA suscite preocupación respecto a los intereses que persiguen o los impactos que generan en esferas tan sensibles como la sanitaria y fitosanitaria ¿Están orientadas a corregir fallos del mercado y proteger a los consumidores? ¿Podrían transformarse en formas encubiertas de proteccionismo? No siempre resulta sencillo distinguir las reglamentaciones legítimas de las que se consideran proteccionistas.

En principio, en el acuerdo MSF se exige que las MNA estén basadas en principios científicos[12]. No obstante, el tema transciende el mero aspecto técnico de asegurar inocuidad, valor nutritivo, evitar adulteración y contaminación, para entrar en ámbitos multidimensionales con implicaciones económicas, comerciales, sociales, culturales, ambientales, afectando las relaciones entre actores involucrados (productores, distribuidores, consumidores...etc.).

1.5 Políticas comerciales y espacio Euro-Mediterráneo

La UE y los PSEM se encuentran sumergidos en la dinámica global de integración regional y han experimentado la expansión de acuerdos en comercio agroalimentario. La proximidad geográfica de los PSEM a la UE y

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[12] Los Acuerdos MSF exigen que los Miembros de la OMC, al elaborar y aplicar medidas, establezcan un equilibrio entre el logro de los objetivos legítimos que persiguen y la restricción del comercio. En concreto, que estén basadas en principios científicos y no se mantengan sin testimonios científicos suficientes y que no discriminen de maneraarbitraria o injustificada entre los Miembros en que prevalezcan las mismas condiciones.

su posición estratégica ofrece a la comunidad mediterránea una ventaja competitiva, aunque está ensombrecida por el drama de la inestabilidad política, en algunos casos de la guerra. Junto con los vínculos históricos entre ambos lados del Mediterráneo, el interés común en consolidar un área mediterránea estable explicaría la demanda de acuerdos de integración entre las dos orillas. Así, reconocía la OMC (2004) en el Examen de las Políticas Comerciales de la Comunidad Europea "Los acuerdos Euro-mediterráneos concluidos con ocho países mediterráneos siguen siendo la base para intensificar la cooperación bilateral con miras a la creación de una zona de paz, estabilidad y prosperidad compartida". Desde los años 60 se sucedieron numerosas conferencias Euro-Mediterráneas y se activaron las primeras políticas de cooperación basadas en acuerdos bilaterales preferentes. Coincidiendo con el creciente interés de la UE por ejercer una política exterior, durante la década de los 90 se potenció esta tendencia y hasta ahora han seguido sumándose acuerdos que apuestan por incrementar los flujos comerciales en la región mediterránea. No es objeto de esta investigación profundizar en tales acuerdos y únicamente se exponen los más relevantes para, a partir de ellos, entender la evolución de las políticas y enmarcar el análisis de la sustitución entre medidas arancelarias y no arancelarias que se realiza en la presente tesis.

La mayor parte de la literatura coincide en destacar tres eventos que marcaron puntos de inflexión en la relación entre la UE y los PSEM:

- En primer lugar, en noviembre de 1995, los quince Estados Miembros (EM) de la UE y 12 países del Mediterráneo[13] iniciaron el "Proceso de Barcelona". Los participantes destacaron la importancia de establecer "Un desarrollo económico y social sostenible y equilibrado haciendo de la cuenca mediterránea un ámbito de dialogo, intercambio y cooperación que garantice paz, la estabilidad y la prosperidad" (Declaración de Barcelona, 1995). El objetivo central del proyecto de la Asociación Euro Mediterránea (AEM)[14] era, junto con la asistencia técnica y financiera, construir un espacio

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[13] Los países mediterráneos en ese momento eran Egipto, Líbano, Siria, Jordania, Turquía, Malta, Chipre, Israel, Marruecos, Túnez, Argelia y la Autoridad Palestina.
[14] La iniciativa de cooperación e integración entre los quince EM de la UE y doce países del sur y del este del Mediterráneo que recoge el conjunto de tratados internacionales entre la UE y los PSEM.

económico integrado. El instrumento principal ha sido la creación de una Zona Euro-Mediterránea de Libre Comercio (ZEMLC)[15] para el 2010 mediante la eliminación progresiva y asimétrica de aranceles. Para ello se estableció un marco de negociaciones bilaterales entre la UE y los países mediterráneos y estos últimos entre sí, que ha desembocado en aspectos relacionados con la armonización de normas, en algunos países con los que se negocia la integración profunda y general (Marruecos y Túnez). Este primer paso hacia la implementación concreta suscitó grandes esperanzas. Sobre todo para impulsar un proceso de desarrollo económico y social sostenible en el sur del Mediterráneo (Martín, 2003).

- En segundo lugar, en mayo de 2004, la nueva EU ampliada planteó una nueva Política Europea de Vecindad (PEV)[16] con intención de coordinar las relaciones de la UE con sus antiguos y nuevos vecinos del Sur y del Este. La PEV en el Mediterráneo aglutinó los acuerdos existentes y la cooperación práctica ya establecida por la AEM (Bataller y Jordán, 2004).

- Finalmente, en julio de 2008, desde la Comisión de la UE dentro del marco de la PEV y con el ánimo de impulsar el proceso de integración nace la Unión por el Mediterráneo (UpM)[17]. La UpM pretende afianzar un paso adelante y seguir avanzando en la integración en las relaciones Euro-Mediterráneas (Comisión Europea, 2008).

Como resultado de este proceso se han establecido numerosos acuerdos bilaterales Euro-Mediterráneos y la implantación de la ZEMLC ha concurrido en un incremento de los flujos comerciales entre la UE y los

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[15] El Proceso de Barcelona abarca también temas como la cooperación técnica y financiera, la reforma de las reglamentaciones, las compras públicas y la armonización de normas.

[16] Plan de Acción Conjunto de la Política Europea de Vecindad se dirige a aquellos países vecinos de la UE en su doble vertiente de frontera Sur (países mediterráneos beneficiarios del Proceso de Barcelona) y frontera Este (Ucrania, Moldavia, Bielorrusia, Georgia, Armenia y Azerbaiyán).

[17] La UpM agrupa a 43 países (los países de la UE y los países mediterráneos: Argelia, Egipto, Jordania, Israel, Líbano, Marruecos, Autoridad Palestina, Siria, Túnez y Turquía. Tienen el estatus de observadores del proceso UpM: Libia, Mauritania, Bosnia-Herzegovina, Mónaco y Montenegro). Abarca a más de 750.000.000 de habitantes de países del Mediterráneo Sur y de la UE.

PSEM, aunque cabe mencionar que en menor medida que los flujos comerciales de los PSEM con el resto del mundo (Martín, 2003). Bajo el marco de los acuerdos bilaterales de la ZEMLC también se han establecido acuerdos de libre comercio entre los países del Sur del Mediterráneo (enfoque Sur-Sur). Turquía ha destacado como potencia comercial en la región, y como país candidato para acceder a la UE. Se han firmado acuerdos de asociación con Jordania, Líbano, Túnez, Marruecos, Egipto e Israel. Las negociaciones con Siria prácticamente finalizaron, pero se han visto truncadas por el conflicto bélico en Oriente Próximo.

Paralelamente al desarrollo de este proceso de integración Euro-Mediterráneo se han firmado Tratados de Libre Comercio (TLC) con los países del sur como protagonistas, como el Proyecto de la Unión del Magreb Árabe (UMA)[18], el Acuerdo de Agadir[19] y el Acuerdo General de Libre Comercio Árabe (más conocido por sus siglas en ingles GAFTA)[20]. A su vez, la UE y la mayoría de los PSEM son miembros de la OMC. Por tanto, participan en el sistema multilateral de comercio y asumen las obligaciones del Acuerdo de Agricultura de la OMC (incluidos los compromisos de reducción de subvenciones a la exportación, ayuda interna y los aranceles sobre los productos agrícolas).

Todo este proceso de acuerdos demuestra el interés en afianzar las relaciones y ofrecer un marco regulador que fomente la cooperación en la región. Se han alcanzado progresos significativos (Comisión Europea, 2011). Sin embargo, parte de la literatura coincide en cuestionar si la PEV ha cumplido con las expectativas que generó (Del Sarto y Schumacher, 2005; Schumacher, 2004; Aliboni, et al., 2008). Voces más pesimistas argumentan que la AEM arrastraba ya desde sus inicios deficiencias de diseño que ponían en entredicho su capacidad para alcanzar los objetivos que se propuso (Escribano, 2005; Martín, 2003).

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[18] Acuerdo de interacción comercial firmado el 17 de febrero de 1989 en Marrakech, entre Argelia, Libia, Marruecos, Mauritania y Túnez. Desde el año 1994 se encuentra bloqueado.

[19] Acuerdo de libre comercio firmado el 25 de febrero de 2004 en Rabat, entre Jordania, Túnez, Egipto y Marruecos. Ha quedado englobado en el GAFTA.

[20] Desde 1998 se halla en vigor el Greater Arab Free Trade Area entre dieciocho países árabes (entre los que no se encuentra Argelia).

Al analizar la evolución y hacer balance, acotando y centrando el proceso de integración sobre el sector agroalimentario, se deben formular tres mensajes que destaca la literatura:

- La potente asimetría económica, política y social entre el Norte y el Sur del Mediterráneo ha sido una de las principales limitaciones. Las negociaciones bilaterales entre la UE (28 países bajo una misma voz) y cada uno de los PSEM no equilibra la capacidad de negociación (Altemir y Hernandez, 2014; De Castro Ruano, 2003; García-Álvarez- Coque, 2002).
- El equilibrio engañoso de los intercambios Euro-Mediterráneos en donde Turquía contribuye ella sola con casi la mitad de las exportaciones de los PSEM hacia la UE (Hervieu, 2007). El comercio intra-regional entre los PSEM inferior al 5% de los intercambios totales, con lo que el proceso de integración Sur-Sur no ha dado los resultados esperados (García Álvarez-Coque, et al., 2011).
- La Unión Europea no es la única potencia exportadora de referencia en el Sur del Mediterráneo. Estados Unidos, Argentina, Brasil y China son importantes actores comerciales que afectan y marcan las agendas y preferencias comerciales de los PSEM (Hervieu, 2007, Altemir, 2005). La intensificación de la cooperación subregional y el fomento del comercio interregional es necesario para la creación de la ZEMLC. Sin embargo, el entramado de acuerdos comerciales preferenciales en la región configura una trama de cuerdos superpuestos, en ocasiones difícil de interpretar, que amplía el margen de arbitrariedad en la aplicación de las normativas comerciales (Aliboni y Ammor, 2009; Martín, 2010).

1.6 Políticas agrarias y comercio agroalimentario

Dentro del proceso de la creación de la ZEMLC el sector agrario es un tema sensible. Se caracteriza por su notable complejidad debido a la amplia gama de intereses y temáticas que abarca: desarrollo rural, aspectos medioambientales y alimentación. Las negociaciones sobre los productos agrícolas comenzaron de manera tardía[21] y siempre han sido objeto de un tratamiento diferenciado como "excepción agrícola".

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[21] El 27 de noviembre de 2003 en Venecia, bajo presidencia italiana, tuvo lugar la primera conferencia euro mediterránea sobre agricultura.

En los países del Sur de Europa, los productores agrícolas temen enfrentarse a una competencia mayor si se extienden las preferencias comunitarias. En el Sur del Mediterraneo, con una parte del sector agrario basado en agricultura de subsistencia y ya gran importador-dependiente de productos agrarios europeos evita exponerse a la competencia extranjera. Los sistemas agrarios en ambos lados del Mediterráneo mas vulnerables a la competencia; se caracterizan por su carácter familiar de pequeño tamaño y por estar ubicadas en contextos rurales (García Álvarez-Coque, et al., 2014). En definitiva, existe cierta resistencia en ambas orillas a la liberalización del sector agrario, por temor a la competencia en los mismos productos agrícolas (principalmente aceite y el sector hortofrutícola).

Como resultado, una vez aprobados los acuerdos, para los productos agrícolas se establece la "liberalización progresiva", sujeta a negociaciones que parten de los flujos tradicionales de intercambio y donde se tienen en cuenta las respectivas políticas agrícolas. Además de respetar los resultados consensuados en el marco de las negociaciones del GATT. En la práctica, la adopción de los acuerdos de liberalización de productos agrarios avanza lentamente (negociaciones producto a producto) y sigue planteando múltiples inquietudes, como es el caso de las MNA que se trata en la presente tesis. La UE ha ampliado sus concesiones, pero desde las reducciones arancelarias de las principales exportaciones agrarias entre los años 70 y 80, los PSEM apenas han experimentado mejoras en el acceso al mercado de productos agrarios de la UE (Martín, 2010; Sallam y Galduf, 2003).

Siendo la agricultura un sector clave, ambas orillas de la Cuenca Mediterránea comparten problemáticas similares como la asimetría en la cadena de valor y la vulnerabilidad de los productores frente al mercado. Se añaden las presiones medioambientales: el cambio climático, la desertificación, la erosión y contaminación de los suelos y la alarmante escasez de agua. Y el interés común de garantizar la seguridad alimentaria y la estabilidad social en la región. Se entienden todos los esfuerzos invertidos en la región por fomentar la integración y generar marcos normativos de comercio y acuerdos de cooperación. Son muchas las posibilidades que ofrecen dichos acuerdos, pero a la vez subsisten numerosos desafíos para seguir avanzando en los procesos de integración.

Actualmente, para el sector agroalimentario, se entiende que la ZEMLC es una herramienta de liberalización del comercio pero por si sola no favorece las preocupaciones de seguridad alimentaria, cohesión social y el equilibrio territorial (Martín, 2005). El gran reto de la AEM y ahora de la PEV de la UE es propiciar el impulso suficiente para plantear desafíos más allá de los acuerdos comerciales, sin los cuales difícilmente habrá un mayor desarrollo económico.

La iniciativa más reciente de la UE en el sector agroalimentario dentro del ámbito de la PEV con el Sur, además de la cooperación bilateral, es el Programa Europeo de Vecindad para la Agricultura y el Desarrollo Rural (ENPARD). Programado desde 2014 al 2020, sitúa la agricultura en el centro del debate y persigue como objetivo principal mejorar la seguridad alimentaria de la región (Comisión Europea, 2012). Tras las revueltas y los cambios de régimen en Túnez y Egipto en 2011 y las posteriores reformas constitucionales de Marruecos y Jordania, junto con los conflictos desatados en Libia y Siria, la situación actual parece caracterizarse por una parálisis general de la integración Euro-Mediterránea. En este contexto tiene interés analizar la relación entre medidas arancelarias y no arancelarias en un ámbito tan sensible como es el comercio agroalimenario.

2. Preguntas de investigación

Actualmente en las negociaciones no subsiste controversia sobre la inclusión de la liberalización comercial como ingrediente del desarrollo. Los avances en las negociaciones tienden a extenderse al sector agroalimentario, abaracando la liberalización arancelaria y la armonización de las MNA. Pero ¿Qué motiva a éstas? En esta tesis se plantea el análisis de los factores que determinan la aplicación de las MNA, basado en metodologías que podrían aplicarse a distintos contextos geográficos, pero se tendrá en cuenta su aplicación a contextos cercanos como es la liberalización del sector en el Mediterráneo o la aplicación de MSF por los EM de la UE.

Cabe destacar una preocupación común clave: el uso proteccionista de las MNA que, fomentado por la reducción de los aranceles, dificulte el acceso a los mercados y el éxito de los procesos de integración comercial (Aparici y Betes, 2009). Teniendo en cuenta la literatura centrada en el estudio de las

MNA y su impacto (Deardorff y Stern, 1998; Bora, et al., 2002; Ferrantino 2006), se han trabajado dos preguntas de investigación: la sustitución de políticas y los efectos de reputación o dependencia de senda ("path dependency").

2.1 Sustitución de Políticas

Como parte del proceso de integración, los PSEM se encuentran en diferentes etapas de armonización de sus MNA (FEMISE 2005; González-Mellado et al., 2010). Proporcionar conocimientos sobre la armonización de las MNA en el área Mediterránea puede ser útil para fomentar el comercio en lugar de restringirlo.

Se ha planteado en la literatura la hipótesis de sustitución de políticas entre aranceles y MNA (Staiger, 2012). Profundizando en el tema, los resultados de Gourdon y Nicita (2012) sugieren la presencia de una correlación entre el uso de las MNA y las formas tradicionales de la política comercial (aranceles). La posibilidad de que las MNA actúen como políticas sustitutivas o complementarias puede ser un síntoma de las presiones económicas y políticas nacionales (Bown y Tovar, 2011). Otras investigaciones, argumentan que el carácter restrictivo de las MNA no es concluyente y puede variar en función del sector o el país importador (Dean et al., 2009).

Con el fin de explorar la posible interdependencia entre las MNA y los aranceles en el comercio agroalimentario, en la investigación se estudia la situación de las MNA en un conjunto de PSEM reuniendo los datos disponibles para la comparación de los aranceles y los equivalentes arancelarios de las MNA. Estos equivalentes deben entenderse como la medición de la diferencia entre el precio interno doméstico y el internacional provocados por la incidencia de las MNA.

2.2 Efectos de Reputación ("path dependency")

Una serie de autores ha estudiado los efectos económicos de la estandarización, concluyendo que la estandarización de las MNA está estrechamente relacionada con la facilitación del comercio (Moenius, 2004; Gandal y Shy, 2001). En la práctica, existe poca literatura relacionada con la medición directa del impacto de las MNA, y menos aún sobre los efectos que determinan la aplicación de normas en frontera. Andriamananjara et al.

(2004) estimaron que la eliminación de ciertas categorías de MNA podría producir ganancias de bienestar. No obstante, el estudio de Van Tongeren, et al. (2009) argumenta que no es evidente a priori que la eliminación de las MNA asociadas lograría ganancias de eficiencia.

Cieslik y Hagemejer, (2009) encontraron que a pesar de los Acuerdos de Asociación y liberalizaron en la UE las importaciones de productos con origen en los PSEM no contribuyeron a la expansión de sus exportaciones a los mercados de la UE, evidenciando que el éxito de las exportaciones PSEM no sólo depende de un mayor acceso a los mercados de la UE, sino también en la adaptación a la normativa europea, orientada a mejorar los sistemas de calidad y buenas prácticas agrícolas (González-Mellado et al., 2010; Rau y Kavallari, 2013). A su vez, otros estudios argumentan que hasta ahora la postura de la UE para el sector agrario ha respondido a una actitud proteccionista (De Arce Borda et al., 2006).

La aplicación de MNA podría deberse a la dependencia de senda o memoria, que refleja el comportamiento de los sistemas de control en frontera de los EM de la UE. En la medida en que un problema fitosanitario o alimentario aparecido en un año concreto, influya en el comportamiento del pais importador en el futuro, se podría apuntar la idea de que "la reputación importa", o que la aplicación de normas no sigue una lógica meramente técnica. Cabe contrastar también el impacto de un aumento de las importaciones sobre la incidencia de MNA o, en el caso que se va a estudiar en esta tesis, de normas de inocuidad sobre los alimentos importados.

El cumplimiento de las medidas sanitarias y de seguridad de la UE es un reto para los países en desarrollo (García Álvarez-Coque et al., 2015). En esta tesis se realiza un análisis exhaustico del comportamiento en la aplicación de estas medidas por parte de los EM a través del registro de las notificaciones fronterizas. Las notificaciones alimentarias en fronteras serán consideradas un indicador de las dificultades que encuentran los exportadores para cumplir con los requisitos de seguridad y calidad de los alimentos impuestos por los EM de la UE.

El Sistema de Alerta Rápida para Alimentos y Piensos (RASFF) es la herramienta utilizada por la UE para asegurar el seguimiento transfronterizo de trazabilidad y poder reaccionar rápidamente cuando se detectan riesgos

para la salud pública en la cadena alimentaria. Creado en 1979, el RASFF permite que la información sea compartida de manera eficiente entre sus miembros (las 28 autoridades de seguridad alimentaria nacionales de la UE, la Comisión, la EFSA[22], la EFTA[23], Noruega, Liechtenstein, Islandia y Suiza). Ofrece un servicio continuo para asegurarse de que las notificaciones urgentes se envían, reciben y responden colectivamente y de manera eficiente (RASFF, 2013). En definitiva, el RASFF es la herramienta para garantizar la seguridad alimentaria en la UE y fuera de sus fronteras.

Esta base de datos proporciona una medida directa de las MNA, expresada a través del número de notificaciones de MSF aplicadas por los países de la UE a los productos de sus socios exportadores. Se trata de un tipo específico de MNA basadas en las normas alimentarias en frontera que es interesante entender si existe una lógica económica y política en su aplicación, más allá de la existencia de riesgos sanitarios asociados a determinados productos.

3. Objetivos

Con la intención de aportar en la comprensión del funcionamiento del comercio agroalimentario, la intención es contribuir, como objetivo general, a la mejor comprensión de las MNA. El ámbito geográfico será la UE y el espacio Euro-Mediterráneo, no porque se crea que estos problemas son inexistentes en otras zonas del planeta, sino porque constituyen una realidad cercana y relevante para el comercio agrario español.

Para alcanzar esa meta general se plantean los siguientes objetivos específicos:

- O1. Explorar el avance de los acuerdos en materia de comercio agroalimentario en la región Euro-Mediterránea.

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[22] La Autoridad Europea de Seguridad Alimentaria (EuropeanFood Safety Authority, EFSA) Ver: <*http://www.efsa.europa.eu/*> (Fecha de consulta 20/07/2015).

[23] La Asociación Europea de Libre Comercio (European Free TradeAssociation, EFTA) es una organización intergubernamental establecida para la promoción del libre comercio y la integración económica en beneficio de sus cuatro Estados miembros: Islandia, Liechtenstein, Noruega, Suiza. Ver:<*http://www.efta.int/*> (Fecha de consulta 20/07/2015).

- O2. Analizar la relación entre los aranceles y las MNA en el comercio agroalimentario.
- O3. Identificar los determinantes de la aplicación de las MSF a traves de las notificaciones alimentarias registradas.
- O4. Explorar el nivel de armonización de las notificiones alimentarias frente a la importación de productos agroalimentarios en algunos EM de la UE.

Las hipótesis de partida están relacionadas directamente con los objetivos planteados, son:

- H1. ¿Ha avanzando la integración de comercio agroalimentario en el área Euro-Mediterránea?.
- H2. ¿Hay sustitución entre aranceles y MNA? (hipotesis de sustitucion de politicas).
- H3. ¿Las notificaciones recibidas en años anteriores influyen en las notificaciones actuales? (hipótesis de reputación o dependencia de senda).
- H4. ¿Ha avanzando la armonización de las medidas en frontera de los EM de la UE frente a la importación de productos agroalimentarios?.

4. Metodología y fuentes de información

La investigación propone un análisis de los factores que contribuyen a explicar el alcance de la utilización de las MNA, a través de dos enfoques complementarios entre sí: el primer enfoque o pregunta de investigacion (P1) estudia si la profusión de MNA está relacionada con la eliminación de los aranceles para el comercio y el segundo enfoque (P2) si la aplicación de notificaciones alimentarias esta guiada por consideraciones económicas y políticas más allá de la aplicación específicas y problemas de sanidad y salud. La P1, que aborda la H1 e H2, es estudiada en los Países Sur-Este Mediterráneos (PSEM) mientras que la P2, que engloba la H3 e H4, se analizará en países de la Unión Europea (UE).

Por tanto, las hipótesis se ponen a prueba por separado y en contextos geográficos distintos. Y para abordarlas se han empleado distintas metodologías estadísticas y consultado diversas fuentes de información que se describen detalladamente en cada capítulo, a lo largo de cada uno de los artículos que conforman la investigación. No obstante, se resumen a continuación:

La hipótesis H1 se basa en un análisis de la situación de los PSEM, con una referencia a los niveles de protección arancelaria y no arancelaria en los mismos, así como una exploración de sus objetivos de política alimentaria.

La hipótesis H2 estudia la presencia de sustitución de políticas entre aranceles y MNA. Para poder comparar aranceles y MNA y estudiar su relación se han utilizado las estimaciones propuestas por Kee et al. (2009) de los equivalentes ad valorem (EAV) medios de las MNA. Estos equivalentes no arancelarios son la variable dependiente de interés y se expresan en porcentaje de modo que son directamente comparables con los aranceles, que constituyen una variable explicativa relevante junto con otras variables. Este análisis se ha trabajado sobre seis PSEM: Argelia, Egipto, Jordania, Líbano, Marruecos y Túnez y para todo el rango de productos agroalimentarios (incluye los capítulos 01-24) al nivel de 6 dígitos del Sistema Armonizado de Designación y Codificación de Mercancías (SA) (SA)[24].

En el caso de los aranceles la fuente de informacion es el Sistema de Análisis e Información Comercial (TRAINS). Es la base de datos más completa a disposición pública. Accesible mediante la Solución Comercial Integrada Mundial (WITS), programa informático elaborado por la UNCTAD y el Banco Mundial. Concretamente, en la investigación se ha trabajado con los promedios simples de los aranceles aplicados a las naciones más favorecidas (NMF) de los productos agroalimentarios al nivel de 6 dígitos del SA.

En primer lugar, se realizó un análisis descriptivo y se identificaron los valores de EAV más altos (crestas equivalentes ad valorem). Para identificar dichas crestas EAV, se definió el umbral de referencia teniendo en cuenta el

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[24] Creado por la Organización Mundial de Aduanas (OMA), desde 1988 es la nomenclatura más utilizada como referente de codificación en el comercio exterior de todo el mundo.

documento resultante de la Ronda de Doha[25] de negociaciones de la OMC (OMC, 2008). Donde se entiende como crestas EAV aquellas cuyo valor sea superior al 75%.

En segundo lugar, se clasificó la relación de las MNA y aranceles de los productos agroalimentarios para cada uno de los países estudiados. Se definieron, cuatro categorías en función de la combinación de la proporción de altos aranceles y crestas EAV:

- Alta protección: alta proporción de elevados aranceles y crestas EAV.
- Protección encubierta: baja proporción de los aranceles altos y alta proporción de crestas EAV.
- Baja protección: baja proporción de ambos (arancles y crestas AEV)
- Protección transparente: alta proporción de aranceles altos y baja proporción de crestas EAV

A continuación, se realizó un análisis de regresión múltiple más profundo para cada uno de los países considerados. Se pudo hacer así una caracterización de los países según sus niveles de protección arancelaria y no arancelaria, así como estudiar los factores determinantes de la protección no arancelaria.

Las hipótesis H3 y H4 estudian, a través del número de notificaciones alimentarias emitidas por los países europeos, la aplicación de las MSF sus factores determinantes y la capacidad de respuesta de los países exportadores. Este análisis se basa en la metodología propuesta por Jouanjean et al. (2012, 2015) en la aplicación de MSF en los EE.UU.

Los productos agroalimentarios seleccionados incluyen, a nivel de 4 dígitos del SA, los capítulos 07 (frutas y frutos frescos), 08 (hortalizas, tubérculos y raíces) y 20 (procesados de frutas y hortalizas). España, Italia, Alemania, Francia, Países Bajos y Reino Unido fueron los seis EM de la UE seleccionados para el estudio como países importadores. En conjunto, estos paises representan el 70% del total de las importaciones europeas de los sectores estudiados. Se consideraron las notificaciones registradas

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[25] La Ronda de Doha es la ronda de negociaciones comerciales más reciente entre los Miembros de la OMC, se inició oficialmente en noviembre de 2001.

provenientes de los 23 principales exportadores de frutas y verduras[26] entre el 2000 y el 2013. En conjunto los países exportadores elegidos representan el 90% de las exportaciones mundiales de los sectores estudiados.

La H3 aborda el efecto de reputación, es decir, estudia si el número de notificaciones alimentarias de un año se ve afectado por el número de notificaciones de los años anteriores. Y si el efecto reputación existe, estudia qué factores lo potencian: el producto, el sector, el país exportador o el importador.

El RASFF es la fuente de informacion de las notificaciones alimentarias. Actualmente, el portal RASFF cuenta con una base de datos de acceso público que permite la búsqueda interactiva de las notificaciones alimentarias recientes, así como la búsqueda de información sobre notificaciones efectuadas en el pasado.

En la base de datos RASFF se entiende por "notificaciones" aquellos registros que informan sobre los riesgos identificados en los alimentos, los piensos o en los materiales en contacto con los alimentos. Las notificaciones pueden realizarse en el país de origen pero también en cualquier punto de entrada de la frontera de la UE, por lo que puede identificarse el mercado de destino o EM que emite la notificación. De acuerdo con el nivel de riesgo identificado y la distribución del producto en el mercado, la notificación se clasifica en una de las siguientes categorías:

- Notificaciones de alerta o alertas: se emiten al identificar un riesgo grave para la salud está en el mercado y cuando se requiere una acción rápida. Las alertas se activan por el miembro de la red que detecta el problema y ha iniciado las medidas pertinentes, como la retirada o recuperación.
- Notificaciones de información: se utilizan cuando el riesgo ha sido identificado en un alimento, un pienso o material en contacto con alimentos, pero los otros miembros no tienen que tomar una acción rápida. Esto se debe a que el producto no haya alcanzado su mercado

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[26] La lista de los principales países exportadores de frutas y verduras seleccionados son: Argentina, Australia, Brasil, Canada, Chile, China, Costa Rica, Ecuador, EEUU, Egipto, Filipinas, Ganna, Guatemala, India, Israel, Marruecos, Mexico, Nueva Zelanda, Peru, Sudáfrica, Tailandia, Turquía y Vietnam.

o ya no esté presente en su mercado o porque la naturaleza del riesgo no requiere una acción rápida.

- Rechazos en frontera: se utilizan cuando el riesgo ha sido identificado fuera de las fronteras de la UE (y del Espacio Económico Europeo). Las notificaciones se envían a todos los puestos fronterizos del RASFF con el fin de reforzar los controles y para asegurar que el producto rechazado no vuelva a entrar en la UE a través de otro puesto fronterizo.
- Notificaciones noticias o noticias: cualquier información relacionada con la seguridad de los alimentos y piensos que no se ha comunicado como una alerta o una notificación de información, pero sí que se juzga de interés para las autoridades de control.

En la investigación fueron incluidas todas las categorías de notificaciones registradas en el RASFF.

Una vez inspeccionado un producto en el mercado o en frontera y detectado un riesgo, la autoridad competente decide si el asunto entra en el ámbito del RASFF, si es así, remite la notificación al punto RASFF de referencia nacional, que de nuevo evalúa y decide si es necesario ascender la notificación a la Comisión Europea.

Cabe destacar que la base de datos RASFF no hace pública la numeración de los capítulos comerciales en el SA de los productos afectados por las notificaciones[27] (lo que sin duda facilitaría el análisis posterior). Para afrontar esta limitación, en primer lugar, se ha invertido un esfuerzo en diseñar y construir una herramienta lexicográfica[28], capaz de codificar la información en formato "texto" recopilada a partir del RASFF en notificaciones clasificadas bajo el código del SA de comercio. Esta herramienta lexicográfica permitió la conversión de las 3.330 notificaciones alimentarias que se produjeron en el periodo estudiado (Ver Anexo 2. Manual Codificador del RASSF).

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[27] Por protección de información comercial el RASFF tampoco hace públicos los nombres de las empresas o distribuidoras comerciales afectadas por las notificaciones.
[28] Para facilitar el uso de esta herramienta se ha elaborado un manual. Ver Anexo 2: Manual Codificador del RASSF.

La propia conformación de una base de datos que relacione la emisión de notificaciones alimentarias con el volumen del comercio de distintos productos, ya constituye en si mismo una cuestión clave de la presente investigación. Por tanto la construccion de esta base de datos ya constituye un resultado derivado de la tesis.

A continuación, se aplicaron dos modelos econométricos: el modelo Binomial Negativo (NB) y el modelo Binomial Negativo Inflado por Ceros (ZIBM). Ambos persiguen explicar la relación entre la frecuencia de notificaciones recibidas un año y los anteriores (H3) en función de los tres niveles de estudio: las notificaciones recibidas a nivel producto, las notificaciones del sector, y las notificaciones de los exportadores. Teniendo en cuenta la influencia del volumen de las importaciones, la variación del volumen de las importaciones y el Producto Interior Bruto (PIB) per cápita de los países exportadores (Ver Anexo 1: Lenguaje de Programación. Código R).

Se contrastó a través de la H4 si la respuesta de los seis EM elegidos es homogénea o, en otras palabras, si se puede hablar de un comportamiento uniforme de las fronteras de la UE en la aplicación de las normas sanitarias. En el análisis se llevó el estudio más profundo de la evolución de las notificaciones alimentarias a lo largo de dos periodos semi-homólogos: entre 2001 y 2007 y entre 2008 y 2013, que constituyen períodos anteriores y posteriores a la reforma de la política comunitaria para frutas y hortalizas, realizados en 2007. Dicha reforma se vio motivada por una caída en el consumo per capita de frutas y hortalizas en la UE, lo que podría motivar comportamientos proteccionistas en algunos EM.

A continuación, se resume la información principal de los apartados anteriores de objetivos y metodología:

Tabla 1. Resumen de los apartados de objetivos y metodología

OBJETIVO PRINCIPAL	PREGUNTAS DE INVESTIGACIÓN	OBJETIVOS ESPECÍFICOS	HIPÓTESIS	METODOLOGÍA	FUENTE DE INFORMACIÓN	LOCALIZACIÓN
Mejorar la comprensión del funcionamiento de las MSF en el comercio agroalimentario	P1. ¿La profusión de MNA está relacionada con la eliminación de los aranceles para el comercio?	O1. Explorar el avance de los acuerdos en materia de comercio agroalimentario	H1. ¿Ha avanzando la integración de comercio agroalimentario en el área Euro-Mediterránea?	Análisis de los niveles de protección y los objetivos de política alimentaria	Consulta literatura bibliográfica	Países Sur-Este Mediterráneos (PSEM)

(Argelia, Egipto, Jordania, Líbano, Marruecos y Túnez) |
| | ¿Existe sustitución de políticas entre MNA y aranceles? | O2. Analizar la relación entre los aranceles y las MNA | H2. ¿Hay sustitución entre aranceles y MNA? (sustitución de políticas) | Clasificación de los paises según sus niveles de protección y regresión múltiple | WITS Database y Kee et al. (2009) | |
| | P2. ¿La aplicación de MNA está motivada por una conducta sistemática, guiada por consideraciones económicas y políticas? | O3. Identificar los determinantes que contribuyen a explicar la aplicación de las MSF | H3. ¿Las notificaciones recibidas en años anteriores influyen en las notificaciones actuales? (efectos de reputación) | Elaboración de la herramienta codificadora y estimacion del modelo NB y el modelo ZIBM | RASFF Database | Países de la Unión Europea (UE)

(España, Italia, Alemania, Francia, Países Bajos y Reino Unido) |
| | | O4. Explorar el nivel de armonización de las noticiaciones alimentarias | H4. ¿Ha avanzando la armonización de las medidas en frontera de los EM de la UE frente a la importación de productos agroalimentarios? | Estimación del modelo NB para los periodos 2001 y 2007 y entre 2008 y 2013 | Consulta literatura bibliográfica | |

Fuente: Elaboración propia.

5. Estructura de la Tesis por capítulos

Además de este capítulo introductorio, la tesis se desarrolla en otros seis capítulos. Los cuatro primeros se corresponden con cuatro trabajos científicos publicados (o en vías de publicarse) fruto de la investigación desarrollada. Los artículos están presentados en orden cronológico de elaboración, mostrando su maduración a lo largo del desarrollo de la tesis.

La primera publicación se titula *"Issues in trade liberalisation in Southern and Eastern Mediterranean countries"*. Se trata del séptimo capítulo del libro *"Sustainable Agricultural Development, Challenges and Approaches in Southern and Eastern Mediterranean Countries"* de la editorial Springer, con número de ISBN 978-3-319-17812-7. Este capítulo ofrece una visión de los acuerdos en la región Euro-Mediterránea y constituye la primera síntesis del marco conceptual, y sobre todo, de los antecedentes económicos y políticos de la presente tesis doctoral, que toma la protección a la agricultura como uno de sus puntos de partida. En efecto, el artículo analiza el proceso de liberalización de los PSEM a lo largo de las últimas décadas con las limitaciones y oportunidades que conlleva.

La segunda publicación que conforma esta tesis doctoral se denomina *"Mediterranean Food Trade and Non-Tariff Measures"* y está aceptada para su publicación en la revista Options Méditerranéennes del Centre International Hautes Etudes Agronomiques Mediterraneennes (CIHEAM). En este trabajo se avanza en la metodología de la tesis. Se describen las características de las principales MNA en el comercio agroalimentario de los países PSEM y se discuten los factores que determinan su aplicación. Asimismo, se plantean los dos enfoques de análisis de las MNA de la investigación.

La tercera publicación incluida en la tesis se titula *"Are Non-Tariff Measures substitutes for tariffs in agricultural trade? The case of Southern Mediterranean countries"*. El artículo analiza y discute en profundidad la hipótesis de sustitución de políticas entre aranceles y MNA en los PSEM seleccionados. Ha sido publicado en diciembre del 2014 en la revista Outlook on Agriculture, Volumen 43, Número 4, páginas 235–240, indexada en Journal Citation Report (JCR).

Por último, el cuarto artículo *"Investigating differences in safety border notifications on fruit and vegetables imports by selected EU Member States"* profundiza en el análisis de la implementación de MFS en Europa a través de la hipótesis de efectos de reputación. Asimismo, se explora el nivel de armonización en la aplicación de estos estándares sanitarios en las fronteras de los países europeos seleccionados. Ha sido aceptadoo como "contributed paper" en el Congreso Internacional de Economistas Agrarios, concretamente en el 29th ICAE Congress (International Conference of Agricultural Economists), en agosto de 2015 en Milan, Italia. Se trata de una de las 30 contribuciones orales seleccionadas de un total de 1000 trabajos remitidos al congreso internacional. Una version actualizada está en proceso de revisión en la revista Journal of Common Market Studies.

A continuación de los artículos se incluye el sexto capítulo de discusión general de los resultados y finalmente el séptimo capítulo dedicado a las conclusiones de la investigación.

En resumen, los capítulos que estructuran esta investigación mantienen el orden cronológico de elaboración de las publicaciones y puede esquematizarse como se observa en la siguiente figura:

Figura 3. Estructura de la Tesis
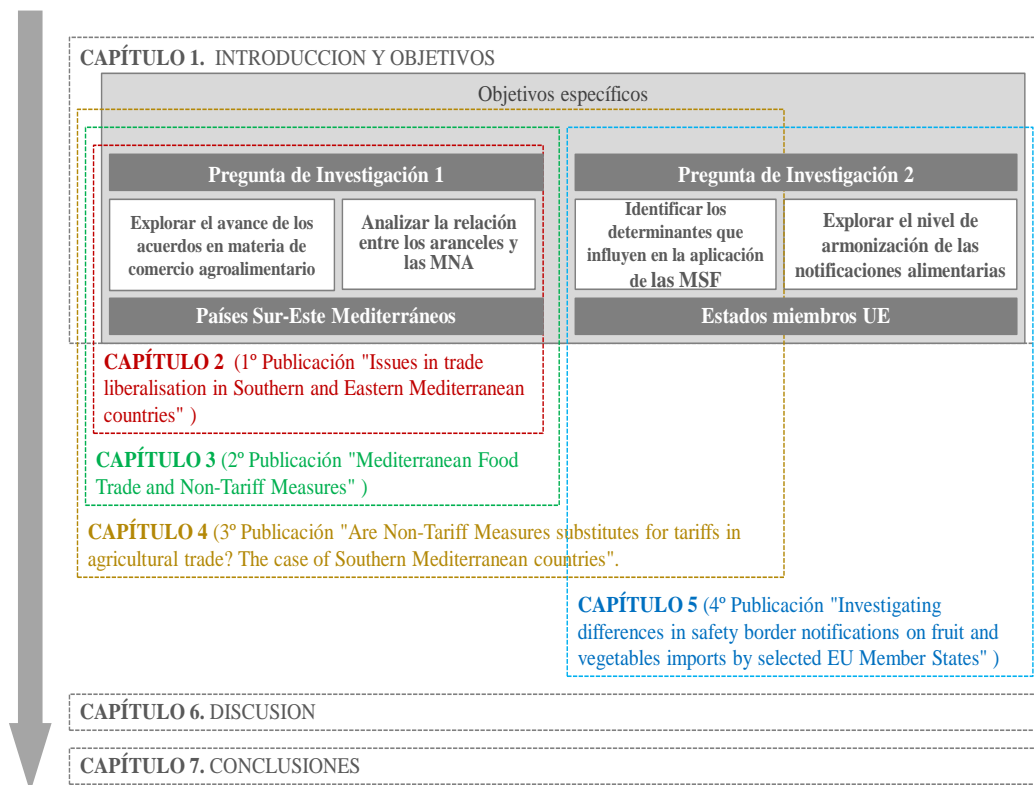
Fuente: Elaboración propia

6. Otros congresos y workshops resultado de la Tesis

- Tudela-Marco, L., García Álvarez-Coque, J.M., Martinez-Gomez, V. (2013). "NTMs and AVE peaks in agrifood trade in MENA countries", Comunicación presentada en el IX Congreso de Economía Agraria, Castelldefells, Barcelona, Septiembre, 3-5, 2013.

- Tudela-Marco, L., Martí, M.L., García Álvarez-Coque, J.M. (2014). "Deterninants of Non Tariff Measures on EU Agrofood import. What RASFF database reflects", Comunicación presentada en la I Jornada de Investigación de la Facultad de ADE, UPV, Valencia, Julio 2-3, 2014.

- Tudela-Marco, L., García Álvarez-Coque, J.M., Martinez-Gomez, V. (2014). "Is there a trade off between NTM and Tariff protection in MED countries?", Póster presentado en el "14th EAAE Congress" (European Association of Agricultural Economists): Agri-Food and Rural Innovations for Healthier Societies, Lubiana, Agosto 26-29, 2014.

- Tudela-Marco, L., García Álvarez-Coque, J.M., y Martí, M.L (2015). "Understanding Non-Tariff Measures. An Analysis of the Tariff Substitution and Reputation effects", Comunicación presentada en el "6th EAAE PhD Workshop", coorganizado por AIEAA (Italian Association of Agricultural and Applied Economics) y el Departamento de Economía de Roma Tre University, Roma, Junio 8-10, 2015.

- Tudela-Marco, L., García Álvarez-Coque, J.M., y Martí, M.L. (2015). "Determinants of Non-Tariff Measures in Agricultural Trade", Comunicación presentada en el "1st International Conference on Business Management", UPV, Valencia, Julio 2-3, 2015.

- Tudela-Marco, L., Taghouti I., Martí Selva, LM., Martínez-Gómez, V., García Álvarez-Coque J.M. (2015). "Specific responses to past food safety notifications by EU Member States". Comunicación aceptada en el X Congreso de la Asociación Española de Economía Agraria Córdoba, Septiembre 09-11, 2015**.**

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CAPÍTULO 2: ISSUES IN TRADE LIBERALISATION IN SOUTHERN AND EASTERN MEDITERRANEAN COUNTRIES[29]
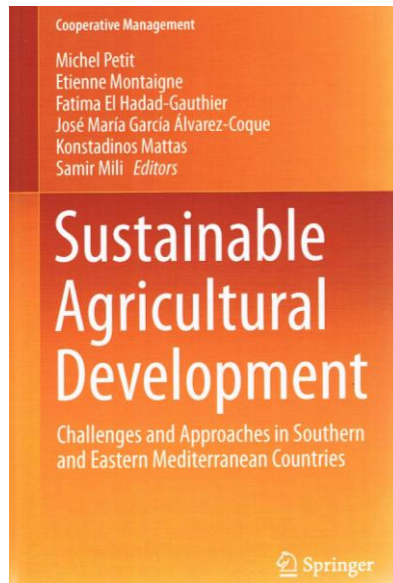
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Issues in Trade Liberalisation in Southern and Eastern Mediterranean Countries

Abstract
Member Partner Countries plus Turkey (MPCs) face numerous challenges to agricultural policy and competitiveness. The current policy strategy has not generated desperately needed economic development in rural areas and growth in value-added agriculture is low compared to other developing regions, all of which indicate a need for new approaches that go beyond conventional industry analysis. Using principles from the supply chain management literature and drawing heavily from current value chain thinking, this chapter applies a Global Value Chain Analysis (GVCA) to the fresh orange export sector in MPCs. Consumer data was collected in four European countries through quantitative surveys and Tesco loyalty card data and field interviews were conducted with value chain stakeholders in MPCs. A set of policy recommendations are presented. It is hoped the findings catalyze a discussion on the use of value chain thinking in agricultural policy formation for the region.

1. Introduction

In the framework of their trade policies aiming at a gradual opening of their agricultural markets, Southern and Eastern Mediterranean Countries (SEMC) are involved in deepening their relationships with the EU. The Euro-Mediterranean relationship framed by the European Neighbourhood Policy pursues a trade liberalization agenda covering agriculture, fishery and processed agricultural products. On 14th December 2011, the Council authorized the Commission to open bilateral negotiations to establish Deep and Comprehensive Free Trade Areas (DCFTAs) with Egypt, Jordan, Morocco and Tunisia. These DCFTAs go beyond trade liberalization to cover other regulatory issues relevant to trade, such as investment protection and public procurement. The process also encompasses agreements among

SEMC themselves. This process joins to the Agadir Economic Agreement between Tunisia, Morocco, Jordan, and Egypt (2004), which remains open to other Arab Mediterranean countries or to a set of bilateral trade agreements involving SEMCs.

Trade liberalization is combined with an "accompanying" program concerning rural development, the promotion of Mediterranean products, and also involves plans to liberalize services and investments. The result of this process of trade liberalization is a large network of agreements which covers trade but also cooperation in a vast range of areas of mutual interest including security, democracy, justice and sector policies, with the aim of promoting peace, stability, and prosperity in the region.

In the following pages, a set of critical aspects regarding trade policies in the region is discussed. After examining the trade patterns in some major food staples in the region, we discuss the link with domestic concerns and food security in the region. Then, we refer to the lack of understanding on the way agriculture has been considered by agricultural and trade policies in the Mediterranean region. We will move to the analysis of the main issues in the EU-Mediterranean association, with reference on some specific topics, myths and realities of trade liberalization in the region. After that, we focus policy recommendations for the future agenda of cooperation.

2. Trade background

To date, the EU has largely dominated the agricultural trade relations of SEMCs. Morocco shows a positive agricultural trade balance with the EU but other SEMCs, in particular Algeria and Egypt, show a large deficit vis-à-vis the EU. The preponderance of the EU is also explained by the absence of understanding among SEMCs themselves and their failure to achieve South-South integration in spite of initiatives such as the Agadir Agreement. Trade flows between the two shores of the Mediterranean indicate a high degree of complementarity: SEMCs are traditional importers of EU's temperate productsand simultaneously exchange Mediterranean products. Some instances from the last years' trade data illustrate this complementarity: while in average about 10 per cent of EU agricultural exports have SEMCs as their destination, SEMCs markets account for close to 20 per cent of sugar and sugar confectionery exported by the EU and a noticeable 45 per cent of

EU's cereals exports. On the other hand, SEMCs are the origin of about 7 per cent of EU imports, but for vegetables this share is close to 40 per cent and for fruits it is about 20 per cent.

However, the EU as a trading partner is losing relevance as trade diversifies towards other countries outside the EU, in particular extra-regional powers like the US and large emergent countries (Brazil, China, India, Russia and South Africa). In fact, nowadays about two-thirds of food imports in SEMCs are purchased at countries outside the Euro-Mediterranean zone. The United States ranks as the leading supplier for basic agricultural commodities (mainly grains, in particular maize and soybeans) in Turkey, Egypt, Jordan, Morocco and Algeria. Imports from Brazil are also increasing (mainly beef, soybeans and sugar), and Russia and the Ukraine are becoming major exporters of cereals to the Mediterranean region. Graphs 1 to 4 illustrate the main origins of SEMCs imports for a set of basic products. While trade diversification is a valuable strategy, these developments can reflect the lack of confidence on the possibilities to create a common economic space in the Euro-Mediterranean region.
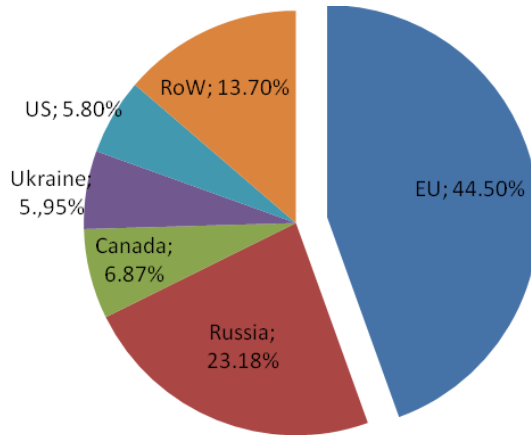
Graph 1. Main origins of SEMCs' maize imports (2009)
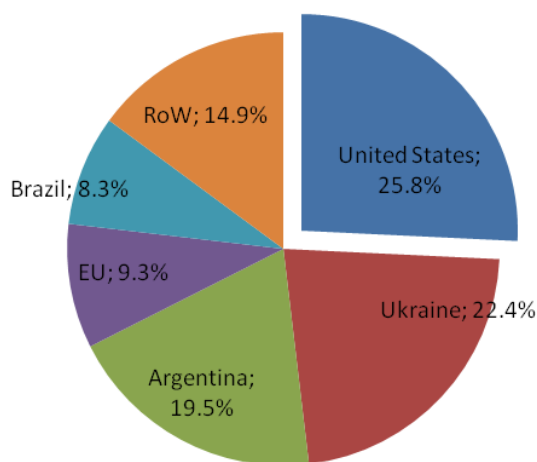
Note: the SEMCs aggregated are Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Tunisia and Turkey.RoW: Rest of the World. Source: FAOSTAT
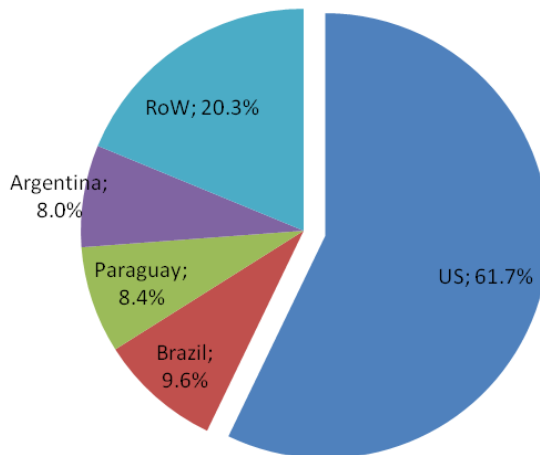
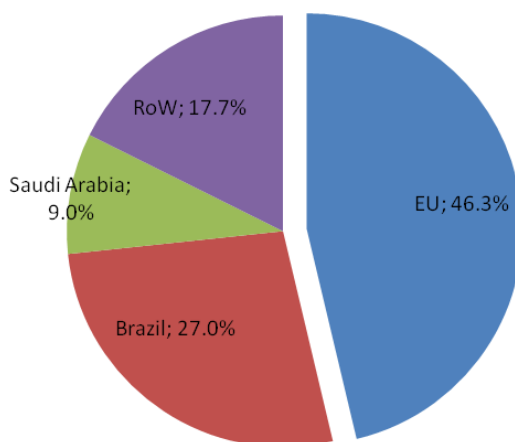Graph 2. Main origins of SEMCs' wheat imports (2009)

Note: the SEMCs aggregated are Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Tunisia and Turkey. RoW: Rest of the World. Source: FAOSTAT

Graph 3. Main origins of SEMCs' soybeans imports (2009)

Note: the SEMCs aggregated are Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Tunisia and Turkey.RoW: Rest of the World. Source: FAOSTAT

Graph 4. Main origins of SEMCs' refined sugar imports (2009)

Note: the SEMCs aggregated are Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Tunisia and Turkey.RoW: Rest of the World. Source: FAOSTAT

3. Links betweentradepatterns and agricultural policies

Trade patterns in the region are clearly connected with the domestic situation, as regards to natural conditions and farm and social structures (Garcia Alvarez-Coque, 2012). In most SEMCs, there is a sharp dualism between traditional agriculture and modern agriculture. Traditional agriculture continues to be poorly integrated into the market and is highly dependent on weather conditions in rain fed areas. In contrast, modern agriculture, consisting of large farms oriented toward exporting, is found mainly in irrigated areas devoted to fruit, vegetables and cultivated plains of grain and olive trees.

Although SEMCs have made considerable efforts to improve their agricultural conditions, in general terms they continue to struggle with a poor endowment of cultivable land and water. Grain yields in rainfed areas remain low in Morocco, Tunisia and Algeria, where the yield per hectare is between 1 and 2 tons. Agriculture is still the main livelihood of a substantial part of the rural poor in the region. Close to three quarters of the poor in SEMCs live in rural areas. Although agricultural production has increased in the region due to the efforts to enlarge the irrigated agricultural area, it

remains highly variable due to harsh weather conditions. Food dependency has a lot to do with the agricultural constraints.

Simultaneously, there are also demand-side problems: food consumption continues to grow in a context of demographic change and urbanization. The dependency problem is paradoxically aggravated by the emergence of the middle classes, keen to shift their diet and consumption patterns. This has been a consequence of economic growth and, at the same time, a reflection of the failure of domestic agricultural production to meet the food needs of the population. The direct consumption of cereals has been declining while being replaced by an indirect consumption as a feeding-stuff for livestock. Another crucial element in food dependency is demography. Its evolution is quite varied in the region, with populations in the Maghreb countries growing a little over 1% annually after the decrease in population growth experienced in recent decades, and significantly higher growth, about 2% annually, in Egypt.

Fostering the productive sector has been a recurrent *leitmotiv* in many SEMCs to increase food security and alleviate poverty. In the past century, development options chosen in the fifties and sixties did not get the expected results: the revitalization of the agricultural sector, often based on land reforms accompanied by large-scale irrigation projects, had limited impact. Later in the eighties the structural adjustment programs included trade liberalization measures and the reduction of public transfers to agriculture. In the last decades, SEMCs policies have hesitated between the exploitation of their comparative advantages in production and exports of fruits and vegetables, and the support of their more vulnerable traditional farming to reduce dependency on imports of the basic staples. For these objectives, programs like the Green Morocco Plan, launched in 2008, have given to irrigated agriculture a strategic role in national development. With the political crisis after the Arab revolutions, agricultural policies in many countries in the region remain weak and still need to build confidence of economic agents. In fact, the governance deficits and the lack of a transparent regulatory environment constrain investment and international cooperation.

Turning now explicitly to trade policies, the first thing to state is that the
situation is not the same for all SEMCs. In spite of the wide range of shared
problems faced by agriculture and development in the region, there is still a
long way until the Mediterranean countries reach a common vision on the
role of the agricultural policies in the future. Policy convergence across the
region is not a *must* per se. But existing differences reflect the difficulties for
international cooperation and coherence of policies. The lack of a common
view can be illustrated by the approaches followed by different countries in
the region as to how agriculture can be inserted in the multilateral trading
system. The experience of agricultural trade negotiations shows a variety of
positions among SEMCs with respect to the Doha Agenda. While the EU
argues the need to reform farm policies through reallocating support towards
policies of a less distorting nature, namely policies addressed to decoupled
payments and public goods (e.g. "green payments"), other countries in the
Mediterranean region seem to be reluctant to farm subsidies. Moreover, the
EU direct payments are normally seen by SEMCs as a signal of the double
standard in the interpretation of the world trading-system that favours EU
farmers with respect farmers in the South and East of the Mediterranean
basin.

What is common in agricultural policies in the region? Perhaps the defence
of flexible rules for trade liberalization, as most countries in the region have
vulnerable agricultural areas and many of them suffer import dependence on
basic food staples (Abis, 2012; García Alvarez-Coque et al., 2012).
However, as indicated in the previous section, even with this significant
pressure, many countries in the region point to improve their exporting
agriculture and see their market access in other countries increased. The case
of Turkey is different and takes a more protectionist stands, as it argues for
limited trade liberalization for special products.

Let us consider two case studies of Mediterranean countries with two
alternative approaches for agricultural and trade policies, Morocco and
Turkey (see Compés et al.,2013, for further details). Both cases reflect
policies that accept trade specialization, but with a more open trade setting in
the case of Morocco than in Turkey. Policies approaches are different as
Morocco insists in improving competitiveness of its exporting sector, while

Turkey remains more cautious about how to adapt the more vulnerable farms. Turkey is one of the more developed and richer countries in the region. It is also its biggest agricultural producer. Turkey has an incomplete Custom Agreement with the EU and it has been a candidate country for decades. Morocco, at a lower human development rank, has evolved from a preferential trade status towards an advanced Association status.

3.1 Morocco

Morocco has relied on agriculture for its economic development but its performance has been usually below expectations. Morocco's agriculture has clear advantages in land and labour, a long producing season, relative proximity to the EU markets, and a history of trading relationships with European countries, especially France. A dynamic exporting cluster is combined with a traditional agriculture.

However, Moroccan agricultural potential is restricted by severe dry conditions in many regions, over-exploitation of water resources, inadequate irrigation techniques, weak farm structures, complexity of the land tenure system, illiteracy, unequal land property, weak institutional capacity, insufficient extension, research and marketing services, weak farming structures and high dependency on few export commodities and export destinations.

Since 2008, Morocco is implementing the Green Morocco Plan (GMP) as a major tool to reduce poverty and to improve competitiveness. Under its Pillar 1, the Plan is expected to create 1.15 million jobs by 2020 with a projected annual investment of 0.9 billion euro. Irrigation plans involve the transformation of 550.000 ha until 2020. The plan is intended to have an impact on more than 400,000 farms, both small family-run ones and intensive agri-food firms. GMP's Pillar 2 focuses on solidarity support of smallholder agriculture through improving most vulnerable farms, especially in remote areas. Under this Pillar, 300-400 social projects are registered under the regional agricultural plans.

In the years previous to the GMP, Morocco has signed a set of trade agreements with the aim of promoting their agricultural exports as a means to ensure earnings that help to alleviate its dependency on foreign basic

staples. Among them, the aforementioned Agadir agreement and the FTA with Turkey are two examples of South-South cooperation, while the US-Morocco agreement and the Association Agreement with the EU are cases of North-South integration. While the US-Morocco agreement has certainly not translated into a boom of Moroccan exports (Akesby, 2010), the Association Agreement witnesses less straightforward assessments.

The approach followed in the Association Agreements for agricultural goods follows a stepwise procedure: gradual liberalization extensions are agreed once evaluations of the previous compromises and political negotiations are carried out.

The agreement grants preferential access to agricultural products from the other partner. Preferential concessions to Morocco take several forms: in the most cases, there is a full exemption from tariffs, while for other products this exemption is limited to a tariff-rate quota, often limited seasonally. In addition, another concession for certain fruits and vegetables consists of a reduced entry price, which acts as a sort of minimum import price for a series of fresh fruit and vegetables, quite often coupled with quantitative limits and seasonal application.

The last review of this EU-Moroccan Free Trade Agreement faced strong opposition in the European Parliament due partly to additional concessions to Morocco, though the final vote was favorable in February 2012.[30]This can be understood as a sign of political support to Morocco's reforms and as a clear step towards further trade integration. Trying to offer something to the opponents, in an accompanying resolution, the Parliament called on the Commission to monitor strict application of border measures, such as the tariff quotas applied on tomato imports, and the controls on the entry price system. The resolution also requested an assessment of the impact on European farming.

3.2 Turkey

Turkey is a country with a diversified agriculture, to a great extent based on small farms, many of them not very productive. Agriculture is not only an

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[30] In the following section, an assessment of the value of the preferences given under this review is presented.

economic sector, but plays an important social role. Its agricultural adjustment follows the trend of the emerging countries. Plans for conversion of Turkish agriculture have led is a gradual liberalisation and a paternalistic agricultural policy, based on payments recently linked to the production. Turkey's huge export potential is based on value chains yet to organise, with significant orientation towards extra-EU markets and limited harmonisation of quality standards with the EU. Food security concerns also apply in Turkey, with changing consumption patterns. The variety of climatic zones allows the production of grains, but vulnerable to international competition.

The extent of liberalization in agricultural products in the Custom Union is still limited so a full membership of Turkey into the EU could have significant effects on agriculture in both sides. EU accession began in 2005. In May 2012, the Turkish government and the European Commission declared the need to implement a "positive agenda" to push the negotiations. Difficulties are amplified in a political setting of growing nationalist pressures in both Turkey and the EU, and an unstable macroeconomic climate. Closing positions are also constrained by the substantial differences that still exist in approaches to agricultural policy and rural development.

Turkey's agricultural policy tends to pursue self-sufficiency. Turkey applies market distortions through compensatory payments and subsidies linked to output. In 2001, Turkey introduced direct payments not to different from decoupled payments but they were withdrawn in 2009. So the policy evolution has been contradictory to that of the reformed CAP, which introduced decoupled payments. The interventionist approach of agricultural policy in Turkey is a special case in the OECD area. Most transfers to agriculture remain based on support mechanisms related to production and at market prices. Green box payments are practically inexistent.

Accession to the EU is expected to cause a significant impact on agricultural systems in certain geographic areas, forecasting a significant drop in the levels of protection for potatoes, table grapes, sunflower, corn and barley. These falls could be softened in the context of future international markets, with an expected rise in prices of livestock products. Although the costs of membership may be attenuated by a gradual transition, the family farm model is threatened, which is a common challenge in both the EU-27 and

Turkey. Farm structures are atomized and over 90% of holdings do not exceed 20 hectares, with an average farm size of 6 hectares.

EU Membership will be a challenge for small producers, who will have to adapt not only to a new type of consumer or concentrated distribution, but also to the food safety standards in force in the Union. The integration of producers into cooperatives and other types of organizations varies by sector, with examples of cooperative unions as MarmarabirlikTaris and the olive oil sector, and less success in the fruit and vegetable sector. The impact of accession would require adjustments in the Turkish agriculture. But the market exposure of small farms in the Member States and in Turkey involves more or less similar challenges.

4. Issues in the Euro-Med partnership

In the Euro-Mediterranean partnership, trade is not the least controversial topic. A great deal of studies has underlined the need to overcome the controversies fuelled by the interest groups opposed to trade liberalization. In Europe, pressures emerge from firms and workers of import-sensitive sectors. There are also concerns related to the impact on the environment, in particular the impact of intensive agriculture on global warming and water resources. Critics also argue that trade liberalization hampers small-scale farmers, who represent the majority of the poor in rural areas. Lack of trust also appears in many SEMCs, where the EU approach to extend the scope of trade liberalization is seen as supposedly "colonialist". These views usually present Euro-Mediterranean agreements as tools through which developed countries transfer their economic values into developing countries.

All in all, the distribution of trade impacts results in winners and losers within concerned countries, and these can be regions, sectors, consumers, workers or firms. The role of agricultural policies in the region is to define an agenda that makes it possible both for the SEMCs and for the EU to favour that impact on losers can be minimized, compensated or avoided.

Capítulo 2. Issues in Trade Liberalisation in Southern and Eastern Mediterranean Countries

A great number of reports have studied the effects of the Euro-med Agreements, including aspects of agricultural trade liberalization.[31] These works pay attention to the following outcomes:[32]

- In general, the Barcelona process has not had significant impact on EU-SEMC trade. Progress in expanding trade, fostering investment, and accelerating convergence is below expectations.
- The agreement with Turkey has had significant effects on imports and exports.
- The Agadir agreement had a positive (but not significant) effect on increasing trade between country partners.
- Aggregate liberalisation impacts in sensitive products in the Northern shore of the Mediterranean basin (fruits, vegetables, and olive oil) are expected to be small, but concentrated in certain producing areas and seasons. This concentration of losses in specific areas would make easy to devise accompanying policies for the losers, but this is not taken into account in EU policies. The Sustainmed project's WP4 suggests that a great deal of effort should be put to strengthening the value chains.
- The production potential in SEMCs is not unlimited. Water resources are a constraint in all the countries except for Turkey. The lack of organisation of the fruits and vegetables sector and the weak implementation of standards are currently constraining the export potential. However, an increase in direct foreign investment has been observed in recent years (mainly in Turkey and Morocco), which have contributed exporters in the region to comply with EU standards.
- Consumers of SEMCs, particularly in urban areas, will gain significantly from cheaper food prices, particularly prices of cereals and cereal-based food products. However, prices should not be artificially cheaper through untargeted subsidy programs (see below).

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[31] Some of them have been supported by the EU research programmes, such as SUSTAINMED (or the previous project EUMED-AGPOL) or are linked to international organisations (E.g. IFPRI, IEMED, CSER/CEPS, CEPR, CIHEAM, IMF, etc).
[32] See: Garcia Alvarez-Coque J.M., (2002), Kuiper (2004), De Wulf, L (2009), Rastoin (2009), Emlinger (2010), Abis (2012)

- Small holders in the SEMCs, mainly in rain fed crops, directly suffer from trade liberalization.
- The growth potential of EU agricultural exports to the SEMC markets is probably significant.
- Environmental pressures emerge linked to the increase of activities and urbanisation in coastal areas and the intensification of agriculture. The improved transport infrastructure will increase pressures on natural resources and on biodiversity.
- The Mediterranean diet is negatively affected by the agro-industrial model of mass production.

Can trade liberalization continue? The answer depends partly on the SEMC countries to take advantage of the new opportunities. And this fact is related to their capacity to overcome domestic weaknesses, which have been enumerated above.

5. Selected topics in trade liberalization

In this section we highlight some recent findings related to agri-food trade in this area. These findings, stemming from some of the researches carried out within the SUSTAINMED project, found that some of the conventional thoughts about the impact of trade policies are confirmed, while others have to be qualified. In particular, the current section discusses below the following points: i) The scope of the preferences given to Morocco as a result of the last review of the Morocco – EU protocol; ii) The impact of trade liberalization in fruits and vegetables, which are among the main exporting interests of SEMCs; iii) The extent to which non-tariff measures (NTMs) are applied similarly by the countries in the Mediterranean region; and iv) The underlying factors affecting NTMs applied by the EU on developing countries, in particular on some exporters in the region. We discuss, using EU data, to which extent food alerts and border notifications are related to certain variables, namely, whether the implementation of NTMs depends on the import country within the EU or the export countries supplying the EU market.

5.1 The scope of trade preferences in the reviewed EU – Morocco's protocol

As indicated in previous sections, one of the cornerstones of the Euro-Mediterranean integration has been the signature of the Association Agreements. The agricultural protocols in such agreements have been reviewed, in various degrees depending of the country, leading to gradual trade liberalization between the EU and the corresponding SEMC. In the case of Morocco, the Association Agreement was signed in 1996, coming into force in 2000. The first review of agricultural protocol had effect in 2003 and the European Parliament approved the last review in 2012.

As a result of such review, the majority of Moroccan products are nowadays exported duty-free to the EU. Indeed, this is the main trade preference granted to Morocco. However, for certain products that are sensitive for certain EU producers, some restraints remain and preferences are then limited.

In particular, the entry price system remains in application and, for some fresh products, the preferences granted to Moroccan goods consist of a reduced entry price. This provision applies to tomatoes, cucumbers, courgettes, artichokes, sweet oranges, clementines, table grapes, apricots and peaches. The last three products were added in the last review from 2012, while the other six already had been granted a reduced entry price since 2000. In other products that are not protected with the entry price such as garlic or strawberries, the preference granted consists of a tariff-rate quota.

In addition to the restrictive effect of the entry price system itself -see Agrosynergie (2008), Cioffi and dell'Aquila (2004), Goetz and Grethe (2009) and Santeramo and Cioffi (2012) for thorough evaluations of the system-, a seasonal quota is set for some of these products. They are tomatoes –with monthly quotas gradually increasing until the full implementation of the reviewed agreement-, cucumbers, courgettes and fresh clementines. Quantities exported beyond this quota do not benefit from the reduced entry price, but usually still enjoy from reduced tariffs. The reduced entry price is not constrained by a quota in the other products.

With this framework, an assessment of the last review of the Agricultural Agreement is presented here. The aim of this assessment is to compute the

monetary value of the preferences given to Moroccan exporters, also comparing it with the same value in the previous preferential conditions. To do so, the Value of the Preference Margin (VPM) granted by the EU to Morocco is calculated. This indicator corresponds to the tariff revenue forgone by the EU as giving Morocco a preferential border treatment compared to Most Favored Nation (MFN) conditions, and hence indicates the monetary size of the potential economic transfer to Morocco due to the preference. In fact, the preference can be transformed in market advantages compared to non-preferential competing products, either through a lower market price that permits to gain market share, or through a greater price received by exporters per unit sold (Grethe, 2005). By definition, it is the difference in prices received by preferential and non-preferential exporters multiplied by the quantity that is exported under these conditions.

When the preference is expressed in terms of an ad valorem tariff reduction, the formula to calculate the VPM is (1)

$$VPM = \frac{(t_{MFN} - t_P)}{1 + t_{MFN}} P_P q_P \qquad \text{Eq. (1)}$$

Where t stands for the ad valorem tariffs (or ad valorem equivalents) for the exporters, each type noted by the subscripts *MFN* and *p* (MFN and preferential). *P* and *q* correspond, respectively, to the prices and quantities exported under the preferential regime. Martinez-Gomez (2008) proposed a modification of the formula (1) to consider the cases where entry prices are applied and the preferences consist of reduced entry prices. In this case, two elements of the value of the preference were added, one due to the reduced entry price and the other related to the reduced ad valorem custom duty for countries benefiting of preferences.

We have used these formulae in two fruits - clementines and oranges - and two vegetables - cucumbers and tomatoes -. All of them are relevant products in the trade of fruits and vegetables from Morocco to the EU. In the last years, among all the fresh tomatoes imported by the EU, about three quarters have been originated in Morocco; and about 90 per cent of tomatoes exported by Morocco are sent to the EU. In the case of cucumbers, Morocco sends about one half of its exports to the EU and Morocco represents about

twelve per cent of the value of extra-EU imports of this product. Among the citrus fruits, clementines from Morocco account for about 40 per cent of extra-EU imports, and this market represents close to 20 per cent of total Moroccan clementines exports. In the case of Moroccan fresh sweet oranges, they cover more than 10 per cent of EU imports, while the EU is the destination of above 50 per cent of the Moroccan fresh oranges' exports.

VPM of the previous and the current agreements are compared in Table 1. The last review of the Agricultural Agreement increased by more than one third the value of the potential transfers granted to Morocco in the group of fruits and vegetables considered, reaching about 50.5 million euros after the full implementation of the agreement. Another remark is that the gains calculated in the VPM are due to the enlarged quotas with reduced entry price, with the exception of oranges, where the quota is eliminated but trade flows are experiencing a downwards trend.

Table 1. Comparison of the value of preference margin for selected Moroccan products. Previous and current agreement.

	VPM (€) Previous agreement	VPM (€) Current agreement (Full implementation after 4 years)
Tomatoes	21,877,477	30,628,468
Cucumbers	1,702,768	4,597,474
Oranges	6,057,621	6,057,621
Clementines	7,553,175	9,214,873
Overall VPM (€)	37,191,041	50,498,436

Source: authors' calculations

In particular, tomatoes accrue for about 60 per cent of the VPM of the group of products considered. Whereas this figure might seem quite high, it is not such considering that the yearly value of Moroccan tomatoes exported to the EU is about 250 million Euros. Therefore, preferences account for about 10 per cent of the trade value in this product. In the other products, the VPM values are more modest in absolute terms, being also modest relative to the trade value in the case of the two citrus fruits - about 15 to 20 per cent of the trade value. Conversely, for cucumbers the potential gains boost up to 4.6 million Euros, which are greater than the current trade value. It reflects that the new quotas set increased significantly in this case compared to the quantities currently traded; therefore, there might be a wide opportunity for

Moroccan exporters to increase their consignments to the EU under the new preferential circumstances.

In any event, what is uncertain is the medium term evolution of the productive potential of these products, as a result of the investments made in the light of the GMP may foster the sectors with good market perspectives.

5.2 Simulating F&V trade liberalization

Literature on the Euro-Mediterranean trade liberalization provides some insights from different theoretical approaches. From a general equilibrium perspective, a recent paper by Boulanger et al. (2013) produced simulations considering simultaneously trade liberalization and increased foreign direct investment and capital flows. While their results indicate general productivity gains, in the agri-food sector the effects are not fully conclusive, such in the case of food security for SEMCs. Their results also highlight the distorting role played by NTMs in trade in the area - subsequent sessions of this chapter discuss on NTMs.

From other approach, the partial equilibrium models allow representing with more detailed trade policies that may affect sectors or group of products (Paris et al., 2010). Among this perspective, trade in the Mediterranean area is framed by a series of regulations such as TRQs, entry prices or seasonality that make advisable this approach. Several studies on this token are Britz et al. (2006), Bunte (2005), Garcia Alvarez-Coque et al. (2009, 2010) and Kavallari (2009).

As mentioned above, the policies applied by the EU to protect its fruits and vegetables markets consist on tariffs, TRQs, entry prices and vary seasonally. Hence, a set of partial equilibrium simulations was carried out under the SUSTAINMED project considering these specificities to depict the EU import market for fruits and vegetables.[33] The simulations were carried out for monthly or shorter periods, taking into account the seasonality in the preferential and MFN trade policies.

We considered a number of origins for every product - namely intra-EU origins, Morocco, other SEMCs of relevance depending on the product, and the rest of the world. The import demand is distributed following a two-stage Armington approach, meaning imperfect substitutability among products

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[33] The monthly detailed results are available upon authors' request, and more details are also available in Ouabouch (2013).

from different origins, assuming similar elasticity of substitution. The first stage differentiates between intra-EU and the other suppliers, and the second among the other suppliers. The composite price "P_c" for the good from the "i" different origins is calculated as shown in (2):

$$P_c = [\sum \alpha_i^\sigma P_i^{1-\sigma}]^{1-1/\rho} \qquad \text{Eq. (2)}$$

where α_i^σ is a weight factor, σ, the elasticity of substitution weight, and $\rho = (\sigma - 1)/\sigma_2$.

The market prices for every origin were computed considering their respective export prices, the tariffs applied "t" and a price wedge "w" that incorporates the effect of entry prices and quotas. It is illustrated in equation (3):

$$P_{i} = P^*_i.(1+t_i+w_i) \qquad \text{Eq. (3)}$$

The model is also fed with import demand and export supply behavior parameters - the trade elasticities. They were calculated departing from domestic supply and demand elasticities, and consumption, production, imports and exports FAO data for every country.[34]

Three different scenarios were discussed for the same four products considered in the previous section: oranges, clementines, tomatoes and cucumbers. The three scenarios account for different stages of trade liberalization on the EU fruits and vegetables market. These scenarios evaluated the expected changes in trade flows and prices compared to the baseline scenario - average trade flows and prices for the period 2007-2009. Again, we took Morocco as a reference in two of the studied scenarios but we also explored the effect of a full removal of trade barriers by the EU. The scenarios were defined as follows:

> Scenario 1: Elimination of the entry price system for Moroccan Fruits and Vegetables. Other policy instruments such as quotas or

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[34] See McCalla and Josling (1985, pp. 36-41) to review the methodology of the trade elasticities calculation.

the ad valorem tariffs were kept as currently. Thus, this scenario means a *partial liberalization* of EU imports from Morocco.

Scenario 2: Full liberalization of imports from Morocco. In this case, besides the entry price, ad valorem tariffs and quantity limits are eliminated. Therefore, we assess here a *full access of Morocco's exports* to the EU.

Scenario 3: Full trade liberalization of import from all SEMC. In this scenario, the EU eliminates the entry price system, the tariffs and all the quantitative restraints affecting their imports. Then, it is a *full liberalization of EU import* markets granting SEMC products full access.

The average yearly results are shown in the tables below for every product.[35]Changes in sales and in prices refer to each product (origin) sold in the EU market.

Table 2a. Trade impacts of liberalization scenarios. Comparison with 2007-2009 data.Tomatoes.

	Scenario 1: EP removal for Morocco		Scenario 2: full trade liberalization to Morocco		Scenario 3: full trade liberalization to SEMC	
	Change in sales (%)	Change in prices (%)	Change in sales (%)	Change in prices (%)	Change in sales (%)	Change in prices (%)
Intra-EU	-2.11	-0.39	-2.43	-0.46	-3.68	-0.70
Morocco	92.13	-6.22	111.05	-7.20	109.16	-7.47
Turkey	-4.32	-0.16	-5.03	-0.21	92.15	-7.14
Israel	-2.46	-0.35	-3.36	-0.36	66.12	-5.86
Tunisia	-6.64	-0.02	-6.57	-0.03	93.70	-8.50
Rest of the World	-4.06	-0.20	-4.72	-0.22	84.56	-6.79

Source: authors' calculations

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[35] The monthly detailed results are available upon authors' request, and more details are also available in Ouabouch (2013).

For tomatoes, the first and second scenarios resulted in significant increases for Moroccan exports, with moderate losses to other partner - inclusive of intra-EU sales. In the third scenario, all the extra-EU partners increase their exports to the EU at the expense of the intra-EU sales. A noteworthy instance is that Moroccan results do not differ significantly between the second and third scenarios. Preference erosion is observed in Scenarios 1 and 2 with slight losses for Mediterranean countries other than Morocco. Prices at the EU market of each of origins liberalized go down significantly, but the general intra-EU prices don't fall significantly, given the large size of the EU market for tomato. So the conclusion is that results of a trade liberalization do not show dramatic for the EU tomato market.

Table 2b. Trade impacts of liberalization scenarios. Comparison with 2007-2009 data.Cucumbers.

	Scenario 1: EP removal for Morocco		Scenario 2: full trade liberalization to Morocco		Scenario 3: full trade liberalization to SEMC	
	Change in sales (%)	Change in prices (%)	Change in sales (%)	Change in prices (%)	Change in sales (%)	Change in prices (%)
Intra-EU	-0.06	-0.06	-0.11	-0.11	-0.63	-0.63
Morocco	73.58	-9.48	121.51	-13.88	119.01	-14.24
Turkey	0.01	-0.08	-0.14	-0.11	83.54	-12.08
Rest of the World	15.81	-1.21	15.72	-1.25	65.07	-8.37

Source: authors' calculations

For cucumbers, the first and second scenarios result in significant increases for Moroccan exports with a little reduction of intra-EU sales. If trade is liberalized for all the SEMC, also Turkey greatly benefits from this. All in all, the losses for intra-EU sales are small. MPCs countries would become more competitive with trade liberalization but the effect on EU internal prices for EU producers would not be significant, in a context of product differentiation.

Table 2c. Trade impacts of liberalization scenarios. Comparison with 2007-2009 data. Oranges.

	Scenario 1: EP removal for Morocco		Scenario 2: full trade liberalization to Morocco		Scenario 3: full trade liberalization to SEMC	
	Change in sales (%)	Change in prices (%)	Change in sales (%)	Change in prices (%)	Change in sales (%)	Change in prices (%)
Intra-EU	-0.08	-0.08	-0.08	-0.08	-1.49	-1.49
Morocco	13.91	-1.27	13.91	-1.27	8.76	-2.37
Turkey	-0.47	-0.04	-0.47	-0.04	36.79	-4.43
Israel	-0.49	-0.04	-0.42	-0.04	8.43	-2.28
Tunisia	-0.49	-0.05	-0.45	-0.05	2.72	-2.05
Rest of the World	-0.78	-0.01	-0.78	-0.01	246.95	-10.87

Source: authors' calculations

Removing barriers in the oranges market would only result in noticeable variations if trade is liberalized for all the SEMC. In this case, Turkey would be the most benefitted country. As a consequence of this scenario, the intra-EU sales would be affected by a small but noticeable reduction.

Table 2d. Trade impacts of liberalization scenarios. Comparison with 2007-2009 data.Clementines.

	Scenario 1: EP removal for Morocco		Scenario 2: full trade liberalization to Morocco		Scenario 3: full trade liberalization to SEMC	
	Change in sales (%)	Change in prices (%)	Change in sales (%)	Change in prices (%)	Change in sales (%)	Change in prices (%)
Intra-EU	-0.41	-0.19	-0.51	-0.25	-1.63	-0.82
Morocco	9.63	-2.06	16.68	-3.33	16.22	-3.63
Turkey	-0.41	-0.19	-0.51	-0.25	11.09	-4.42
Rest of the World	-0.24	-0.24	-0.29	-0.29	22.57	-5.04

Source: authors' calculations

In the case of clementines, when trade is liberalized for the SEMC, the gains for them are moderate in terms of additional exports to the EU, and they happen at expense of intra-EU sales. In the other scenarios, the increases in exports that Morocco experiences are moderate.

In general terms, the results presented here show that trade liberalization, including the removal of entry prices for Morocco would boost its exports in the two vegetables. These are the cases where its effect seems more protective. In all the products, eliminating the entry price for Morocco would not affect domestic prices at the EU in a significant extent. Moreover, our results indicate that trade liberalization in EU markets would not result in dramatic price and sale changes for EU producers, in spite that extra-EU import flows could rise significantly. This is one of the myths that we want to qualify in this section. That the marginal impact of trade liberalization does not provoke substantial trade impact does not mean the absence of problems in the value chain for exporters and farmers. Pressures on prices are in many cases related to the lack of transparency, lack of organization and asymmetric information among the different agents in the value chain. Very often, market pressures are attributed to foreign competition when the source of problems may perfectly be related with weak functioning of the value chains.

5.3 NTMs in SEMCs

Recent research has clearly illustrated the trade restrictiveness of NTMs (Hoekman and Nicita, 2011; Lloyd et al., 2010; Manole and Spatareanu, 2010). However, NTMs do not necessarily restrict trade; on the contrary, some evidence indicates that many rules are precisely set to facilitate transparency and predictability. For example, Sanitary and Phytosanitary measures (SPS) and Technical Barriers to Trade (TBT) can bring significant social benefits even to low income countries (Chemnitz et al., 2007), such as reduced agrochemical use and a framework that guides good agricultural and management practices.

As a part of their integration process, SEMCs countries are in different stages of harmonization of their NTMs (Gonzalez-Mellado et al., 2010). For this reason, providing knowledge and fostering better harmonization of NTM in the Mediterranean area may be helpful to foster trade rather than restricting it.

We present here a quick view to the estimates of ad valorem equivalents of NTMs (AVE) by Kee et al. (2009) calculated for Mediterranean Partner Countries. Calculating AVE involves converting a non-ad valorem tariff into a percentage of the value of the product (see Tudela et al., 2013). The group

of countries considered in our study consisted of Algeria, Egypt, Jordan, Lebanon, Morocco and Tunisia. AVEs were considered for products defined at tariff lines up to 6 digits of the Harmonised System (HS).

Summarizing the main results, the first element to point out is that the most SEMCs have AVEs that can be considered as peaks.[36] Concretely, 79 per cent of products present an AVE value that can be considered as an AVE peak, if we define it as a value greater than 0.20.In addition, the total of AVE peaks over 0.75 is 47.8 per cent. Graph 5 reflects the situation for the set of products selected, but detailed results show that this situation persists in all the studied countries.[37]These results suggest there is still a long-way until NTMs lose relevance in constraining trade in SEMCs.

Graph 5.Total AVE of NTMs in MPCs, by AVE class.Percent of products in each class.
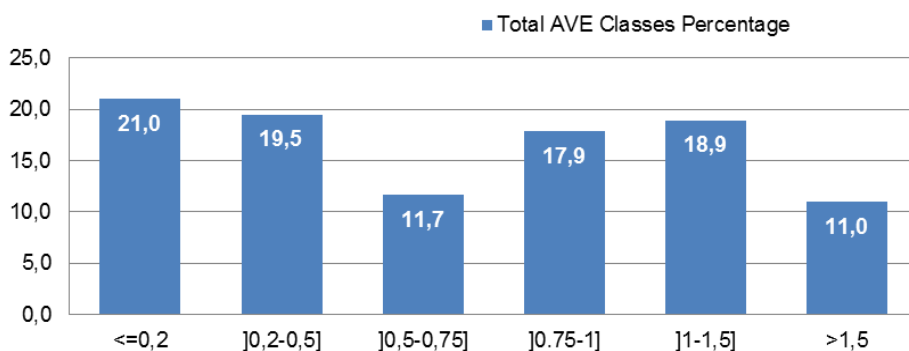
Source: AVE Classes Quick Search, NTM Inventory

Another finding to highlight is that higher AVE peaks take place mostly in a set of products: chapters 02 (meat), 08 (fresh fruits) and 20 (processed fruit

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[36] We keep the "usual" criteria for identifying peaks: literature identifies as tariff peaks those above 0.2 (mentioned in ICSTD, 2009). Among these peaks, the modalities document circulated in the WTO current negotiations, suggests that the highest tariffs reductions shall be done in those where the final bound tariff or ad valorem equivalent is greater than 75 per cent (World Trade Organization, 2008). Following this, we will identify as "high AVE peaks" those AVE values greater than 0.75.

[37] These country results are omitted for space reasons, but are available upon authors' request. More details can be found in Tudela et al (2013).

and vegetables) show the highest number of AVE peaks over 0.75. These three chapters account for above one third of these high peaks. Table 3 illustrates the results concerning the number of high AVE peaks for the countries considered.

Table 3.Number ofhigh AVE peaks by product code.

Chapter	Product Description	Number of highest AVE peaks	Percentage of high AVE peaks
02	Meat and edible meal offal	83	13 %
20	Prep. of vegetables, fruit and nuts	80	12 %
08	Edible fruits and nuts	72	11 %

Source: Number of highest AVE peaks. Kee et al. (2009) and authors' calculations.

The three leading categories in SEMC exports to the EU are fruits, vegetables and preparations based on these two fresh products. Altogether, they represent 54 percent of MPC exports. The large AVE applied to these products seems somewhat contradictory with the aim at building at intra-regional market. Apart from the "protectionist hypothesis", sensitiveness to sanitary and phytosanitary problems may lead to pose exigent NTMs on certain products. It is interesting to note as an instance that all countries have NTMs with high AVE values in the product code 020629 (edible offal of bovine animals). That might correspond to concerns regarding consumers' health protection.

NTMs in the region are far from being harmonized. Focusing on AVE over 0.75, Algeria is the country with larger number of AVE peaks (22 per cent out of the total) and Jordan the one with less (4 per cent). It might be understood that Jordan is the country which is less trade restricted by NTMs.

Focusing on the two chapters with the greatest number of the high AVE peaks (meat and preparations of vegetables and fruits), the next Graph provides a breakdown of the distribution of the high AVE peaks (over 0.75). For both products Algeria and Tunisia show the highest absolute frequency of the high AVE peaks. Egypt and Jordan have the lowest frequency of high

AVE peaks, whereas Morocco seems to apply more restrictive NTMs on preparations of fruits and vegetables than on meat.

Graph 6.Number of AVE by Country by AVE classes and by product. High AVE peaks
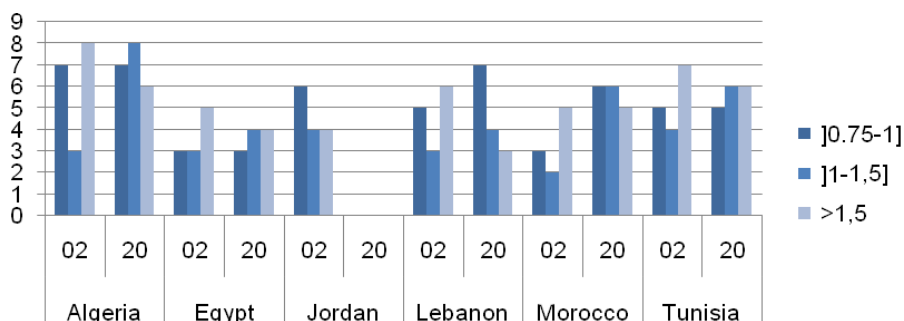
Note: As a rule, missing country/period data means that the reporting country had not reported data for that specific year. E.g: Jordan chapter 20 in this figure.Source: Kee et al. (2009). Authors' calculations.

5.4 Food alerts and notifications by the European Union

Limited resources in developing countries preclude them to participate effectively in the World Trade Organization (WTO) and still they are unable to fully benefit of the opportunities generated by multilateral agreements (Michalopoulos, 1999), given their lack of capacity to comply with standards and controls. As an instance, the EU applies strict standards compared to others standards required in the OECD area. Indeed, accomplishing the EU standards is still a challenge for import products. However, according to Grazia et al., (2009), the main exporting sectors from SEMCs are less affected by border rejections as a consequence of a higher compliance effort undertaken by exporting countries, including infrastructure, skills, human resources, control and test procedures.

- Reputation effects

Literature on the effect of NTMs is still scarce and does not provide a complete image on the NTMs and reputation effect on the cross trade system. This reputation effect is the core point of the analysis introduced in

this section. The underlying idea under this concept is that one product's rejections in one year may affect the probability of future rejections, and that such effects may appear at product, sector and country level. All them constitute a set of so-called *reputation effects*.

To our knowledge, there are only two studies that have focused on the reputation effect regarding the exports of developing countries: the analyses by Baylis et al. (2010) and by Jouanjean et al. (2012). Departing from these two documents, we extended knowledge on the reputation effect concerning EU imports.

To do so, the notifications registered by the EU and included in the Rapid Alert System for Food and Feed (RASFF) were used. The database used consists of 6,757 observations representing the number of notifications registered by the EU during the period of 2000 and 2012 from 21 developing countries, including Turkey and some other SEMCs. Suppliers in the sample were selected on the basis of their export volume to the EU and the number of registered notifications. A conditional fixed-effects negative binomial regression was applied to determine the effects of certain variables in the number of notifications in the year "t". Among the explanatory variables, there are a set of reputation effects –related to the product and sector, and related to the geographic area and country of origin- as well as GDP per capita of the originating country, and the growth and volume of imports.[38]

Taking into account the conventional thoughts stated regarding with the effect of trade policies, the main result from this analysis is that the product reputation effect is found to be statistically significant, suggesting that NTMs decisions are affected by the past history of notifications registered: at product level, the notifications in the year "t-1" increase the likelihood of expected notifications in the year "t" for that same product.

By contrast, sector and country reputation effects are found to be not significant statistically. Regarding to the regional reputation effects, only the variable representing the reputation effect of the Latin American region shows a positive statistically significant coefficient. Nevertheless, the

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[38] All the details of the analysis can be found in Taghouti and Garcia Alvarez-Coque, 2013.

quantitative contribution of such effect is fairly low. No positive regional effect takes place for the SEMC taken as a region. Hence, another conventional thought that can be qualified is that the agri-food exports from the Mediterranean region are particularly discriminated in the EU border, since the empirical evidence found suggests that it does not happen.

- *Differences between EU member states*

Another conventional thought that can be discussed is as follows: there are different propensities to issue notifications across different EU borders. One of the reasons for those different propensities to report notifications might arise from the likelihood of new blights and animal and plant diseases contaminating domestic productions in the importing countries. This argument is sometimes used by EU producers' organizations indicating that the "zeal" of border authorities diminishes in the customs located in countries with low productive levels.

To empirically test this statement, we explored 1,123 notifications for fruits and vegetables, considering which EU Member stated issued them.[39] We also distinguished between notifications related to exports from all the extra-EU origins from the ones related to SEMC origins.

The first focus was put on the EU Member States that are big producers of fruit and vegetables and import low volumes of these products -that includes the majority of EU Mediterranean countries. Slovenia, Malta and Cyprus tend to issue fewer notifications than the rest of EU Mediterranean countries in general terms. But the situation switches when the test is restricted to SEMC origins, as then these three countries have a significantly higher frequency of notifications than the rest of EU Mediterranean countries.
Besides this case, Greece's frequency is significantly ahead than Italy's and Spain's. Another finding that might be surprising is that Spain issues the lesser frequency of notifications out of this entire group of EU Mediterranean group of Member states. This seems to contradict again the

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[39] As in the previous case, more details can be found in the Sustainmed report "Agricultural trade liberalization in the Mediterranean region" Sustainmed, Deliverable D10. (Available at: <*http://sustainmed.iamm.fr/index.php/publications/project-reports*>).

use of sanitary and phytosanitary rules as barriers to foreign competitors, since Spain is one of the European fruits and vegetables producers more affected by SEMC exports.

Turning the attention to the big EU importers, again some changes in the ranking appear according to the different origins considered. The most remarkable fact is that Germany's frequency is the lowest considering all the extra-EU origins, while it passes to the first position when only SEMC origins are taken into account. Maybe the strong trade flows with Turkey together with a big number of notifications affecting the same Turkish product are responsible of this fact. A second element to stress is that the Northern EU Countries show a statistically higher frequency of notifications than the Benelux, irrespective of the origin considered. Like in the Spanish case, we could then state that there is little argument for a disguised barrier to trade posed by the Benelux countries although representing a significant share of the EU supply for certain vegetables.

In summary, there is no evidence that the implementation of NTMs, included in the RASFF database, are used by large EU producers of fruit and vegetables as a disguised form of protectionism.

6. Policy implications for the Euro-Mediterranean space

Challenges faced by small farmers in the value chains in the SEMCs are similar to those observed in Europe, in particular in many parts of Southern and Central Europe. Linked to different production systems in the region, in the Mediterranean region various value chain models exist with very different levels of organization. Value chains aimed at the domestic market tend to have a lower level of organization than chains aimed at agricultural exports. The small farms that dominate are poorly organized and suffer from poor infrastructure and considerable loss of product. By contrast, large-scale farms, able to meet the demands of European retailers in terms of plant health and quality, characterize the agro-export chains. It is not surprising that SEMCs mainly export to Europe, since a South-South regional market fails to consolidate. Few policies have explored the organization of the value chain or considered the opportunities offered by transnational cooperation in the Euro-Mediterranean region. The development of marketing partnerships

could strengthen quality, predictability, and speed of supply for all actors in the value chain.

The decision of reforming the CAP in 2013 did not explicitly consider the possibility of partnerships with SEMCs. However, the new CAP discussed some elements that could be included in the future partnership between countries in Mediterranean basin. Among them, two relevant approaches are (i) the organization of agricultural production chains to ensure the sustainable distribution of value-added, including transnational cooperation; and (ii) the measures to help the competitiveness of rural areas based on innovation, preservation of ecosystems, development based on local governance and social inclusion. Both approaches support the idea that it is not only with trade liberalization that a shared development will be reached in the Euro-Mediterranean region.

We cannot deny the local impacts of agricultural trade liberalization on vulnerable agricultural systems. However, this debate has been distorted by the lack of understanding about the real problems of rural areas. First of all, we have to identify what should not be observed as problems but as normal challenges related to the rapid changes in the international economy. Most of these effects can be managed through targeted policies equipped with adequate instruments. The standard approach of agricultural policies, which has been based on a large subsidy component to farming (including the last CAP's single payment scheme), might have been helpful to soften the social impacts of adjustments but it is less effective to guarantee a sustainable development in rural areas. The new CAP represents a move to a more targeted support but links with the provision of public goods are not yet completed (Mathews, 2013).

Why then not talk about a common agenda for agricultural cooperation including the whole region? The need to strengthen agricultural cooperation between the EU and Southern Mediterranean countries is urgent. Trade liberalization alone is not sufficient to alleviate the urgent need for new jobs for rural youth in SEMCs, which lack infrastructure, education, health, human rights and peace. It is necessary to support more effective partnerships, which promote an emergent civil society seeking to build a basis for developing democracy. Trade liberalization in SEMC must be

accompanied by increased development aid and support to civil society.

The EU initiative for Euro-Mediterranean cooperation is the European Neighbouring Programme for Agriculture and Rural Development (ENPARD) puts agriculture at the core of the relationship between the EU and SEMCs. It recognises the key role of agriculture in terms of food security, sustainable production and rural employment and tries to respond to the challenge of modernizing agriculture and rural areas in their countries.

As to agriculture, more efforts have to be taken to consolidate cooperation between economic and social agents. The paper by Compés et al. (2013) lists some successful initiatives in the field of agricultural and rural cooperation. The conditions for a dialogue are being established. The EU and SEMCs can take advantage of the available expertise in strengthening local initiative networks, involving stakeholders, NGOs, and public research and extension institutions.

Cooperation can be extended to cover regulatory areas of mutual interest. As far as agriculture is concerned, the Deauville Partnership launched in 2011 an agenda that covers six priorities: improve market access for agricultural products and encourage investment, to upgrade standards, promote agricultural research and extension, and deliver efficient and sustainable irrigation services. Priority has to be given to building capacities to provide farmers with adequate information and training.

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Capítulo 2. Issues in Trade Liberalisation in Southern and Eastern Mediterranean Countries

Anexo: Imagen de la primera página de la publicación

Chapter 7
Issues in Trade Liberalisation in Southern and Eastern Mediterranean Countries

Lorena Tudela-Marco, José María García Álvarez-Coque and Victor Martínez-Gómez

7.1 Introduction

In the framework of their trade policies aiming at a gradual opening of their agricultural markets, Southern and Eastern Mediterranean Countries (SEMCs) are involved in deepening their relationships with the EU. The Euro-Mediterranean relationship framed by the European Neighborhood Policy pursues a trade liberalization agenda covering agriculture, fishery and processed agricultural products. On 14th December 2011, the Council authorized the Commission to open bilateral negotiations to establish Deep and Comprehensive Free Trade Areas (DCFTAs) with Egypt, Jordan, Morocco and Tunisia. These DCFTAs go beyond trade liberalization to cover other regulatory issues relevant to trade, such as investment protection and public procurement. The process also encompasses agreements among SEMCs themselves. This process joins the Agadir Economic Agreement between Tunisia, Morocco, Jordan and Egypt (2004), which remains open to other Arab Mediterranean countries or to a set of bilateral trade agreements involving SEMCs.

Trade liberalization is combined with an "accompanying" program concerning rural development, the promotion of Mediterranean products, and plans to liberalize services and investments. The result of this process of trade liberalization has been a large network of agreements which covers trade but also cooperation in a vast range of areas of mutual interest including security, democracy, justice and sector policies, with the aim of promoting peace, stability, and prosperity in the region.

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© Springer International Publishing Switzerland 2015   171
M. Petit et al. (eds.), *Sustainable Agricultural Development*,
Cooperative Management, DOI 10.1007/978-3-319-17813-4_7

Fuente: Sustainable Agricultural Development (2015),
Capítulo 7, páginas 171-196.
Publicado en Springer International Publishing; ISBN: 978-3-319-17812-7

Cartas coautores

UNIVERSITAT POLITÈCNICA DE VALÈNCIA

Departamento de Economía y Ciencias Sociales

Valencia, 21 mayo 2015

A quien corresponda,

Como coautor del artículo "Issues in trade liberalisation in Southern and Eastern Mediterranean countries", publicado como séptimo capítulo del libro "Sustainable Agricultural Development, Challenges and Approaches in Southern and Eastern Mediterranean Countries" de la editorial Springer, con número de ISBN 978-3-319-17812-7, autorizo el uso del mismo en la Tesis Doctoral de Lorena Tudela Marco, coautora del artículo y renuncio a utilizarlo como parte de otra Tesis Doctoral.

Para que así conste a los efectos oportunos firmo la presente en Valencia a 21 de mayo de 2015.

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Cartas coautores

Valencia, 21 mayo 2015

A quien corresponda,

Como coautor del artículo "Issues in trade liberalisation in Southern and Eastern Mediterranean countries", publicado como séptimo capítulo del libro "Sustainable Agricultural Development, Challenges and Approaches in Southern and Eastern Mediterranean Countries" de la editorial Springer, con número de ISBN 978-3-319-17812-7, autorizo el uso del mismo en la Tesis Doctoral de Lorena Tudela Marco, coautora del artículo y renuncio a utilizarlo como parte de otra Tesis Doctoral.

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Fuente: Departamento de Economía y Ciencias Sociales, Prof. Víctor David Martínez Gómez

Capítulo 2. Issues in Trade Liberalisation in Southern and Eastern Mediterranean Countries

CAPÍTULO 3: MEDITERRANEAN FOOD TRADE AND NON-TARIFF MEASURES[40]

José María García Álvarez-Coque[1]
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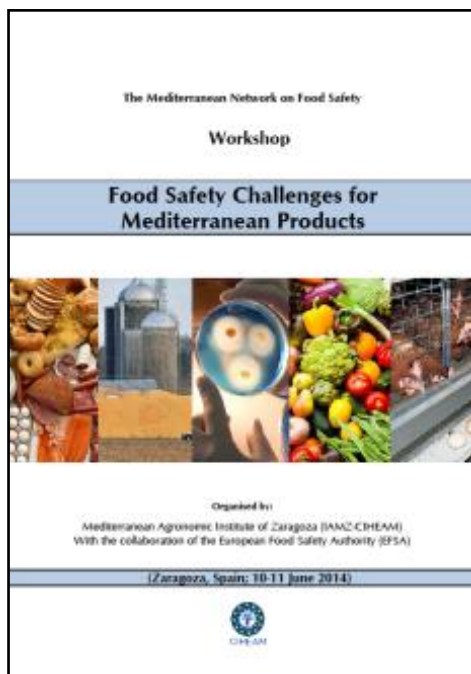
[40] Pendiente de publicación en la revista Options Méditerranéennes del Centre International Hautes EtudesAgronomiques Mediterraneennes (CIHEAM).

Mediterranean Food Trade and Non-Tariff Measures

Abstract
Since the last decades, Southern and Eastern Mediterranean Countries (SEMCs) are following a process of progressive trade liberalization. As a consequence of such process, the significance and interest on Non-Tariff Measures (NTMs) has increased. The aim of this paper is to discuss the underlying factors affecting the implementation of NTMs beyond specific food safety concerns. To do so, we explore the significance of two hypotheses that provide an explanation of NTMs in Mediterranean countries. The first one is the "reputation effect" or the influence of past history of notifications on border rejections. The second one refers to the policy substitution hypothesis or the trade-off between NTMs and tariffs. These two approaches intend to give an overview of the implementation of NTMs situation across Mediterranean trade food area. Both suggest that there are economic and political factors affecting NTM implementation.

Key words
Non Tariff Measures, Southern and Eastern Mediterranean Countries, trade protection, agro-food trade.

Résumé
Depuis les dernières décennies, les pays du Sud et de l'Est de la Méditerranée suivent un processus de libéralisation progressive des échanges. En conséquence de ce processus, l'importance et l'intérêt sur les mesures non tarifaires a augmenté. Le but de cet article est de discuter sur les facteurs sous-jacents pour l'application des mesures non tarifaires au-delà des préocupations spécifiques en matière de sécurité alimentaire. Pour pouvoir le faire, nous examinons l'importance des deux hypothèses qui fournissent une explication des MNT dans les pays méditerranéens. La première est l '«effet de réputation» ou l'influence du passée historique des notifications sur les rejets de la frontière. La deuxième fait réference à l'hypothèse de la substitution de la politique ou le compromis entre les mesures non tarifaires et les tarifs. Ces deux points de vue ont l'intention de donner une image pour la mise en œuvre de la situation des MNT dans l'alimentation du commerce méditerannéen. Les deux suggèrent qu'il y

existe des facteurs économiques et politiques qui affectent la mise en œuvre NTM.

Mots clés
Mesures non tarifaires, Pays du Sud et de la Méditerranée orientale, la protection des échanges, le commerce agro-alimentaire

1. Introduction

Tariffs on imports have been reduced to relatively low levels in the EU and Southern and Easter Mediterranean Countries (SEMCs) especially as the result of the periodic rounds of multilateral and bilateral trade negotiations. This process has led to an increasing interest in the extent to which existing Non-Tariff Measures (NTMs)[41] may distort or restrict international trade. On one side, regulations are often necessary to alleviate market failures, but on the other side, domestic regulations may be imposed simply to restrict imports from foreign competitors (Beghin, 2008). In order to address the issues involving the impact of NTMs, accurate and reliable studies on the actual reasons that explain NTMs are needed.[42]

What explains NTMs? There are, of course, health and technical justifications. NTMs are employed for many purposes, including the correction of information asymmetries and market failures very frequently related to food safety concerns. The use of NTMs is endorsed by the implementation of the WTO Agreements on Sanitary and Phitosanitary Measures (SPS) and Technical Barriers to Trade (TBT), which provide an international legal framework to regulate the implementation of NTMs. When countries implement such measures, they are protecting values such as public health, animal or vegetal health, or consumers' rights. However, they may also have potential protectionism purposes. While tariff barriers have been alleviated under multilateral liberalization agreements, NTMs have

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[41] Bradford (2005) defines Non-tariff barriers as political or governmental practices, in addition to tariffs, which increase the domestic price of a well above their import price. In this paper, we use the more general term "Non-Tariff Measures" because these measures could be welfare improving when they provide information to consumers and decrease the impact of asymmetric information problem (Bureau et al., 2001; Movchan, 1999, Disdier et al., 2008).

[42] Detailed descriptions on NTMs and their quantification can be found in Deardoff and Stern (1999), Bora et al (2002), and Ferrantino (2006).

become a common trade restriction. NTMs can be used as disguised protection aiming at restricting the entrance of foreign produce (Hoeckman and Nicita, 2008; Nimenya et al., 2012).

Harmonization of NTMs in the Euro-Mediterranean regions is a basic goal of the deep and comprehensive free trade area (DCFTA) launched by the EU and most SEMCs. The process, agreed in 1995 in Barcelona, and its follow-up, the Union for the Mediterranean (2008) has aimed at creating an area of shared prosperity, which is translated in the economic field by the establishment of a free trade area between the EU and its Mediterranean partners. Particularly, the agro-food trade has followed a gradual liberalization process over the last decades, as subsequent revisions of the Association Agreements have eliminated or reduced the trade barriers in a preferential and reciprocal basis. Nowadays, the most of agro-food products from SEMCs enter at the EU in a duty-free basis, but NTMs still appear as significant obstacles and they removal or harmonization involve a pre-condition for a deep integration process.

To date, the EU has largely dominated the agricultural trade relations of SEMCs. Morocco shows a positive agricultural trade balance with the EU but other SEMCs, in particular Algeria and Egypt, show a large deficit vis-à-vis the EU (Tudela et al., 2014). According to EU data (European Commission, 2013), trade between the EU and the SEMCs in agricultural and fishery products shares about 5.5% of total EU imports and about 7.6% of total EU exports nowadays. With respect to the products traded, Petit (2009) explains that EU exports to SEMCs are much more diversified than the reverse trade flows from SEMC to the EU. In fact, SEMCs exports are concentrated on fruits and vegetables, with slight and continuous yearly increases. In these goods, SEMCs exploit their competitive advantage, as well as the traditional trade linkages, the aforementioned trade preferences and the geographical proximity to EU markets. On the other hand, in agricultural goods the EU main exporting section is some processed goods such as beverages or prepared foodstuffs. Other relevant agricultural products exported from the EU to SEMCs are dairy products and cereals, mostly wheat that helps to balance the low food self-suffiency ratio suffered in many SEMCs.

In parallel and partially linked to the bilateral EU-SEMC agreements, some SEMCs are involved in a multilateral South-South integration. This process,

namely the Agadir Agreement, has incorporated since 2007 Morocco, Tunisia, Egypt and Jordan in a gradual trade liberalization process. To date, its impact seems to be minor in agro-food trade

Together with the Association Agreements between the EU and SEMCs, the institutional framework devised in the Euro-Mediterranean partnership has included financial instruments to foster the development of SEMCs. The process is supported by the Support to the European Neighbourhood Programme for Agriculture and Rural Development (ENPARD)[43], which is a policy initiative that is part of the EU's commitment to inclusive growth and stability in its neighbourhood, recognising the importance of agriculture in terms of food security, sustainable production and rural employment. Among the axis of action in ENPARD, emphasis is put on achieving food security objectives, and, simultaneously, contributing to increasing food safety and raising quality standards to better benefit from export markets. Then, it is expected that in the next years these programs contribute to a further strengthening in the value chains of key exports from SEMCs to the EU. Such strengthening would imply a better ability of countries involved to comply with public and private standards on imported products.

Most of the literature dealing with NTMs in the Mediterranean region focuses on the role of NTMs on exports from SEMCs to the EU. Emlinger (2010) analysed the implications of NTMs in the entry of fruits and vegetables from different sources into the European markets. Cieslik and Hagemejer (2009) found that even though the new EU Association Agreements liberalised imports of EU products from SEMCs, they did not contribute to the expansion of their exports to the EU markets. This happens as SEMC export success not only depends on a greater access to EU markets, but also on production adaptation to the EU standards, oriented to enhance quality systems and good agricultural practices (Gonzalez Mellado et al., 2010; Rau and Kavallari, 2013).

With this background, this paper presents the results of the recent research carried out at the Universitat Politècnica de València to analyze the underlying factors that affect the use of NTMs applied on agricultural and food trade. We focus on two hypothesis, which are: i) whether the

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[43] In April 2014 CIHEAM launched a web site providing information regarding the ENPARD on SEMCs. The website presents various activities developed in the Southern Mediterranean countries which are partners of EU through the South ENPARD programme. (See: <*http://www.enpard.iamm.fr/en/*>).

implementation of NTMs by the EU is motivated by a systematic behaviour, guided by economic and political considerations beyond the appearance of specific food alerts and safety concerns; ii) whether the implementation of NTMs in SEMCs is related to the removal of tariffs to trade, so a substitution of policies could take place. In summary, we are interested in dealing with an explanation of the NTM implementation that is not directly or solely linked to food safety issues.

To do so, in the next section, we will explore the EU behaviour expressed by the agro-food notifications on food alerts by the EU on imports with Mediterranean origin. Afterwards, the links between tariffs and non-tariff measures will be investigated by looking at the possible trade-off between tariff and non-tariff protection. The last section summarizes the main findings and offers some policy conclusions.

2. Explaining EU food alerts

As mentioned above, the EU is a major agro-food trade partner for SEMCs. Accomplishing the EU sanitary and safety standards is a challenge for Mediterranean exporters (García Alvarez-Coque et al., 2012). A way of dealing with this issue is to monitor border rejections, since they are indicators of exporting countries to comply with food safety and quality requirements imposed by importing countries. During the period 2003 – 2008, the European Rapid Alert System for Food and Feed (RASFF) reported a total of 1,123 border rejection notifications concerning fruits and vegetables imported from the SEMCsto the EU (Grazia et al., 2009).

RASFF supplies information on food alerts and border rejections. This database provides a direct measure of NTMs, expressed by the number of notifications of SPS measures applied by EU countries on imports from its trade partners. RASFF does not provide information of food alerts expressed in terms of notifications in given trade chapters of the Harmonized System (HS)[44], which could facilitate their analysis. To solve that, we designed an Excel lexicographic tool to facilitate the conversion of over 1792 observations from the RASFF dataset into notifications classified by HS code.

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[44]Harmonized Commodity Description and Coding Systems, used to describe products in trade statistics at 6-digit, 4-digit and 2-digit levels.

Focusing on notifications from the main EU importers concerning SEMCs as origin countries, Figure 1 shows the number of notifications applied by EU authorities on exports from Turkey, Morocco and others SEMCs with destination to Spain, Netherlands, France, UK and Germany, between 2000 and 2013. Table 2 reflects the notifications of the considered dataset classified by trade chapter at 2-digit level. Table 3 provides its classification by type of food alert.

Figure 1. Number of notifications applied by selected EU Member States[a] on agrofoodSEMC[b] exports.
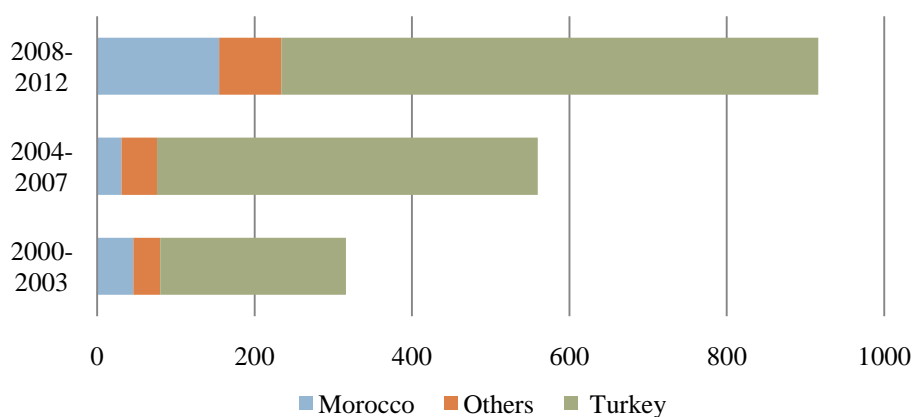
Note: a) Spain, Netherlands, France, UK and Germany. b) Morocco, Tunisia, Turkey, Egypt, Lebanon, Algeria and Jordan.
Source: Authors' calculations from RASFF database

It can be observed in Figure 1 that the number of notifications is increasing in recent years. Then, one might suppose that figures could continue increasing in the following years. The observed increase can probably be attributed to the rise in notifications for products found to be unfit for consumption, but also, due to the increased control related to regulations and standards imposing reinforced checks for a list of products from outside the EU. Turkey is one of the countries –overall in the world, not only in the SEMC group- with highest number of notifications, which is highlighted in every RASFF annual report (see, for example, RASFF 2012).

Figure 2 shows those trade chapters that accumulate more notifications. The significant number of notifications in the product category "Fruits and nuts" (HS 08) is mainly due to the notifications on aflatoxins in dried figs from Turkey. The 111 notifications in the category "Tea and spices" relate to different spices such as: chilli powder, paprika, curry powder and camomile Tea, etc. Concretely 89 notifications concern spices and herbs originating from Turkey and 15 from Egypt. Table 1 summarises the main problems appeared on EU imports from selected SEMCs.Note: a) Spain, Netherlands, France, UK and Germany. b)Morocco, Tunisia, Turkey, Egypt, Lebanon, Algeria and Jordan.

Figure 2. Notifications at different trade chapters, by selected EU Member States on agrifood SEMC[b] exports.
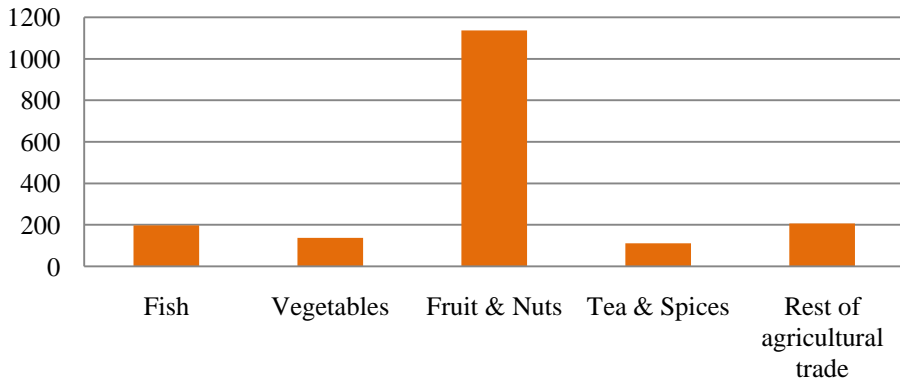
Source: Authors' calculations from RASFF database

Fish and crustaceans (HS03) is the most-notified category of food of animal origin. In this case, the results show clearly that heavy metals and bad hygienic state are still the most reported hazards.

Figure 3. Classification by type of food alert and by year, by selected EU Member States[a] on agrofood SEMC[b] exports
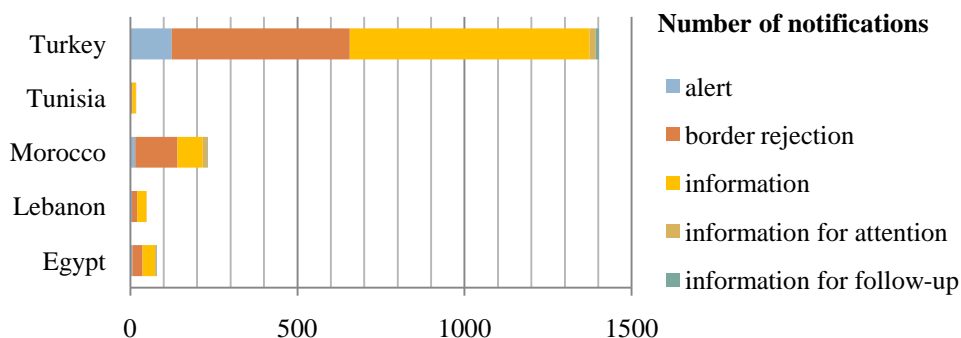
Note: a)Spain, Netherlands, France, UK and Germany. b) Morocco, Tunisia, Turkey, Egypt, Lebanon, Algeria and Jordan. Source: Authors' calculations from RASFF database

Figure 3 shows the different types of classifications based on RASFF. Since 2008, RASFF differentiates between "market notifications" (alerts and information) "border rejections" and "news information" (notifications for attention and for follow-up). Market notifications are about products found on the Community territory for which a health risk was reported, 1.909 in total for the countries and period covered. Products that are subject of a border rejection never entered the Community and were sent back to the country of origin, destroyed or give another destination, accounting to 712 cases.

Table 1. Main hazard type, origin and product category (2012). Notificationsby selected EU Member States[a] on agrofood SEMC[b] exports

Origin	Main risks	Main products
Egypt	Aflatoxins Methomyl	Groundnuts and peanuts Fresh strawberries
Morocco	Too high content of sulphite and Heavy metals Bad hygienic state and parasitic infestation	Fresh and frozen Fish
Tunisia	Mycotoxins Aflatoxin	Pistachios and hazelnuts Dried Figs.
Turkey	Too high content of sulphite Aflatoxins Methamidophos	Dried apricots Dried figs and hazelnut Green Peppers
Lebanon	Aflatoxins	Pistachios and nuts

Note: a) Spain, Netherlands, France, UK and Germany. b) Morocco, Tunisia, Turkey, Egypt, Lebanon, Algeria and Jordan. Source: Authors calculations based on RASFF.

Impacts of NTMs largely depend on the type of standard required and policies designed by EU with their partners (Disdier et al., 2008; Anders and Caswell, 2009; Disdier and Maret, 2010; Martí-Selva and García Alvarez-Coque, 2007). The literature shows that NTMs have basically two contradictory sets of effects for developing countries. Essaji (2008) found that the NTMs lead to increasing production and compliance costs. By contrast, Maertens and Swinnen (2009) suggested that foreign standards push up the production quality and help firms to realize beneficial productivity gains. In the same line, Chemnitz et al. (2007), state that SPS and TBT measures can bring significant social benefits even to low income countries, such as reduced agrochemical use and a framework that guides good agricultural and management practices. The EU is an attractive destination for emerging countries exporters, given its relevant agro-food demand size, the historical relations of trade and the geographical proximity in the case of Mediterranean partners. Despite the harmful effect of NTMs, they may aid to improve the quality level representing strong motivation to develop trade flows of agro-food products through countries.

Taghouti and Garcia Alvarez-Coque (2013) provided a test for the hypothesis that one product's border rejections in one year may affect the

probability of future rejections, and that such effects may appear at product, sector and country level. Thus, the quoted authors tested to which level that past history of food alerts or notifications, that is to say "reputation", significantly influences EU behaviour on actual notifications[45]. At each year (t), the EU authorities may implement NTMs based on present risk assessment criteria, but they are also influenced by the past. Hence, the hypothesis that the product notifications of the year (t-1) and previous years could raise the notifications of the year (t) was examined.

Taghouti and Garcia Alvarez-Coque (2013)[46] applied a conditional fixed-effects negative binomial regression to determine the effects of certain variables in the number of notifications in the year (t). Among the explanatory variables, the "reputation effects" refer to notifications issued at (t-1) on the same product (4-digit HS code), on the sector where such product belongs to (similar products of the corresponding 2-digit HS code), to the country of origin, and to the corresponding geographic area (e.g. Mediterranean region, South America). Other explanatory variables influencing current notifications are the per capita GDP of the originating country, and the import volume and growth.

The per capita GDP was taken as a measure of economic development and capacity of the exporting country to face NTMs. The level of development of partner countries is expected to be negatively correlated with border rejection figures. Indeed, in the quoted study, the per capita GDP was statiscally significant at 1% signifcance level which means that the EU rejections depend on variables correlated by the per capita GDP of the countries (infrastructure, human capital, etc). Import growth was also found a relevant determinant of the total number of refusals, as EU behaviour could be affected in agri-food trade by a protectionist behaviour. Indeed, the positive coefficient of this variable means that, as a general trend, a sharp import flow increase from a given exporter with a history of non compliance is accompanied by a stricter control in the borders so more rejections and notifications by the EU authorities could be expected. The impact of the sector and country reputation were also found to be statiscally significant.

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[45] By doing that, Taghouti and Garcia Alvarez-Coque introduce the reputation effects in the analysis of EU agricultural imports, which is comparable to the studies carried out in the USA by Jouanjean et. 2012.

[46] See also Taghouti, I. (2013)

The variable representing the reputation effect of countries belonging to the Mediterranean region was statistically significant but came with a negative sign. In the case of SEMCs, given their export specialization in products competing with Southern European production (fruit and vegetables and olive oil), the historical partnership and the geographical proximity in the case of SEMC might have a positive effect on the compliance to the required standards.

Linking these results with the figures depicted earlier, the increase in food alerts identified in Figure 1 appears to be motivated by specific safety concerns rather than by EU protectionist behaviour against products from the Mediterranean region. Moreover, it is true noting that significant EU investments in the agro-exporting sectors in these countries help to overcome NTMs. Such relation can improve the capacity of these countries to achieve the quality and standards required by the EU, as the financial tools like ENPARD can do as well.

3. Non-Tariff Measures applied in Southern and Eastern Mediterranean countries

3.1 The hypothesis of policy substitution

As a part of their integration process, SEMCs are in different stages of harmonization of their NTMs (Gonzalez-Mellado et al., 2010). Providing knowledge on NTM harmonization in the Mediterranean area may be helpful to foster trade rather than restricting it. Tudela et al. (2013, 2014) used the estimates of ad valorem equivalents of NTMs (AVEs) by Kee et al. (2009) to identify "peak levels" in several SEMCs. The AVEs reflect what would be the theoretical tariff levels that would produce equivalent effects to the NTMs applied by a given country on a given product. It was found that most SEMCs have AVEs that can be considered as "peaks".[47] It appears that stringency of applying measures by the own SEMCs seems to be relatively stronger at the borders as compared to a less effective monitoring in the domestic market (De Wulf et al., 2009).

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[47] This paper kept the "usual" criteria for identifying peaks: literature identifies as tariff peaks those above 20% (mentioned in ICSTD, 2009).

Some authors have suggested the hypothesis of "policy substitution" between tariffs and NTMs. The policy substitution hypothesis in the context of large-country terms-of-trade motives for tariffs and regulations has been studied in Staiger and Sykes (2009). Going deeper into the subject, results by Gourdon, J., et al. (2012) suggest the presence of correlation between the use of NTMs and traditional forms of trade policy. In fact, the possibility emerges that tariff and NTMs can act as substitute or complementary, in both cases showing the impact to domestic political economic pressures (Bown and Tovar, 2011). The evidence is not conclusive as the restrictiveness of NTMs can be seen as depending on the sector or the country income (Dean et al., 2009).

In order to explore possible interdependence between NTMs and tariffs in agro-food trade we studied NTMs situation in a subset of SEMCs gathering the available data for comparing tariffs and NTMs equivalents. The products include the whole range of agro-food products at the 6-digit level of the Harmonized System (HS chapters 01 to 22).

The NTMs are collected from the data on AVE of Non-Tariff Measures labelled from now on as Non-Tariff Equivalents (NTEs) estimated by Kee et al. (2009). NTEs are expressed as percentage of the value of the product, which make them directly comparable with tariffs. The countries selected are those in the Agadir Agreement, due to their relevant level of integration across SEMCs.

The tariffs data are collected from the World Integrated Trade Solution (WITS) database. Concretely for the study, the Most Favoured Nation (MFN) applied tariffs at HS 6-digit were collected, corresponding to the same period when the NTE were available.

Obviously, these estimates are not free of limitations.[48] We are also aware that the tariffs selected in WITS database are multilateral, so they only reflect the general trade policy of a country and not the expression of the bilateral trade policy with specific partners.

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[48] Kee at al. (2009) offer a comprehensive set of NTEs. Other estimates with a different or more limited scope can be found in Deardoff and Stern (1999), Dean et al., (2003) and Vaughan (2005). Nimenya et al., (2010) extended the price comparison method to account for imperfect substitution and factor endowment under monopolistic competition. Sanjuán et al., (2013) suggest an alternative way of measuring NTE based on the gravity equation.

3.2 Is trade protection significant?

We first explore the overall scope of agricultural protection. Descriptive statistics on the incidence of tariffs and NTMs in terms of frequency, mean, standard deviation and ratio NTE/tariffs were calculated, in order to get a general overview. Table 2 depicts the simple average NTEs and tariff levels on agricultural imports. The table shows the relatively high protection level in the set of countries studied[49], with the exception of Jordan. The situation changes from one HS chapter to another, as indicated by the relatively high standard deviations calculated, with some chapters with low protection -in particular fish- and some others with relatively high protection. Across countries, Egypt shows the highest level of standard deviation due to almost prohibitive tariffs in HS chapters 21 and 22. The tariffs and NTEs displayed are "multilateral", showing the general orientation of trade policy, as the figures don't reflect the bilateral trade liberalization undertaken among countries in the region.

Table 2. Non-Tariff Equivalents and Tariffs on agricultural imports in Agadir countries (ad valorem %).

	Tunisia	Morocco	Jordan	Egypt
NTEs				
Mean	41.1	35.9	6.4	44.2
Standard Deviation	55.2	53.5	25.0	56.2
Tariffs				
Mean	73.5	52.9	21.9	66.6
Standard Deviation	53.2	45.9	24.2	376.0
Ratio NTE/Tariff	0,56	0.68	0.29	0.66

Source: Authors' calculations.

3.3 Are trade policies transparent?

In average, NTEs are lower than tariff levels in the four countries considered, although ratios of NTEs to multilateral tariffs range from 0.29 in Jordan to 0.68 in Morocco and Algeria. This indicates that although tariff liberalization remains an issue in agricultural trade, non-tariff protection is

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[49] Although the list of countries can be extended to more SEMC, care was taken for incomplete datasets or inconsistent figures, so the sample of countries is limited in this paper.

also relevant, in particular because NTMs are not as transparent as tariff protection. The fact that the ratios NTE/tariffs are lower in some countries than others suggests that transparency of trade policies is not uniform in SEMCs. In the next paragraphs we explore protection and transparency in trade rules, showing that both concepts may not necessarily overlap.

The comprehensive set of data regarding protection extracted from the sources quoted in Section 3.1 can be classified with the aim of creating a systematic or "taxonomy" of the protection. The frequency of the so-called "peak" equivalents was measured, to highlight both tariff and NTEs exceeding a certain threshold. To define such peaks, the starting point was the modalities document prepared by the Committee of Agricultural Negotiations circulated in the Doha current negotiations (WTO, 2008). For developing countries, it suggests that the highest tariffs reductions shall be done in those products where the bound tariff or ad valorem equivalent is greater than 75 per cent. Besides, when the tariff values are between 0 and 30 per cent, the lowest rates of reduction shall be applied. After that, two alternative thresholds for tariffs peaks were established at 30% and 75%. On the same token, we identified as NTE peaks those values greater than 75%, with the aim of identifying cases where the price effects of NTMs were of utmost magnitude.

Thus, for each country, the taxonomy of products according to their trade protection pattern was developed combining the NTE and the tariff level. This allows comparing protection across countries and groups of products. To do so, four categories have been defined:

- High protection: The first category contains all products where tariffs are relatively high (above 30 or 75 per cent) and also high NTM are applied (NTEs greater than 75 per cent).
- Disguised protection: The second category contains all products where tariffs are relatively low (less than 30 or 75 per cent) but high NTM are applied (NTEs greater than 75 per cent).
- Low protection: The third category contains all products where tariffs are relatively low (less than 30 or 75 per cent) and also low NTM are applied (NTEs below 75 per cent).
- Transparent protection: The fourth category contains all products where tariffs are relatively high (above 30 or 75 per cent) but low NTM are applied (NTEs below 75 per cent).

Thus, the protection for some products can rely on high tariffs and low NTEs, which means a protectionist approach but transparent in the sense that tariffs are less trade-distorting. On the other extreme, there are products with relatively low tariffs but the NTMs applied have high NTEs, situation that has been considered as "Disguised" protectionism. There are of course groups of "High Protection" and "Low Protection", grouping products where both tariffs and NTEs are high or low, respectively

The taxonomy of protection is illustrated in Table 3, which shows that a significant number of products can be considered as receiving transparent or low protection levels.

Table 3. Taxonomy of agricultural trade protection (Percentage of products in each group).

Category of protection	Egypt		Jordan		Morocco		Tunisia	
	%	Highest frequency HS chapter	%	Highest frequency HS chapter	%	Highest frequency HS chapter	%	Highest frequency HS chapter
Thresholds: NTE 75% and Tariff 75%								
High	1	22	0	-	2	02	9	02,03
Disguised	26	08	4	02	21	03	19	03
Low	71	03	95	03	71	03	48	03
Transparent	1	22	2	22	5	02	25	07
Thresholds: NTE 75% and Tariff 30%								
High	6	20	0	-	22	03	23	03
Disguised	21	08, 15	3	02	2	12	5	12
Low	57	03	52	03	15	15	14	12
Transparent	15	20	45	08	61	03	58	03

Note: HS chapters

02	Meat and edible meat offal	12	Oil seeds and oleaginous
03	Fish and crustaceans	15	Animal or vegetable fats and oils.
07	Edible Vegetables	20	Preparations of vegetables and fruits
08	Edible Fruits and Nuts	22	Beverages

Source: Authors' calculations.

Disguised protection is significant in Morocco, Tunisia and Egypt if thresholds are set at 75%, ranging from 19 percent of total products in

Tunisia to 26 percent in Egypt. When thresholds are lowered for tariffs to 30%, the disguised protection group diminishes in Morocco and Tunisia, but in turn, the high protection group increases in both countries to 22 percent in Morocco and 23 percent in Tunisia. This indicates that, in spite of the criterion for setting the level of tariff peaks, the NTE keep a protective role in a significant number of cases.

Jordan shows a low protection level, irrespective of the criteria set. It does not have products in the high protection group, and the percentage of products in the disguised group is only 4 percent taking the first criterion (75%, 75%) and 3 percent in the second criterion (75%, 30%). In Egypt, the high protection group keeps at only 6 percent of total products with the same thresholds but the disguised protection group still represents 21 percent of products for the same criterion. As a conclusion, data on tariff and NTE show that (i) high NTE are still significant in several SEMCs countries and (ii) high NTE appear both in products with relatively high and in products with relatively low tariff levels.

4. Concluding remarks

In this paper, the protection applied by SEMCs to agro-food products is analyzed. The general argument to be explored was that NTMs are affected by economic and political reasons that are not necessarily connected to specific sanitary and safety concerns. This was approached following two main specific hypotheses. The first is that EU import border rejections and food alerts are explained by a range of variables, including the history of past notifications ("reputation" effect), the import volumes and growth, and per capita GDP of exporting countries. The second hypothesis deals with the possibility of a policy substitution or complementarity between tariffs and NTMs. Both hypotheses were investigated in the context of the Euro-Mediterranean DCFTA.

EU Notifications included in the RASFF database appeared to have been influenced by real SPS and TBT problems. However, beyond specific safety problems, there is a wider common behaviour on the way standards are applied. EU notifications are affected firstly by the own reputation of a product and the sector reputation in a given zone, with relatively stronger effect of the reputation built at a product level. Notifications are also pushed up by the import volume, with a clear response of the alert system to import

growth, suggesting possible protectionist reactions. Implementation of NTMs by the EU vary according the per capita GDP of the exporter, suggesting that investment in infrastructure and human capacities favour the integration of agro-exporting firms in the global value chains to comply with EU requirements regarding the quality of imported products.

However, no special disguised protection was found in the way EU policies affect export flows from Mediterranean countries to the EU member states, compared to flows originated in other world's regions.

The policy substitution analysis was carried out by combining information regarding the protection via tariffs and via NTMs, using comprehensive datasets, which allow a product-by-product detailed view of the issue. Means of achieving agricultural protection are varied in the Mediterranean region. There are different possibilities at stake: only-tariff protection, in other cases NTMs may be used as a substitute for tariffs, while in other cases significant NTMs coincide with tariffs.

To ascertain these elements, a taxonomy or categorization of the products has been made, considering simultaneously the protection via tariffs and via NTMs. The dominant category observed is low protection. However, the general picture shows that a relatively high level of transparent protection (e.g., high tariffs and relatively low NTEs) still remains as well as significant disguised protection (e.g. low tariffs and relatively high NTEs) in the four countries considered. Nevertheless, there are some country differences, as Jordan and Egypt seem to have lower number of products with significant protection. The general conclusion is consistent with other estimates (see Rau and Kavallari, 2013). In addition, another remarkable fact is that the values of the NTEs are lower than the tariffs.

The level of protection in the considered sample of SEMCs varies depending on the products, although certain product chapters 02 (meat), 03 (fish), 20 and 22 (processed fruit and vegetables) are more protected which is in line with some previous results from Tudela et al. (2013).

While this analysis indicates that there could be certain relationship between NMTs and tariffs, it cannot be stated that SEMCs are implementing NTMs as a substitute of the (gradually declining) protection via tariffs; neither a clear complementarity among both types of protection takes place. Consequently, future research could consider a more detailed statistical

analysis on how the NTE levels depend on tariff levels and on a range of product specificities.

Our results suggest that the food safety policies in the Mediterranean region do not respond to a systematic behaviour or general logic of relationship between NTEs and tariff levels. In any case, the analysis requires further exploration at the country level, with focus on identified SPS and TBT problems.

As pointed out in OECD (2011), the challenge for NTMs remains to separate protectionist and non-protectionist policies and to identify alternative approaches for trade policies, in particular in processes involving DCFTAs. In the case of the SEMCs and their bilateral liberalization, the results described above highlight the role of harmonization in NTMs. Indeed, as the NTMs applied in the region do not appear to be motivated by tariff liberalization, a case-by-case approach could be helpful to foster the harmonization of SPS and TBT standards across the countries involved. Such approach could merit from the support of the institutions fostering trade liberalization, or from other funds like the ENPARD program.

Acknowledgement

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Anexo: Justificante de aceptación

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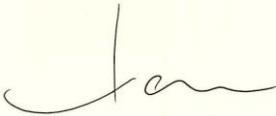
CERTIFICA

Que el artículo:

Mediterranean Food Trade and Non-Tariff Measures. J.M. García Álvarez-Coque, L. Tudela Marco and V. Martinez-Gómez

será publicado próximamente en el número 111 de la revista del CIHEAM, Options Méditerranéennes, Serie A, (ISBN: 2-85352-547-3), que recogerá las actas del Seminario "Food Safety Challenges for Mediterranean Products" celebrado en Zaragoza (España) los días 10 y 11 de junio de 2014, en el que se presentó el trabajo mencionado.

Para que conste a los efectos oportunos y a petición del interesado, se expide el presente Certificado en Zaragoza, a 1 de septiembre de 2015.

CIHEAM
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Fuente: Mediterranean Agronomic Institute of Zaragoza / CIHEAM

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Departamento de
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Ciencias Sociales

Valencia, 21 mayo 2015

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Para que así conste a los efectos oportunos firmo la presente en Valencia a 21 de mayo de 2015.

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CAPÍTULO 4: ARE NON-TARIFF MEASURES A SUBSTITUTE FOR TARIFFS IN AGRICULTURAL TRADE? RECENT EVIDENCE FROM SOUTHERN MEDITERRANEAN COUNTRIES[50]

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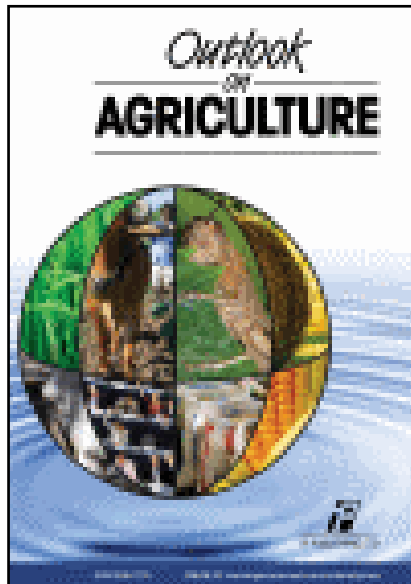
Are non-tariff measures a substitute for tariffs in agricultural trade? Recent evidence from southern Mediterranean countries

Abstract

The significance and interest in non-tariff measures (NTMs) has increased as a consequence of the reduction inagricultural tariffs. This paper analyzes the relationship between NTMs and tariffs in Southern Mediterranean Countries (SMCs) through two complementary analyses: firstly, a taxonomy of protection for products is carried out, distinguishing between high protection, transparent protection, low protection and disguised protection.The low protection category is most widely represented, and the disguised protection is also of relevance. Secondly, we test the policy substitution hypothesis between tariff and non-tariff protection. This hypothesis appears in the literature as the possibility that countries implement NTMs for protection purposes, as a result of the progressive reduction of the tariffs levied. Policysubstitution is found in some SMCs, which is consistent with an upward trend of non-tariff protection as tariff liberalization progresses in the region.

1. Introduction

As a result of the trade liberalization that has been ongoing over the last few decades, tariffsare playing a less important role in determining agri-food trade flows. Therefore, more attention is being paid to the role of Non-tariff measures (NTMs) both in academia and research, and in the political arena. In fact, NTMs are now among the main obstacles remaining in agri-food trade, with a legal coverage provided by the endorsement of the World Trade Organization (WTO) agreements on Sanitary and Phytosanitary Measures (SPS) and Technical Barriers to Trade (TBT) and the provisions agreed in bilateral arrangements. NTMs are employed for many purposes, including the correction of information asymmetries and market failures often related to food safety concerns. When countries implement such measures, they are

protecting values such as human, animal or vegetal health, or consumers' rights. However, they may also have potential protectionist purposes as they can be used as a disguised protection aiming at restricting the entrance of foreign products Hoeckman and Nicita, 2008; Nimenya et al., 2012).Fontagné et al. 2005) reported that the trade-distorting effects of NTMs are very relevant in food trade; Disdier et al. (2008) highlighted that their restrictive effects mostly take place in developing countries' exports.

In this respect, several authors (Copeland, 1990; Ederington, 2001;BagwellandStaiger,2001) have suggested the policy substitution hypothesis: with the agreed gradual tariff reduction, countries could implement in parallel NTMs as an alternative way of protectingtheir domestic production. In WTO (2012) a comprehensive review of literature seeking for empirical evidence of this phenomenonwas carried out. As this evidence is mixed, they end the section by indicating that "TBT measures may have beenused to take the place of tariffs, but there is verylimited evidence of substitution between tariffs andSPS measures" (WTO, 2012, p. 71). Some studies in the US (Baylis, 2010) and the EU (Jouanjean et al., 2012, and Cadot et al., 2012) also suggest that food alerts (a type of NTM) are influenced by Most Favoured Nation (MFN) tariffs[51].

Considering this background, this paper focuses on the relationship between tariffs and NTMs as protection tools in several SMC. Specifically, we carry out an analysis that allows us to ascertain whether NTMs implemented by SMCs are dependent or not upon tariffs and their evolution. Furthermore, we have accounted for sectoral differences in the restrictiveness of NTMs. To this end, we first examine the literature concerning the effects of NTMs applied to the agri-food trade in the Mediterranean regionand then explain the methodology chosen to carry out the analysis, including the likely relationships between NTMs and tariffs. Subsequently, the results of the analysis and main findings are discussed.

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[51]By MFN tariffs we mean the Most Favoured Nation applied tariffs. They are the custom duties applied by WTO members to other WTO members which do not benefit from a preferential treatment. In practice MFN tariff rates reflect the current usage of tariffs applied to third countries.

2. Effects of NTM in the Mediterranean region

After a thorough analysis of NTMs applied by Egypt and Tunisia in all the sectors,Ghali et al. (2013) identified that in Tunisia the agri-food products (from HS section I to IV) account for approximately75% of NTMs, while for Egypt the NTMs for the same product categories are less than 25% of the total. Another difference they mention is that, for all the sectors, Egypt's NTMs belong predominantly to the TBT category, while Tunisia implements mainly SPS measures. Recent evidence indicates thatvarious forms of NTM still play a trade-deterrent role in Mediterranean agri-food trade. Chemingui and Dessus (2008) highlight the restrictiveness of quantitativeconstraints applied by Syria.De Wulf et al. (2009) stated that the application of food standards by SMCs seems to be stricter at the borders than in the domestic markets. Emlinger (2010) analysed the "border effect" which relates to the access of SMC fruits and vegetables to the EU markets, including NTMs.
Usinga wider approach, Boulanger et al. (2013) carried out a Computable General Equilibrium model to simulate the impact of Deep and Comprehensive FreeTrade Area (DCFTA) in the Mediterranean, using the Kee et al. 2009) estimates of non-tariff equivalents also used in this study. Boulanger et al. (2013) highlighted hat the projected trade increases after NTMs reduction in the region are several times greater than in the case of just tariff elimination. With respect to this framework of the DCFTA Gonzalez-Mellado et al. (2010) and Rau and Kavallari(2013) showed that SMCs are in different stages of harmonization of their respective NTMs.

3. Methodology

The countries examinedin this study included Egypt, Jordan, Morocco, Lebanon, Algeria and Tunisia. These countries are members of the WTO with the exception of Lebanon and Algeria. All are part of the Euro-Mediterranean partnership. Since 2004, Egypt, Jordan, Morocco and Tunisia are members of the Agadir Agreement[52]. Besides, they are members of the

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[52]The Agreement Establishing a Free Trade Area Amongst Arab Euro-Mediterranean Countries (Agadir Agreement) was signed in Rabat on February 25th 2004 and entered into force on July 6th 2006. The Agreement aims to involve their members (Egypt, Jordan, Morocco and Tunisia) in a process of trade liberalization that goes beyond the multilateral agreements and also aims at harmonizing general and sectoral economic policies in relation to foreign trade.

GAFTA (Greater Arab Free Trade Area) with the exception of Algeria. Thus, they are involved in different stages of the trade liberalization processes. The products include the whole range of agri-food products at the 6-digit level of the Harmonized System (referred to as HS Chapters01 to 22).Data on NTMs and tariffs were first combined to allow for a description of the levels of protection provided in the considered products and countries. Then an econometric analysis was carried out to detect any relationships between tariffs and NTMs.

4. Data on tariffs and non-tariff measures

We needed a measure of the protection level provided by NTMs. For that, we use the ad valorem equivalents of NTMs (labelled from now on as Non-Tariff Equivalents, NTEs) estimated by Kee et al. (2009).The particular interests of this datasetare that it covers a wide range of products at the HS 6 level; note that the number of HS lines considered in this study includes up to 583 products, it provides ad valorem equivalents of NTMs that are directly comparable with tariffs, and it gives an estimation of the restrictiveness of each NTM, irrespective of its nature. Obviously, these estimates are not free from limitations. Deardorff and Stern (1999), Dean et al. (2003) or Vaughan (2005) underlined the problem of NTE computation for the casewhen imported and domestic goods are not close substitutes. Kee et al. (2009) and Nimenya et al. (2012) account for imperfect substitution, as recently done by SanjuánLópezet al. (2013) who suggest an alternative way of measuring NTEs based on gravity equations.With regard to tariffs, we gatheredthe MFNapplied tariffs at the HS 6-digit levelfrom the World Integrated Trade Solution (WITS)[53]database, corresponding to the same period as the NTEsthat were available, including a previous period to compute the variation of tariffs required to test the impact of tariff variations on NTE.

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[53] The World Integrated Trade Solution (WITS) is a data consultation and extraction software. Contains import and export data from the United Nations COMTRADE data base and tariff rates and non-tariff barriers from UNCTAD's TRAINS data base. Historical MFN tariffs data can be accessed through Quick Search menu by selecting Tariff - View and Export Raw Data sub-menu. Users can download an Excel spreadsheet with all information. (See: <*http://wits.worldbank.org/wits/*>).

4.1 Taxonomy of protection

We defined the level of protection by combining two dimensions: firstly, if it is either low or high, and, secondly, by indicating how transparent the protection is. We consider that if NTEs and tariffsexceed a certain threshold, protection could be considered high. In order to define the threshold, we drew on the modalities document prepared by the Committee of Agricultural Negotiations (WTO, 2008). For developing countries, it suggests that substantial tariff reductions shall be done forthose products where the bound tariff or its ad valorem equivalent is greater than 75%. Hence, we consider high protection via tariffs when such threshold is overcome. We extended this threshold to NTEs. On the other hand, the WTO considers tariffs as transparent measures, whereas in general terms NTMs are non-transparent protection measures.Thus four categories of products were defined:

- <u>High protection</u>: products where applied tariffs are high (above 75%) and NTEs are greater than 75%;

- <u>Disguised protection:</u> products where tariffs are less than 75% and NTEs are over 75%;

- <u>Low protection</u>: products where tariffs are less than 75% and NTEs are below 75%, and;

- <u>Transparent protection:</u> products where tariffs are greater than 75% and NTEs are below 75%.

4.2 Do applied NTMs depend on tariffs?

While the previous analysis can provide some insights about the relationship between NTMs and tariffs, a multiple regression analysis allows to statistically testpolicy substitution.In other words, are NTEs statistically dependent on the tariffs levied?If that is the case, what is the sign of the relationship?Equation 1 illustrates the general model where the NTMs are dependent upon tariffs and their evolution.

$$NTM = F(tariffs, \Delta tariffs) \qquad \text{Eq. (1)}$$

The existence of policy substitution will be indicated by the sign of the first derivatives:

$$\frac{\partial NTM}{\partial tariff} \quad \text{Eq. (2)}$$

In this case, static policy substitution is suggested whenEquation 2<0 as the higher the tariff, the less restrictive the NTM (and vice versa). In the case of Equation 2> 0 it suggests "policy complementarity" as there are possible underlying political and economic reasons implying that both tariff and non-tariff protection tend to move in the same direction.Also, dynamic policy substitution could take place, considering the influence of a previous tariff changes on current NTMs:

$$\frac{\partial NTM}{\partial \Delta tariff} \quad \text{Eq. (3)}$$

IfEuation3<0 itindicates that restrictive NTMs are connected to decreasing tariffs in the previous period, indicating dynamic policy substitution. Dynamic complementarity would appear when high NTMs result from previoustariff increases. To test the existence of policy substitution, the multiple regressionmodel depicted in equation (4) was estimated:

$$lnNTE = \alpha + \beta_1 lnT + \beta_2 \Delta lnT + \sum \delta_j Z_j + \sum \sigma_j Z_j lnT + \sum \rho_j Z_j \Delta lnT + \sum \gamma_m fm + u \quad \text{Eq. (4)}$$

Where*ln NTE* is the natural logarithm of ad valorem equivalents of the NTMs,*ln T*is the natural logarithm of the tariffs, which are calculated as a simple average for the products included under each 6 digit heading. With Δ we refer to the fiveyear differences between the logarithms of the tariffs, where the final year is the year for which the NTEs were available. Specific product effects $Z_j$arerepresented through dummies that correspond tothefixed effects for groups of productsto capture product- specificities following the suggestion by Dean et al. (2009). These groups are defined asbelonging to Section I (live animals and animal products) HS chapters 01 to 05 (*j*= 1) and Section II (vegetal products) HS chapters 06 to 14(*j*= 2). So, the expression $\sum \sigma_j Z_j lnT$is used to estimate the static policy substitution by sector and the expression $\sum \rho_j Z_j \Delta lnT$is used to estimate the dynamic policy substitution by sector over a five years period.*fm*isa set of dummy variablesequal to 1 when the product belongs to the HS chapter *m* and 0 otherwise, where *m* = 1 to *m* = 21 are the trade chapters (HS 2 digits).Finally, *u* is the error term.

Apart from the dynamic substitution, it should be noted thatconsidering the tariff variation allows us to deal with the endogeneitybetween tariffs and NTEs; in any case, we believe that endogeneity is not likely to take place as the evolution of tariffs is largely exogenous and mostly determined by previous multilateral political commitments and schedules.

5. Results and discussion

5.1 Depicting trade protection in Southern Mediterranean countries

We first show the overall picture of agricultural protection. Table 1 depicts thesimple average NTEs andthe evolution of appliedMFN tariffs between 1998 and 2003. This data shows the relatively high level of agricultural protection in the selected SMCs. As Table 1 shows, the evolution of applied tariffs is not the same across countries. Morocco and Tunisia increased their tariffs at the beginning of the century, and then lowered them in the following years. Egypt and Lebanon showed the opposite trends, while Jordan and Algeria, with low initial levels, were reducing many tariffs over time. Average NTEs calculated by Kee et al. (2009) were about 50% for most countries, with the lowest level in Morocco.A similar pattern of changes on tariffscan be seen when considering specific sections.

Table 1 NTEs and change in agricultural tariffs for selected SMCs

	MFN applied tariffs - simple average (%)			Non-Tariff Equivalents Simple average (%) *
	1995-99	2000-04	2005-08	2003-04
Egypt	65.8	45.0	66.5	48.7
Lebanon	11.8	17.1	19.1	50.7
Jordan	-	21.9	19.0	50.0
Morocco	43.0	50.8	44.5	38.6
Tunisia	34.6	71.5	56.3	55.5
Algeria	28.0	23.9	23.2	56.5

Source: World Bank. World Trade Indicators 2009/10 and*authors calculationsfromKee et al. (2009).

Table 2 shows the percentage of tariff lines with positive and negative variations in applied MFN tariffs between 1998 and 2003. As mentioned aboveMorocco and Tunisia present the greater positivetariff percentage variations, which shows a general increase of tariffs lines in all sectors during that period, contrariwise to the other four SMCs.

Table 2. Percentage of tariff lineswith positive and negative variations in applied MFN tariffsbetween 1998 and 2003 (HS 6 digits).

	Section I: Animal products (Chapters 1-5)		Section II: Vegetable products (Chapters 6-14)		Section III and IV: Fats and oils, and prepared food stuffs (Chapters 15-22)	
	> 0	< 0	> 0	< 0	> 0	< 0
Egypt	3.95	53.95	11.31	79.19	21.89	77.51
Lebanon	28.66	28.66	38.77	53.30	30.91	52.12
Jordan	0.00	43.28	0.00	11.11	12.50	87.50
Morocco	79.55	19.32	90.72	5.49	83.33	16.67
Tunisia	40.49	1.84	52.67	11.33	51.53	12.27
Algeria	15.38	78.11	27.04	50.21	18.75	71.02

Sources: WITS and authors' calculations.

However, considering that for all studied countries low protection category is the most represented (see Table 3), we could conclude that Morocco and Tunisia had avery low protection level in the beginning of the period. Table 3 shows the taxonomy of protection. Apart from the relevance of the low protection level in every country, the disguised protection is also noticeable in all countries. Besides, Tunisia can be mentionedas the country with highest percentage of tariffs intransparent category (25%).

Table 3. Taxonomy of agricultural trade protection.

Category of protection	Egypt	Jordan	Morocco	Tunisia	Lebanon	Algeria
High	1%	0%	2%	9%	0%	0%
Disguised	26%	4%	21%	19%	27%	36%
Low	71%	95%	71%	48%	71%	64%
Transparent	1%	2%	5%	25%	2%	0%

Sources: WITS and authors' calculations.

5.2 Policy substitution between NTMs and tariffs

Table 4 summarizes the modelresultstestingthe hypothesis of policy substitution. For each country, estimated coefficients and standard errors are shown for the explanatory variables, where the sign of significant coefficients reveals the possible appearance of policy substitution.For Egypt, the main significant relationship between NTEs and tariffs takes place for vegetable products, with dynamicpolicy substitutiontaking place in HS Section II. As shown above, MFN tariffs were mainly reduced for these goods in the yearsprevious to this study, which implied an upward pressure on NTMs. This happened in spite of the fact that the fixed effect coefficient for Section II products indicates a lesser level of NTEs than the other Sections. Dynamic policy substitutionin vegetable products are consistentwith relatively the highcount of disguised protection in the country (26% in Table 3). Dairy products showeda positive coefficient indicating higher NTEs than inthe rest of products.For Lebanon, neither policy substitution nor complementarity between tariffs and NTMs weredetected. Several positive fixed effects are significant for specific sectors, notably dairy products and preparations of vegetables, and negative for Section II products. In Jordan, no significant relationships werefound.In all cases, we considered statistical significance at the 5% threshold. The lack of results in the Jordan case could be related to the limited availability of data to carry out the regression analyses.

Table 4 Model results. Non-Tariff Equivalents of Non-Tariff Measures as a function of tariffs, tariffs evolution and sector. Selected SMCs.

	Egypt	Lebanon	Jordan	Morocco	Tunisia	Algeria
ln Tariff						
General $\beta_1 lnT$	-0.0506 (0.0542)	-0.3552 (0.2637)	2.5739 (1.6300)	0.6373 (0.3248)	0.1251 (0.2791)	-0.1696 (0.4946)
Animal Products (Chapters 1 to 5) $\sigma_j Z_j lnT$	-0.4896 (0.3338)	0.6256 (0.6587)	-3.2506 (1.6688)	-0.6922** (0.3422)	0.0123 (0.1420)	0.12841 (0.6995)
Vegetable Products (Chapters 6 to 14) $\sigma_j Z_j lnT$	0.5107 (0.3103)	0.5499 (0.4391)	-4.1088 (3.2481)	-0.3109 (0.3750)	0.3271 (0.1581)	0.8738 (0.5505)
Δ lnTariff						
General $\beta_2 \Delta lnT$	0.1800 (0.1964)	0.2079 (0.2123)	-0.1605 (1.4900)	-0.0236 (0.1268)	0.2220 (0.3357)	-0.7192** (0.3146)
Animal Products (Chapters 1 to 5) $\rho_j Z_j \Delta lnT$	0.0370 (0.3240)	-0.3892 (0.5948)	1.1539 (1.7184)	-1.0613** (0.4940)	-0.2321 (0.2679)	0.9064 (0.4661)
Vegetable Products (Chapters 6 to 14) $\rho_j Z_j \Delta lnT$	- 0.8615*** (0.3276)	-0.0810 (0.5064)	NA	-0.2347 (0.3503)	-0.8493*** (0.2803)	0.7835 (0.4167)
Fixed effects for HS chapters f_m and $\delta_j Z_j$	f_4 0.1627** $Z_1$0.0076 Z_2 - 0.1748***	$f_4$0.2019** f_{20} 0.1641** Z_1 -0.1219 Z_2 - 0.1183**	$f_4$0.2201 $Z_1$0.5937 Z_2 0.3555	f_{20} 0.2158*** Z_1 0.3898*** Z_2 0.1590	$f_4$0.2749*** f_{20}0.16094**	$f_4$0.1891** Z_1 -0.0425 Z_2 -0.2432
Nº observations	532	545	75	583	467	568
p-value	0.04936	0.01045	0.01611	4.651e-05	1.009e-05	0.00010

Notes: ***, **, indicate significance at 1 and 5 per cent, respectively. Standard errors are provided in brackets.The coefficients of non-significant fixed effects are omitted for reasons of space. Z_1 = Section I (animal products); Z_2 : Section 2 (vegetable products).$f4$ = dairy products; $f20$ = preparation of vegetables.

Sources: authors' calculations.

For Morocco, both static and dynamic policy substitution appear in Section I products. The dynamic policy substitution together with the fact that Section I products' tariffs were mostly raised, indicates that NTMs have become less stringent, though they keep significant as shown by the positive fixed effects estimated for Section I products. Preparations of vegetables (Chapter 20) also have a higher NTE level. In Tunisia, dynamic policy substitution occurs in Section II products. For these products tariffs were mostly lowered, which indicates more restrictive NTMs in general. Likewise for the other countries analysed, significant and positive fixed effects took place for dairy products and preparations of vegetables.In Algeria, dynamic policy substitution also appears, in this case for all the products. In addition, dairy products have significant and positive fixed effects.

6. Concluding remarks

Studieson trade policy reformfrequently refer to the policy substitution hypothesis, which stems from a simple observation in the trends towards lower tariff values and enhanced NTMs (Hoekmand and Nicita, 2008). Explicit tests of such relations are not conclusive in the literature. In this paper we tested thishypothesis based on the NTEs estimated by Kee et al. (2009) and observed levels and changes in MFN tariff values in SMCs. Our results suggest that NTMs substitute tariffs in four countries of the sample. About howthis phenomenon affects countries and sectors, some summarizing points are: First, in the countries where policy substitutionappears, it does in a dynamic way. Static substitution is only significant for vegetable products in Morocco.Therefore, it indicates that the restrictiveness of NTMs is influenced by the evolution of tariffs, rather than by its current level.Secondly, countries seem to target specific groups of products when applied tariffs have been declining in favour of NTMs: only in Algeria dynamic policy substitutionis accepted as applied to all the HS agriculturalsections, while substitution is observed in Egypt and Tunisia only in vegetable products and in Morocco only in animal products.Therefore, we have detected different behaviours concerning the policy substitution, which may respond to domestic sector determinants.A third conclusion is that policy substitution functionsin both directions, which depends on the trade liberalization approach chosen by each country. Morocco and Tunisia mainly raised the applied MFN tariffs in the years before signing the Agadir Agreement and hence then lowered the restrictiveness of their NTMs.As

tariffs are the most transparent protection measure, it can be concluded that they were following the WTO philosophy of transparency and predictability in trade policies. In the same period, Egypt lowered tariffs and thenraised the restrictiveness of its NTMs. Other findings from our analysis indicate that dairy products and, to a lesser extent, preparations of vegetables, have more restrictive NTMs compared to the rest of products. The analysis of factors explaining these facts would require acase-by-case assessment.

In spite of these results suggesting the possibility of policy substitution, there is a need for further evidence in order to define a general trend in developing economies, as our results contrast with opposing evidence in developed economies (see Baylis et al., 2010, and Jouanjean et al., 2012). An updated estimation of NTEs for SMCs could help to confirm whether or not the substitution hypothesis is consistent. Moreover it should be noted that the substitution effects are tested between multilateral NTEs and MFN tariffs. Taking into account the specific changes related to the bilateral relation emerging from the Association process between the EU and the Mediterranean countries would require a detailed analysis of the preferential tariffs, which is beyond the general trends identified in this paper. If policy substitution is confirmed in further research, trade liberalization in the Mediterranean region would imply increasing pressures on NTMs.As the literature has indicated, the lack of harmonization in the region hampers trade; hence, departing from the multilateral protection and making progress at the regional level, the creation of a DCFTA in the Mediterranean region should place emphasis on attempting to even up the restrictiveness of NTMs.

Acknowledgement

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Capítulo 4. Are non-tariff measures a substitute for tariffs in agricultural trade? Recent evidence from southern Mediterranean countries

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Capítulo 4. Are non-tariff measures a substitute for tariffs in agricultural trade? Recent evidence from southern Mediterranean countries

Anexo: Imagen de la primera página de la publicación

Are non-tariff measures a substitute for tariffs in agricultural trade?

Recent evidence from southern Mediterranean countries

Lorena Tudela-Marco, Jose-Maria Garcia-Alvarez-Coque and Victor Martinez-Gomez

Abstract: The significance of and interest in non-tariff measures (NTMs) have increased as a consequence of the reduction in agricultural tariffs. This paper analyses the relationship between NTMs and tariffs in southern Mediterranean countries (SMCs) through two complementary analyses. First, the authors construct a taxonomy of protection for products, distinguishing between high protection, transparent protection, low protection and disguised protection. The low protection category is most widely represented, and the disguised protection category is also important. Second, the policy substitution hypothesis between tariff and non-tariff protection is tested. This hypothesis appears in the literature as the possibility that countries implement NTMs for protection purposes, as a result of the progressive reduction in the tariffs levied. Policy substitution is found in some SMCs, which is consistent with an upward trend of non-tariff protection as tariff liberalization progresses in the region.

Keywords: trade policy substitution; developing countries; agri-food trade; trade liberalization

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As a result of the trade liberalization over the last few decades, tariffs play a less important role in determining agri-food trade flows. Therefore, more attention is being paid to the role of non-tariff measures (NTMs) in both academic research and the political arena. In fact, NTMs are now among the main obstacles remaining in agri-food trade, with legal coverage provided by the endorsement of the World Trade Organization (WTO) agreements on Sanitary and Phytosanitary Measures (SPS) and Technical Barriers to Trade (TBT) and the provisions agreed in bilateral arrangements. NTMs are employed for many purposes, including the correction of information asymmetries and market failures often related to food safety concerns. When countries implement such measures, they are protecting values such as human, animal or vegetal health, or consumers' rights. However, they may also have potential protectionist purposes, as they can be used as a disguised protection aimed at restricting the entry of foreign products (Hoekman and Nicita, 2008; Nimenya et al, 2012). Fontagné et al (2005) reported that the trade-distorting effects of NTMs were very relevant in food trade; Disdier et al (2008) highlighted the fact that their restrictive effects mostly took place in developing countries' exports.

In this respect, several authors (Copeland, 1990; Ederington, 2001; Bagwell and Staiger, 2001) have

Fuente: Tudela-Marco, L., Garcia-Alvarez-Coque, J. M., & Martinez-Gomez, V. (2015). Are non-tariff measures a substitute for tariffs in agricultural trade? Recent evidence from southern Mediterranean countries. *Outlook on Agriculture*, 43(4), 235-240.

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UNIVERSITAT POLITÈCNICA DE VALÈNCIA

Departamento de Economía y Ciencias Sociales

Valencia, 21 mayo 2015

A quien corresponda,

Como coautor del artículo "Are Non-Tariff Measures substitutes for tariffs in agricultural trade? The case of Southern Mediterranean countries", publicado el 1 de diciembre del 2014 en la revista Outlook on Agriculture, Volumen 43, Número 4, páginas 235–240 con ISSN 0030-7270, online ISSN: 2043-6866, autorizo el uso del mismo en la Tesis Doctoral de Lorena Tudela Marco, coautora del artículo y renuncio a utilizarlo como parte de otra Tesis Doctoral.

Para que así conste a los efectos oportunos firmo la presente en Valencia a 21 de mayo de 2015.

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Capítulo 4. Are non-tariff measures a substitute for tariffs in agricultural trade? Recent evidence from southern Mediterranean countries

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Capítulo 4. Are non-tariff measures a substitute for tariffs in agricultural trade? Recent evidence from southern Mediterranean countries

CAPÍTULO 5: INVESTIGATING DIFFERENCES IN SAFETY BORDER NOTIFICATIONS ON FRUIT AND VEGETABLES IMPORTS BY SELECTED EU MEMBER STATES[54]

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[54] Presentado como "Contributed Paper" en el Congreso Internacional de Economistas Agrarios, en el 29th ICAE Congress (International Conference of AgriculturalEconomists), en agosto de 2015 en Milan, Italia. Actualmente en proceso de revisión en la revista "Journal of Common Market Studies".

Investigating differences in safety border notifications on fruit and vegetable imports by selected EU Member States

Abstract

The hypothesis that six EU Member States show a common behavior on the implementation of food safety standards on fruits and vegetables imports is examined. To do so, we analyzed food border notifications recorded by the Rapid Alert System for Food and Feed (RASFF). Path dependence and reputation effects of past border notifications were explored for the whole period 2001-13, and for sub-periods 2001-07 and 2008-13. Negative binomial (NB) and zero-inflated negative binomial (ZINB) distributions were used to deal with over-dispersion and excess of zero counts. Our findings suggest thatthe EU cannot be considered as a single unit when non-tariff measures are studied, although there are some signs that MS behavior is becoming more uniform in the latest period.

Keywords

JEL codes

1. Introduction

The Sanitary and Phyto-Sanitary (SPS) agreement allows the use of border measures to protect human, animal and plant health as well as environment, wildlife and human safety. Literature on SPS controls applied by OECD countries frequently refers to these measures as a type of Non-Tariff Measures (NTMs) (Cadot and Malouche, 2012). A significant deal of work has provided analysis and data on the impact of NTMs applied by the European Union (EU) and other OECD countries on food imports (Disdier et al., 2008; Nicita and Gourdon, 2012).

The EUaims at becoming an integrated regional actor, able to develop and implement food control measures at its borders. Lezaun and Groenteer (2006) argue that the EU Member States (MS) are increasingly capable to interpret food regulations uniformly upon a more integrated geographical

space. However, although by law all EU MS adopt the same set of food safety standards at the border, a question of interest is whether MS enforce the pan-EU measures uniformly. The question arises on whether individual MS are managing rules and practices to cooperate with, and to commonly face food safety problems originated in third countries or not. This paper tests such hypothesis by explaining food safety notifications included in the Rapid Alert System for Food and Feed (RASFF) used by the European Commission to monitor and detect food alerts (RASFF, 2013). RASFF data are fed by national authorities, which could involve different interpretations. This contribution addresses this question by analyzing differences within a group of six individual MS that implement food controls at the border.

National differences at border controls may be due, first, to the ways of applying control management measures, also influenced by the specific national sensitiveness to certain risks. Thus, MS differences can depend on different criteria when deciding whether or not to submit information to the RASFF system. The lack of a common approach by national control authorities has led to complaints by the industry on RASFF (CIAA, 2011; European Commission, 2012; Food&DrinkEurope, 2012).

In our contribution, the focus is on measuring the differential border control implementation by EU MS[55]. We attempt to explain the border notifications applied by a group of six MS on fruit and vegetable imports, which are largely sensitive to risk controls. Attention will be paid on testing whether the SPS enforcement depends on different MS reactions to the monitoring and compliance rules or if, alternatively, the EU is behaving uniformly as a regional unit.

Jouanjean (2012) introduced, for her analysis on US standards, the notion of reputation or path dependence on past food alerts that affect current food import notifications or refusals. In the EU case, this effect could reflect differences across MS. Little has been written on the differential behavior in food import notifications or refusals by EU MS. Baylis et al. (2010) explored whether SPS measures on fish imports were influenced by trade protection

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[55] Other approaches have been used to analysedifferential food import behavior across EU MS, such as gravity models (Otsuki*et al.*, 2001; De Frahan and Vancauteren, 2006) and the calculation of *ad valorem* equivalents of NTMs (Nimenya*et al.*, 2012).

but without testing path dependence on past behavior in food border controls. They also considered the EU as a single regional unit, assumption that we question in the present contribution.

The RASFF database has been previously used to analyze the impact of SPS measures on trade flows. Kallummal et al. (2013) investigated MS actions on exports of South Asian countries. However, they did not explain why food alerts could be larger in some MS than in others. Kleter et al. (2009) analyzed chronological trends for product and hazard categories, regions of origin and notifying countries, putting observed trends into perspective. Jaud et al. (2013) linked food risks to supplier concentration in the EU market, considering the EU as a single import unit.

In the present contribution, the next steps were followed. First, a database was built by drawing on the RASFF information system through the counting of food border notifications implemented by selected MSfor4-digit trade chapters of the Harmonized Standard (HS) classification for the period 2001-13.Second, we analyzed food border notifications that the six selected EU MS issued on fresh fruit and vegetables (HS chapters 7 and 8) and processed fruit and vegetables (HS chapter 20).

In this analysis, count models were analyzed after having tested the over-dispersion of the dependent variable (food import notifications). Negative binomial (NB) and Zero-Inflated Negative Binomial (ZINB) specifications were used to represent the process leading to food import notifications. By explicitly modeling the food alerts in six MS, we tested the hypothesis that the group behaved uniformly. Afterwards, the estimation was subdivided into two periods (2001-07 and 2008-13) in order to explore the evolution of reputation effects overtime and whether or not the hypothesis of uniformity of such effects across MS is being fulfilled as the EU integration process goes ahead.

2. RASFF data in the EU

Since the foundation of the WTO, there has been a boost in the EU sanitary and safety standards. Satisfying food standards is a challenge for non-EU exporters. RASFF supplies information on food border notifications, and they are indicators of which exporting countries and products comply with

food safety and quality requirements imposed by EU MS, with a strong concentration on fruit and vegetables (Grazia et al*.,* 2009; RASFF, 2013). When national food inspectors have any information relating to existence of serious risk to human health deriving from food or feed they shall immediately notify it to the European Commission.National inspection authorities control the product on the market or at the border and decide if a specific finding falls under the scope of the RASFF in order to report a notification where necessary and forward it to the European Commission. They use a notification form to provide details of the findings and measures taken.

Table 1 shows the number of food notifications on fruit and vegetables by trade chapter for six selected MS with a total count of notifications of 3,311 for the period 2001-13[56]. It also presents the most notified exporters, showing a concentration, as expected, on large exporters of fruit and vegetables. As the Table 1 highlights, the larger number of notifications correspond to chapter 08. Germany is the most notifying country, with 943 notifications, followed by United Kingdom, Italy, France, Spain and the Netherlands. This sample of importing countries represents the basis for the present study. These six countries cover 60 per cent of the total notifications in the EU. According to Eurostat, in 2013, the selected six MS represented the 82 per cent of the EU import value in HS chapter 07, 78 per cent in chapter 08 and 71 per cent in chapter 20.

As for exporters in the present study, we acknowledge that there might be an import concentration on a limited number of non-EU exporters for products that present higher risks, as noted by Jaud et al. (2013). To avoid the selection bias related to this fact, we selected exporters by noting their share in total world exports. This criterion selects potential exporters based on their relevance at the world level. Hence, we took notifications originated

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[56] The system has been subjected to changes in the types of notifications considered, which restricts the possibility of a time series analysis by type of notification (eg. alert, information, border rejection). Further details of the system can be found at: <*http://ec.europa.eu/food/safety/rasff/index_en.htm*>.

from the top 23 world exporters of fruit and vegetables[57] that represent 90 per cent of world exports of the sectors studied.

Table 1 shows the exporting countries that have been most notified by sector and by importing country in this period. It underlines the importance of Turkey, covering 59 per cent of total notifications in HS chapter 08, India with 30 per cent of notifications in HS chapter 07, and Ghana with 28 per cent in HS chapter 20. Most notified countries also vary across MS.

Table 2. Number of RASFF notifications by trade chapter for six MS selected for 2001-2013.

	Sector 07 (Vegetables)	Sector 08 (Fruits and Nuts)	Sector 20 (Processedfruit and vegetables)	**Total**	MostNotified Exporters (*)
France	49	344	6	**399**	Turkey (73%) China (7%) India (5%)
Germany	176	745	22	**943**	Turkey(74%) USA(7%) Thailand (6%)
Italy	145	438	33	**616**	Turkey (44%) USA (11%) China (10%)
Netherlands	61	227	5	**293**	USA(25%) China (19%) Thailand (18%)
Spain	79	278	23	**380**	USA (33%) Turkey (26%) China (9%)
United Kingdom	303	276	101	**680**	India (32%)(Turkey(16%) Ghana (11%)
Total	**813**	**2308**	**190**	**3311**	
Most Notified Exporters(**)	India(30%) Thailand (19%) Turkey(17%)	Turkey (59%) USA (16% Brazil (6%)	Ghana (28%) Turkey (15%) China (15%)		

Note: (*) Calculated over the total percentage of notifications by importing country. (**) Calculated over the total percentage of notifications by HS2 sector. Source: Authors' calculations from RASFF.

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[57] List of top 23 world exporters of fruit and vegetables: Morocco, Mexico, Egypt, Brazil, USA, Argentina, China, Ghana, Turkey, Vietnam, South Africa, New Zealand, Chile, India, Thailand, Canada, Ecuador, Australia, Costa Rica, Peru, Philippines, Israel and Guatemala.

One methodological challenge that could explain why RASFF database has not been widely used for the analysis of EU food alerts is the need to link RASFF data with trade data expressed in terms of a recognized nomenclature such as the HS. RASFF contains the complete information regarding products but these are not classified using HS code. Therefore, a great deal of effort was made in this study to transform RASFF text data into notifications classified by HS code. Jaud et al. (2013) used a similar database to explain the relationship between food alerts and the concentration of EU suppliers for the period 2001-2005. As RASFF contains complete information regarding products in a lexical form and products are not coded into the HS system, the conversion was, as the quoted authors recognized, "painstaking". Our research widens the scope by considering the differential behavior of MS, so product destination has to be considered in the notification counts, which substantially increases the database size[58]. We considered the unit of observations as formed by product-exporter-importer-year sets, which increased the complexity of the conversion exercise and multiplied the number of observations. For that, an Excel lexicographic tool was defined to facilitate the conversion of 74,589 observations, between 2000-2013, identified by a product, a supplying country and a country of destination. The coding process included the whole range of products at the 4-digit level of the HS[59] for the before mentioned chapters. As the database has to allow the analysis of agri-food trade products, zero counts were also included, which considerably increased the total number of observations up to 69,264[60]. We opted for a 4-digit level of the HS to minimize inaccuracies in the reclassification of RASFF events expressed in verbal mode into HS codes. Each observation refers to a given product with specific origins and destinations, with over 7,000 product-exporter-importer references per year.

3. Theoretical background

In this paper, we use a path dependence notion of the EU food safety system. We aim at testing the hypothesis that the history of notifications significantly

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[58] It is worth noting that one exporter adds 2886 observations to the analysis, significantly increasing the costs of conversion of RASFF data into HS codes.

[59] A total of 37 HS 4 digit products for chapters 07 (fresh vegetables), (08 fresh fruits) and 20 (processed fruits, vegetables and nuts).

[60] A total of 74,589 observations were coded by the Excel lexicographic tool. However, by introducing a lagged variable (t-1) the total number of observations reduced to 69,264.

influences individual MS behavior on current notifications. The underlying idea is that one product's alerts in one year may affect the probability of future alerts, and that such effects may appear at product, sector and exporting country level. Path dependence has several explanations. The first one is the reputation concept used by Jouanjean (2012) for the analysis of US border safety controls. This concept in turn draws on Tirole (1996) who introduced the notion of collective reputation that influence consumer behavior based on the past behavior[61]. The dynamic reputation concept can explain a dependency between one country's exports and food alerts and the history of related food safety issues. Over time one product can appear safe for importers but their control behavior may be affected by the collective reputation of the exporting country or of the sector where the specific product is included. Jouanjean et al. (2012) looked at import refusals providing a first evidence of how reputation affects the enforcement of SPS measures in USA. Another path dependence effect can be related to the increase in food tests in year (t) understood as warnings that food hazards detected in year (t-1) will continue until real product improvements take place or imported products meet the standard requirements.

We hypothesize that inspections in EU MS are not necessarily random and that can vary according to the product, the exporting country, and the importing country, which relate to specific path dependence effects. A higher number of recorded notifications on exports to the EU could affect the way the system could consider future imports of the given product. Repeated notifications affect directly stakeholders in exporting countries and the whole supply chain and may lead compliance actions that could reduce their future impact.

The RASFF is first and foremost designed for national control authorities and they are responsible for feeding the information system. We wonder if some countries are more sensitive to collective reputation of certain products than others so RASFF does not necessarily function as a uniformly applied European-wide system and can reflect diverging interpretations of RASFF at a MS level.

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[61] See and extension of this concept in Winfree and McCluskey (2005) to the framework of "quality" Jouanjean's and our contribution refers to "safety".

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We name the number of notifications for a given product (i) from an exporter (j) to an importer (k) at year (t) as N_{ijkt}. Three path dependence effects are then underlined with respect to the MS reaction to food safety problems:

- <u>Product dependence</u> refers to the relationship between the number of notifications for a given product-exporter-importer-year combination N_{ijkt} and the number of notifications for that product-exporter-importer in the previous year $N_{ijk(t-1)}$.

- <u>Sector dependence</u> refers to the relationship between the number of notifications for a given product-exporter-importer-year combination N_{ijkt} and the number of notifications for all products included in the same HS2chapter-exporter-importer in year t-1:

$$N_{Ijk(t-1)} = \sum_{\forall i \in I}^{j,k} N_{ijk(t-1)} \qquad \text{Eq. (1)}$$

Where (I) refers to a HS2chapter, which in fresh and processed fruit and vegetables are HS 7, 8 and 20. In such cases, the hypothesis to be tested is whether the collective reputation at a sector level matters for specific products' controls.

- <u>Exporter dependence</u> refers to the relationship between the number of notifications for a given product-exporter-importer-year combination N_{ijkt} and the total number of notifications applied on the corresponding exporter in the previous year. Here the collective reputation refers to the full record of notifications received by a given exporter in year t-1:

$$N_{Jk(t-1)} = \sum_{\forall i \in J}^{k} N_{ijk(t-1)} \qquad \text{Eq. (2)}$$

Where (J) refers to an exporting country.

At each year (t), the MS authorities may implement controls based on updated criteria on risk assessment, but are also influenced by the past. And we can test whether the considered MS have a uniform reaction or if the responses are different among them.

Import notifications can be also related to the development of the exporting country. We take the logarithm of GDP per capita lagged one period ($\ln GDP_{j(t-1)}$)as a relative measure of economic development and the capacity of the exporting country to face NTMs. However, the GDP per capita is also related to the actual ability to face foreign standards, which could have a reducing effect on importer's notifications. Robust food safety systems and controls involve recalls of health and sanitary problems sourced in the country of origin (European Commission, 2013), so notifications can also be positively linked to the GDP per capita of the exporter.[62]NTMs are employed for many purposes, including the correction of information asymmetries and market failures often related to food safety concerns (Disdier et al*., 2014).They may also have potential protectionist purposes as they can be used as a disguised protection aiming at restricting the entrance of foreign products (Hoeckman and Nicita, 2011; Nimenya et al., 2012).Nevertheless, tariffs were not computed in our exercise as a covariate due to, firstly, the difficulties in estimating the true tariff-equivalent of those fruit and vegetables involving a large number of complex tariffs, including provisions linked to the entry price system, which acts as a minimum price for certain seasons (Jean et al*., 2008; Garcia Alvarez-Coque *et. al*, 2009, 2010); and secondly, the fact that most EU fruit and vegetables have already received very low tariff protection during the studied period. Thus, Jean et al. (2008) report that the percentage of tariff lines (8 digits) under 20 per cent of ad-valorem equivalents of MFN duties is 89.3 per cent products in chapter 7, and 69.7per cent in chapters 8 and 20. As an attempt to capture the EU response to foreign competition, we followed an alternative way of testing the impact of market opening on food alerts: the volume of imports for each product-exporter-importer lagged one period $M_{ijk(t-1)}$, was considered as a covariate, in terms of total volume, and in terms of import changeΔM_{ijkt} .[63]In the case of a protectionist behavior, we expect that an import surge would

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[62] We used GDP in PPP terms from the World Development Indicators. See National Accounts Main Aggregates Database (See: <*http://unstats.un.org/unsd/snaama/dnllist.asp*>).

[63] Bilateral trade volumes were extracted from de WITS database, in terms of yearly imports expressed in thousand tons of net weight. WITS is data consultation and extraction software. It contains import and export data from the United Nations COMTRADE data base and from UNCTAD's TRAINS data base. (See: <*http://wits.worldbank.org/wits/*>).

involve a further increase in the notification count. Import level and import changes were expressed in volumes (tons)and not in logarithms to avoid neglecting zero trade values, which were explicitly considered to test a zero inflated count model (see below).

To complete the theoretical background, fixed effects can be also considered to express the specific characteristics in terms of sector (I) HS 7, 8 and 20, exporting country (j) and importing MS (k). Independently of specific risks and health problems, a function will depict the possibility of a control behavior that reflects specific path product dependence, sector reputation, exporting country characteristics and the import dynamics. The model must also consider that the EU does not behave necessarily as a single unit and for that the importing country behavior is explicitly included in the model.

4. Estimation procedure

We expressed food notifications as a dependent variable in a count model. Modeling count variables is a common quantitative practice in social sciences (Zeileis et al., 2008). For this, several strategies are possible. One approach is the Poisson (log-linear) regression model that explicitly takes into account the non-negative integer-valued aspect of the dependent count variable. The Poisson model requires the equi-dispersion property, meaning that the conditional variance must be equal to the conditional mean. According to Burger et al. (2009) the standard Poisson model is sensitive to problems of over-dispersion and excess zeros in the dependent variable. The NB count model, which belongs to the family of modified Poisson models, is believed to offer a solution to correct over-dispersion (Cameron and Trivedi, 2013). The expected value of the observed dependent variable in the NB regression model is the same as for in Poisson regression model (Long, 1997), but the variance here is specified as a function of both the conditional mean and a dispersion parameter, thereby incorporating unobserved heterogeneity into the conditional mean. More formally, and following Cameron and Trivedi, we assume that N_{ijkt}, the notification count of the product (i) exporter (j) and importer (k) at period (t) has a conditional mean N_{ijkt} which is a function of a matrix of covariates, and the probability mass function:

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$$Pr[N_{ijkt}] = \frac{\Gamma(N_{ijkt} + \alpha^{-1})}{N_{ijkt}!\Gamma(\alpha^{-1})} \left(\frac{\alpha^{-1}}{\alpha^{-1} + \mu_{ijkt}}\right)^{\alpha^{-1}} \left(\frac{\mu_{ijkt}}{\alpha^{-1} + \mu_{ijkt}}\right)^{N_{ijkt}} \qquad \text{Eq. (3)}$$

Where Γ is the gamma function, and α is the rate of over dispersion. A likelihood ratio test of α can test whether over dispersion is present and it is wise to prefer the NB over the Poisson distribution.

The conditional mean is given by Equation 4:

$$N_{ijkt} = exp\left(\delta_0 + \sum_{k=1}^{n}\beta_k N_{ijk(t-1)} + \sum_{k=1}^{n}\gamma_k N_{Ijk(t-1)} + \sum_{k=1}^{n}\rho_k N_{Jk(t-1)} + \right.$$
$$\text{k=1n}\sigma_k\text{lnGDPj(t−1)} + \tau\text{Mijk(t−1)} + \varphi\Delta\text{Mijkt} + \delta\text{I} + \delta\text{j} + \delta\text{kEq. (4)}$$

Where δ_I, δ_j and δ_k represent the fixed effects for sector (I), exporter (j) and importing MS (k). In the estimated specification, we express MS parameters $\beta_k, \gamma_k, \rho_k$ and σ_k, as follows:

- Product dependence by importing MS: $\beta_k = \beta_1^* + \beta_k^* Z_k$;

- Sector dependence by importing MS: $\gamma_k = \gamma_1^* + \gamma_k^* Z_k$;

- Country dependence by importing MS: $\rho_k = \rho_1^* + \rho_k^* Z_k$;

- Exporter's GDP effect by importing MS: $\sigma_k = \sigma_1^* + \sigma_k^* Z_k$;

Where Z_k is a dummy variable that takes value of one for country (k), and it is used to examine the differentiated behavior on specific EU MS imports ($Z_1 = 0$, k = 1 for Germany).

Specification in equation 4 allows to understand the interpretation of equation coefficients, with fixed effects understood as a percentage change in N_{ijkt} resulting from individual sector δ_I, exporter δ_j and importer effects δ_k, these coefficients being expressed as percentages of notification changes due to one unit change in product, sector and country notifications; the coefficient of the $\ln GDP_{j(t-1)}$ variable as percentage of notification change due to one percent change in per capita GDP; and the coefficients of import volume variables, M_{ijkt} and ΔM_{ijkt}, as the percentage of notification change due to a change in one ton.

Whether or not this excess zero problem involves a bias in the NB approach has to be explored with care. Burger et al.(2009) considered such problem when they modeled trade flows, taking into account that not all pairs of countries have the potential (or are at risk) to trade because serious constrains that prevent exports. The quoted authors distinguished two different kinds of zero-valued trade flows: countries that never trade and countries that do not trade now, but potentially could trade in the future. In our case, the most important problem caused by excessive zeros in the data stems from the fact that two different processes can produce zero notifications. The first is the full compliance of a product exported to the EU food control system, which is reflected by inexistence of food notifications. The second process is the absence of exports to the EU, which can be due to structural factors depending on resources, distances, preferences and specialization. In this case, food alerts do not appear because the probability of trade is zero, and notifications cannot be applied to the corresponding product and partner. The possibility of such double process led to test a ZINB model that considers the possible existence of two latent groups within the sample of exporting countries: a group having strictly zero counts and a group having a non-zero probability of having counts other than zero (Lambert 1992).

Consequently, the estimation process of the ZINB contains two parts. The first part includes a logit regression of the probability that there is no possibility of positive counts. The second part contains a NB analysis of the notification count for the group that has a non-zero probability of food alerts. A ZINB model with extra proportion of zeros (p) was defined by the following probability density function:

$$Prob(N = N_{ijkt} | \Omega)$$

$$
\begin{cases}
p + (1-p)\pi(N_{ijkt} = 0 | \Omega) & \text{If } N_{ijkt} = 0 \\
(1-p)\pi(N_{ijkt} | \Omega) \text{If } N_{ijkt} > 0 \\
\text{Eq. (5)}
\end{cases}
$$

Where we consider a NB distribution for $\pi (N_{ijkt} | \Omega)$.

The logit part of the ZINB model contains variables that are correlated with the probability of zero notifications, including the lagged product notifications$N_{ijk(t-1)}$, the lagged exporting country notifications$N_{Jk(t-1)}$, the logarithm of GDP per capita $\ln GDP_{j(t-1)}$and the import variationΔM_{ijkt}. Following Portugal-Perez et al. (2010) and Reyes (2012) we also included the lagged decision to export, a dummy variable that takes value of one if country (j) exported product (i) to country (k) in (t-1), is $M_{ijk(t-1)} \neq 0$), which can be correlated with the probability of $N_{ijkt} \neq 0$ but is uncorrelated with the actual notification count N_{ijkt}.

However, the choice of the econometric model specification should be based on standard statistical tests because "having many zeros in the dataset does not automatically mean that a zero inflated model is necessary" (Cameron and Trivedi, 2010, p. 605). In this article, we used the Vuong statistic (Vuong, 1989) that can be employed to discriminate between the ZINB model and the standard NB counterparts. The Vuong statistic follows a standard normal distribution with large positive values favoring the ZINB model and large negative values favoring the NB model.

5. Findings and discussion

NB and ZINB versions of the models were estimated and compared to test the hypotheses examined in this paper. The model parameters were estimated, distinguishing specific MS coefficients for product, exporter and sector dependence, and for GDP per capita. Goodness-of fit criteria were used to evaluate whether the models provide a good fit to the data.Finally, we tested the hypothesis for two relatively homogenous sub-periods, 2001-07 and 2008-13[64]in order to explore the evolution of dependence effects along time and verify whether the EU integration process goes ahead.

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[64] In 2007 a reform of the EU regime for fruit and vegetables was passed. This reform did not have noticeable consequences on the RASFF system, though it responded to the recognition by the EU Commission of the stagnation of the consumption of the fruit and vegetables in the European Union. (See details in <*http://ec.europa.eu/agriculture/fruit-and-vegetables/2007-reform/index_en.htm*>).
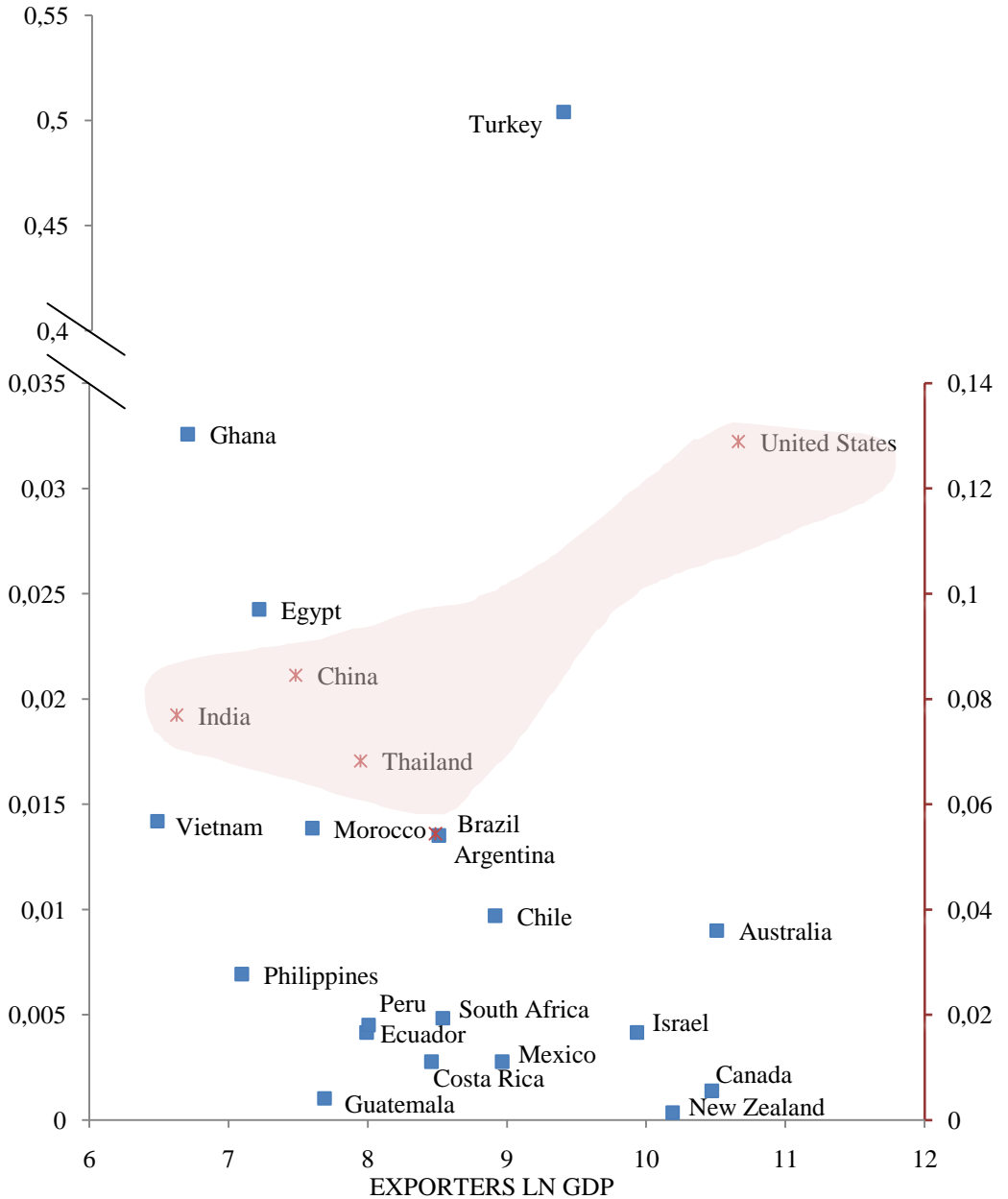
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The descriptive statistics of the set of variables used in the estimation are given in Table 2.A look to the mean and standard deviations of the notification count N_{ijkt} suggests that overdispersion can be a problem. The over-dispersion parameter α was estimated at 2.512, which strongly signals against the assumption of equi-dispersion ($p < 0.001$). This led the estimation strategy to disregard the Poisson distribution and move to NB and ZINB.

Table 2.Descriptive statistics

Variable	Unit	Mean	Std.	Min.	Max
N_{ijtk}	Notifications of product (i) from country (j) to exporter (k) in year (t)	0.047	0.851	0	74
$N_{ijk\,(t-1)}$	Notifications of product (i) from country (j) to exporter (k)in year (t-1)	0.044	0.791	0	62
$N_{ij\,FR\,(t-1)}$	Notifications of product (i) from country (j)to France in year (t-1)	0.005	0.337	0	62
$N_{ij\,GE\,(t-1)}$	Notifications of product (i) fromcountry (j) to Germanyin year (t-1)	0.013	0.510	0	51
$N_{ij\,IT\,(t-1)}$	Notifications of product (i) from country (j) to Italy in year (t-1)	0.008	0.257	0	24
$N_{ij\,NL\,(t-1)}$	Notifications of product (i) fromcountry (j)to Netherlands in year (t-1)	0.004	0.181	0	26
$N_{ij\,SP\,(t-1)}$	Notifications of product (i) from country (j) to Spain in year (t-1)	0.005	0.235	0	27
$N_{ij\,UK\,(t-1)}$	Notifications of product (i) from country (j) to United Kingdom in year (t-1)	0.009	0.440	0	74
$N_{Ijk\,(t-1)}$	Notifications of sector (I) from country (j) to exporter (k) in year (t-1)	0.614	3.703	0	78
$N_{Jk\,(t-1)}$	Notifications of allproducts from country (j) to exporter (k) in year (t-1)	5.372	10.973	0	110
$M_{ijk(t-1)}$	Import in volume (miles of tones) of product (i) from country (j) to exporter (k) in year (t-1)	2.064	15.5	0	1280
$\ln GDP_{j(t-1)}$	Ln per capita GDP of exporter country (j) in year (t)	8.353	1.249	6.119	10.715

Note: To simplify the rest of variables has been omitted for reasons of space. The mean is calculated over the total average of observations.

Source: Authors' calculations.

The excessive zeros is a further feature of the database. In our case, as we consider all the HS 4-digit trade chapters included in HS2 chapters 7, 8 and 20, the count data have a large number of zero counts. Thus, in our sample of 69,266 observations, 98.5 per cent of total observations showed a zero notification count.. This is shown in Figure 1, which presents the percentage of HS4-digit chapters with zero trade flows from each exporter to the set of EU MS considered, ranging from 28 per cent (Morocco) to 77per cent (Guatemala).

NB and ZINB can both handle the excess of zero notifications and over-dispersion. Empirical results for both models are shown in Table 3.With respect to the ZINB model there are two sets of parameter estimates: one set for the logit model, which pairs of countries that never show notifications, and one set for the NB part, which predict the probability of a count belonging to the group of countries that have theoretically non-zero notifications. As can be observed in Table 3, the signs of the coefficients in the logit model are usually opposite to those in the negative binomial part.

Figure 4. Percentage of HS4-digit chapters with zero trade flows from each exporter to the set of EU MS
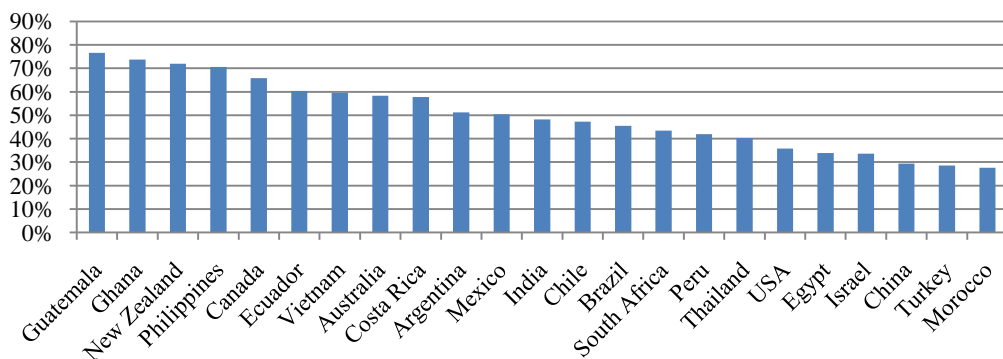
Source: Authors' calculations.

Analyzing the results, product dependence appears to be statistically significant for both models in most importing countries. This means that, the increase in lagged notifications $N_{ijk(t-1)}$ would increase the number of expected notifications N_{ijkt}, which can reflect that reputation matters in EU

MS safety controls.The regression coefficients estimated are generally greater under the NB model. However, in both models there are two extreme positions: Germany with the lowest product dependence and United Kingdom with the highest. The other countries remain in an intermediate position. As indicated above, product dependence in both models were statistically significant for most importers, except for Italy and the Netherlands in the ZINB model, suggesting that notificating decisions appear to be affected by the past history of notifications registered at product levelfor the MS studied with clear variations across importers.

Findings for the rest of effects are less convincing. Exporter and sector dependence effects, where significant, have a negative sign and with lower intensity than the product dependence. Negative signs of coefficients in both cases would suggest that exporters and sector-exporters affected by notifications are taking measures to counteract border measures, which reflect in further lower counts. Significant effects are found in exporter dependence forGermany, Italy and Spain in the ZINB model, and for France in both models. Significant sector dependence effects were found for France in the ZINB model, and for Spain and United Kingdom for the NB model. Exporter and sector dependence effects were not significant for the Netherlands in either ZINB or NB models.

Table 3. Statistical models: estimated parameters

	Zero-Inflated Model (ZINB)		Negative Binomial Model (NBM)
	Neg.bin	Logit	
(Intercept)	-1.352 (0.277)***	3.926 (0.230)***	-4.687 (0.279)***
$N_{ijk\,(t-1)}$	0.137 (0.023)***	-5.267 (1.318)***	0.482 (0.028)***
$N_{ij\,FR(t-1)}$	0.131 (0.056)*		0.896 (0.075)***
$N_{ij\,IT(t-1)}$	0.033 (0.041)		0.400 (0.064)***
$N_{ij\,NL(t-1)}$	0.115 (0.082)		0.907 (0.095)***
$N_{ij\,SP(t-1)}$	0.188 (0.079)*		0.397 (0.087)***
$N_{ij\,UK(t-1)}$	0.602 (0.073)***		3.316 (0.038)***
$N_{Jk\,(t-1)}$	-0.011 (0.004)*	-0.026 (0.004)***	0.005 (0.004)
$N_{J\,FR(t-1)}$	-0.043 (0.018)*		-0.039 (0.018)*
$N_{J\,IT(t-1)}$	-0.016 (0.007)*		-0.012 (0.007)
$N_{J\,NL(t-1)}$	0.007 (0.010)		0.007 (0.009)
$N_{J\,SP(t-1)}$	-0.025 (0.013)*		-0.009 (0.012)
$N_{J\,UK(t-1)}$	0.004 (0.006)		0.002 (0.009)
$N_{Ijk\,(t-1)}$	0.008 (0.006)		-0.001 (0.008)
$N_{Ij\,FR(t-1)}$	0.003 (0.024)		-0.093 (0.046)*
$N_{Ij\,IT(t-1)}$	-0.009 (0.016)		-0.014 (0.019)
$N_{Ij\,NL(t-1)}$	-0.093 (0.058)		-0.068 (0.048)
$N_{Ij\,SP(t-1)}$	-0.145 (0.068)*		-0.136 (0.058)*
$N_{Ij\,UK(t-1)}$	-0.091 (0.029)**		-0.157 (0.058)**
$\ln \mathrm{GDP}_{j(t-1)}$	0.006 (0.003)	-0.002 (0.001)**	0.010 (0.003)***
$\Delta\,\mathrm{M}_{ijkt}$	0.00001 (0.00002)	0.00001 (0.00001)	0.00001 (0.00001)
$\mathrm{M}_{ijk\,(t-1)}$	0.00003 (0.00002)		0.00006 (0.00000)***
$\ln \mathrm{GDP}_{jFR(t-1)}$	0.00019 (0.00181)		0.00048 (0.00187)
$\ln \mathrm{GDP}_{jIT(t-1)}$	-0.00113 (0.00157)		-0.00035 (0.00145)
$\ln \mathrm{GDP}_{jNL(t-1)}$	-0.00206 (0.00180)		-0.00074 (0.00164)
$\ln \mathrm{GDP}_{jSP(t-1)}$	-0.00130 (0.00167)		0.00036 (0.00160)
$\ln \mathrm{GDP}_{jUK(t-1)}$	-0.00281 (0.00168)		-0.00483 (0.00219)*
$f_J exporter\,(\delta_j)$	yes		yes
$f_I sector\,(\delta_I)$	yes		yes
$f_k importer(\delta_k)$	yes		yes
$f_{t-1} trade$	-	1.358 (0.160)***	
Theta	-0.881 (0.088)***		0.074(0.003)***

Note: ZINB consist of two parts. The first part is a negative binomial regression of probability. The second contains a logit regression of the probability. ***p< 0.001,

**p < 0.01, *p < 0.05. Standard errors are provided in brackets. All models are estimated using R-language. Source:Authors'calculations.

As for comparison with Jouanjean et al (2012) findings for the USA using a NB model, it is worth noting that these authors studied import refusals by plant inspections in USA, which are not directly comparable with the more general concept of food notifications followed in our exercise with the RASFF database at EU. Product dependence effects are found positive in both works. In our NB model, the import volume parameter is positive and significant. However, import change is not significant neither in our ZINB or the NB, suggesting that the EU safety controls are not affected by the imports' dynamics as it appears in some of the models estimated by the quoted authors. Therefore, food safety alerts in fruit and vegetables would not appear to be a reaction to import surges from various origins.

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Figure 2. Relationship between the simple average of notifications by the six EU MS studied and exporters GDP per capita.

Note: United States, China, Brazil, India and Thailand correspond to the right axis. Spain, Italy, Germany, France, Netherlands and United Kingdom as EU MS importing countries considered. Source: Authors' calculations.

Ln GDP per capita is not significant in the quoted exercise for USA and it is not as well in our ZINB model for EU. Ln GDP per capita coefficient is, however, significant and positive in our NB model although only the coefficient for United Kingdom appears to be significant and of little intensity. The discussion on the relationship between food notifications and GDP per capita is still open as suggested above in the theoretical background section of this work. Figure 2 depicts the relationship between the simple average of notifications by the sample of EU MS studied and exporters GDP per capita. Exporters do not follow a general pattern although some major exporters (China, Thailand, India) and countries with relatively medium (Turkey) and high development levels (USA) are among the most notified.

The model comparison methods proposed in Table 4 are Akaike Information Criterion (AIC), the Bayesian Information Criterion (BIC), the likelihood ratio test, and the Vuong statistic. All four statistical tests are computed for determining the best model choice. The different statistics do not all point to the same conclusion. Thus, the likelihood ratio, the AIC and the BIC favor the ZINB over the NB. However, the Vuong test suggests that the NB model is more appropriate than the ZINB. In addition, when model fits for different count levels are compared, NB predicts a 98.68per cent of zero counts, which is closer to the observed percentage of zero counts (98.55 per cent) than the percentage predicted by the ZINB (97.86 per cent). This is consistent with the idea expressed by Cameron and Trivedi (2010) that assuming a ZINB distribution is not always the best solution for modeling excess zero counts.

Table 4. NB and ZINB models. Quality of fit indicators

	Zero-Inflated Model (ZINB)	**Negative Binomial Model (NBM)**
AIC	10197.559	10749.170
BIC	10782.88	11279.619
Log Likelihood	-5034.780	-5316.585
Num. observations	69264	69264
Overdispersion (α)		2.512***
Deviance		3745.748
Vuong Test	-26.60315***	

Note: For overdispersion, the alpha value is displayed, for the Vuong test the z-score. All models are estimated using R-language. Source: Authors' calculations.

Once the models were estimated the uniformity of the MS behavior in their safety control behavior was analyzed. Starting from the general unrestricted model (saturated model), the models with the restrictions imposed (constrained models) were estimated. Because the restricted models are nested with the general one, the change in the goodness of fit of the model with and without the restriction imposed can be compared (Table 5). If the restriction is true, the loss in fit should be small. Otherwise, if the restriction is false the loss in fit will be large. We complement the assessment of common MS behavior with the analysis of a constrained model estimation that accepts uniform values for all the parameters, that is to say, by imposing all the five aforementioned restrictions (restriction 6).

Table 5. Testing common EU MS food control behavior

	Restrictions (Ho)		NBM		ZINB	
			LR stat	Pvalue	Wald statistic	Pvalue
1	Common fixed MS effects	$\forall\,\delta_k = \delta_0,$	29.185	0.00002***	-	
2	Common product MS effects	$\forall\beta_k = \beta_1^*\,k\neq 1,$	640.531	0.000***	76.667	0.000***
3	Common sector MS effects	$\forall\gamma_k = \gamma_1^*\,k\neq 1,$	19.857	0.0013***	16.638	0.0052**
4	Common exporter MS effects	$\forall\rho_k = \rho_1^*\,k\neq 1,$	9.214	0.1008	16.952	0.0045**
5	Common exporter's GDP per capita MS effects	$\forall\sigma_k = \sigma_1^*\,k\neq 1,$	6.759	0.2391	4.005	0.5486
6	All restrictions accepted	$\forall\delta_k = \delta_0,$ $\forall\,\beta_k = \beta_1^*,\quad \forall\,\gamma_k = \gamma_1^*,\quad \forall\,\rho_k = \rho_1^*,$ $\forall\,\sigma_k = \sigma_1^*$	778.210	0.000***	141.63	0.000***

Note: H_1: saturated model. Likelihood Ratio Test (LRTs) have been used to
compare the nested binomial and Wald Test for Zero inflated Models.
Source: Authors' calculations.

Table 5 shows six different goodness-of-fit tests comparing the constrained models to the saturated model. They allow to test whether a different MS behavior is accepted (H_1) compared to the common behavior (H_0) represented in the six constrained models defined. As regards to restrictions 1 to 3, the general model with different MS behavior was confirmed with respect to the constrained models that consider the indicated restrictions (see p-values in Table 5). Consequently, we find that analyzing the EU behavior on safety border controls, as a single unit, is not acceptable. This is supported by restriction 6, which compares the saturated model with the constrained model where all restrictions were accepted. A different story occurred when exporter dependence (restriction 4) was considered. Here H_1 was rejected by the NB model and accepted by the ZINB. This would mean that there are no clear signs that the total record of total notifications for a given exporter (collective reputation) affects the individual MS control behavior. H_1 is also rejected for the Ln GDP per capita effect (restriction 5), confirming that the EU control system behaves in a uniform way when considering the characteristics of exporting countries.

Table 6. Testing common EU MS food control behavior by sub-periods

	Restrictions (Ho)	NB 2001-07		NB (2008-13)		NBM	
		LR stat	pvalue	LR stat	pvalue	LR stat	pvalue
1	Common fixed MS effects	19.72898	0.0005	11.30093	0.0457	29.185	0.00002
2	Common product MS effects	340.4795	0.0000	294.0599	0.0000	640.531	0.0000
3	Common sector MS effects	17.16411	0.0041	13.00985	0.0232	19.857	0.0013
4	Common exporter's MS effects	10.1053	0.0723	3.443741	0.6319	9.214	0.1008
5	Common exporter's GDP per capita MS effects	10.93435	0.0526	4.422265	0.4903	6.759	0.2391
6	All restrictions accepted	433.4794	0.0000	361.6581	0.0000	778.210	0.0000

Note: H_1: saturated model. Likelihood Ratio Test (LRTs) have been used to compare the nested binomial models. Source: Authors' calculations.

A question could be raised on whether, in line with the opinions by Lezaun et al. (2006) and De Frahan and Vancauteren (2006), the single market is progressing towards a uniform implementation of food safety standards. The progress in harmonizing the safety controls can be tested by breaking the period 2001-13 into sub-periods 2001-07 and 2008-13. The general NB model was estimated for each period, with the estimation results presented in Annex 1. Both are in general consistent with the model estimated for the complete period 2001-13, with perhaps less pronounced product dependence effects in the second sub-period compared to the first. The six restrictions were also tested for both periods, with results summarized in Table 6. It is observed that p-values for different MS behavior for product and sector dependence are larger in the second sub-period estimation, signaling the possibility that such behavior is becoming more common across MS, but still H_1 is accepted. Restrictions 4 and 5 were clearly accepted for the second sub-period, indicating a common MS behavior as regards to the exporting country characteristics. The analysis by sub-periods, in summary, would indicate that the selected MS still behave differently in the food alert implementation, but there are some signs that such behavior is becoming more uniform as the experience in applying RASFF is making progress.

6. Conclusions

The present paper has raised the question on the adequacy to consider the EU as a single integrated unit when considering the implementation of

NTMs. When the question refers to food safety standards, it is true that the EU MS are evolving towards more common risk control procedures, which are actually reflected in RASFF. However, control measures are still monitored and applied by national authorities, with differing interpretations, so the harmonization process remains imperfect. The RASFF database was adapted in this contribution to link the recorded food notifications with the corresponding trade codes at HS4. This allowed exploring the pathway to the common implementation of food safety border measures, represented in the number of food alerts in six EU MS (France, Germany, Italy, the Netherlands, Spain and United Kingdom). Thus, the hypothesis of uniformity of dependence effects across the six MS selected was tested. For that, we explored the dependence effects on notifications on food alerts on fruit and vegetables imports registered by the RASFF across the selected EU MS. Three types of path dependence were considered; product, sector and exporter, the three of them referring to the collective effect over time of having received previous food alerts.

Notification numbers were explained through count models. Two main problems found because the inherent characteristics of the food alert data (1) the over-dispersion in the data and (2) the excess of zeros in the observations. NB and ZINB count models were applied to consider the large number of observations with zero notifications, which could be motivated by two processes of generating zero counts, one being the absence of a bilateral trade flow, and the other being the absence of a risk in the corresponding food import. The model selection process was not conclusive between the NB and the ZINB distributions, though the NB performs better in predicting zero counts, which would make the ZINB version less needed.

Our findings uphold the idea that reputation matters at the EU borders, supporting the evidence found by Jouanjean et al. referred to the US SPS border controls. Such results relate to the collective reputation represented by a product, HS2 sector or an exporting country, although collective sector and exporter effects were found to be of lower intensity than the product specific dependence effect. In sector and exporter effects, it appears that having many notifications by a sector-exporter in previous year decreases the expected number of product notifications in the next year. It seems that in this case the notion of collective reputation must be qualified by the

ability of a sector or an exporter to implement measures to react and reduce the notifications in the following years.

Food alerts at the EU border seem to be little influenced by the characteristics of the country of origin (GDP per capita effect). While food safety can be correlated with development of exporting countries (the higher GDP per capita, the less number of food alerts), food awareness, controls at origin and cooperation with EU authorities may also be correlated with the degree of development of the country of origin with an increase in safety controls as the exporter becomes a larger or/and more developed actor. As for the impact of the import volume level and the import volume change, their effects on food notifications were marginal or non-significant. This disregards a protectionist behavior of MS authorities in the implementation of food safety controls.

Our analysis tested the hypothesis that the EU behaves as a single unit in the implementation of safety border controls and found that this is not the case for the whole period 2001-13. However, once the sub-period 2001-07 is compared with the sub-period 2008-13, common border restrictions on the count models analyzed tend to be more significant in the second sub-period than in the first, which could suggest that there is a tendency for the EU MS to show a common behavior in the implementation of food safety measures.

Policy substitution between tariffs and non-tariffs measures could not be explicitly tested in our analysis of the factors influencing food alerts in the EU fruit and vegetables trade. Most of this trade is not restricted by high tariffs at the EU borders, except for a series of products affected by the entry price system, whose equivalent tariffs are seasonal and cumbersome to estimate. However, the low significance of the parameters related to the import volume level and change would suggest that food alerts may be influenced by individual and collective reputation but not by a substituting behavior between tariffs and non-tariffs, so a protectionist approach does not seem to motivate safety controls in the studied EU MS. This would support the idea by Disdier et al. (2014) that estimates that one part of ad valorem equivalents is explained by the correction of market failures and risk management considerations, and not by a merely protectionist behavior.

A final warning on the empirical analysis is that although we have tested the hypothesis of a uniform enforcement of food standard across six MS, path

dependence could be accumulative over past history. If, for example, an exporter cleans its own record by staying out of the market for a year, it would choose to export inspected products in every other year. The concepts of product, sector and exporter reputation could make reference, in further investigations, to longer past periods and to test if the MS reactions tend to be more uniform in the long term.

Acknowledgments

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Appendix

Appendix 1. Statistical Negative Binomial models: estimated parameters by periods 2001-07 and 2008 -13

	NBM 2001-07	NBM 2008-13	Negative Binomial Model (NBM) 2001-2013
(Intercept)	-5.247 (0.486)***	-4.512 (0.375)***	-4.687 (0.279)***
$N_{ijk\,(t-1)}$	0.679 (0.045)***	0.399 (0.033)***	0.482 (0.028)***
$N_{ij\,FR\,(t-1)}$	1.165 (0.179)***	0.624 (0.086)***	0.896 (0.075)***
$N_{ij\,IT\,(t-1)}$	0.425 (0.111)***	0.262 (0.073)***	0.400 (0.064)***
$N_{ij\,NL\,(t-1)}$	0.976 (0.234)***	0.748 (0.102)***	0.907 (0.095)***
$N_{ij\,SP\,(t-1)}$	0.097 (0.120)	0.542 (0.138)***	0.397 (0.087)***
$N_{ij\,UK\,(t-1)}$	4.249 (0.081)***	2.584 (0.041)***	3.316 (0.038)***
$N_{Jk\,(t-1)}$	0.002 (0.007)	0.014 (0.006)*	0.005 (0.004)
$N_{JFR\,(t-1)}$	-0.109 (0.047)*	-0.020 (0.018)	-0.039 (0.018)*
$N_{JIT\,(t-1)}$	-0.021 (0.011)	-0.012 (0.010)	-0.012 (0.007)
$N_{JNL\,(t-1)}$	0.006 (0.021)	-0.006 (0.011)	0.007 (0.009)
$N_{JSP\,(t-1)}$	-0.019 (0.019)	-0.021 (0.016)	-0.009 (0.012)
$N_{JUK\,(t-1)}$	0.005 (0.021)	-0.005 (0.010)	0.002 (0.009)
$N_{Ijk\,(t-1)}$	0.003 (0.014)	0.004 (0.009)	-0.001 (0.008)
$N_{Ij\,FR\,(t-1)}$	-0.052 (0.082)	-0.099 (0.058)	-0.093 (0.046)*
$N_{Ij\,IT\,(t-1)}$	-0.077 (0.039)*	0.015 (0.021)	-0.014 (0.019)
$N_{Ij\,NL\,(t-1)}$	-0.034 (0.103)	-0.074 (0.060)	-0.068 (0.048)
$N_{Ij\,SP\,(t-1)}$	-0.146 (0.082)	-0.182 (0.099)	-0.136 (0.058)*
$N_{Ij\,UK\,(t-1)}$	-0.918 (0.153)***	-0.088 (0.056)	-0.157 (0.058)**
$\ln GDP_{jk(t-1)}$	0.041 (0.012)***	0.010 (0.008)	0.010 (0.003)***
$\Delta\,M_{ijkt}$	-0.00003 (0.00002)	0.00002 (0.00002)	0.00001 (0.00001)
$M_{ijk\,(t-1)}$	0.00012 (0.00001)***	0.00012 (0.00001)***	0.00006 (0.00000)***
$\ln GDP_{jFR(t-1)}$	0.00372 (0.00546)	0.00044 (0.00544)	0.00048 (0.00187)
$\ln GDP_{jIT(t-1)}$	-0.00010 (0.00405)	0.00217 (0.00436)	-0.00035 (0.00145)
$\ln GDP_{jNL(t-1)}$	-0.00626 (0.00456)	0.00774 (0.00492)	-0.00074 (0.00164)
$\ln GDP_{jSP(t-1)}$	0.00208 (0.00467)	0.00376 (0.00463)	0.00036 (0.00160)
$\ln GDP_{jUK(t-1)}$	-0.01637 (0.00674)*	-0.00351 (0.00604)	-0.00483 (0.00219)*
$f_J exporter\,(\delta_j)$	yes	yes	yes
$f_I sector\,(\delta_I)$	yes	yes	yes
$f_k importer(\delta_k)$	yes	yes	yes

.

Appendix

	NBM 2001-07	NBM 2008-13	Negative Binomial Model (NBM) 2001-2013
AIC	4859.490	5854.649	10749.170
BIC	5354.035	6340.253	11279.619
Log Likelihood	-2371.745	-2869.324	-5316.585
Deviance	1638.905	2099.447	3745.748
Num. obs.	37296	31968	69264

Note: ***p< 0.001, **p < 0.01, *p < 0.05. Standard errors are provided in brackets. All models are estimated using R-language. Source: Authors' calculations

Capítulo 5. Investigating differences in safety border notifications on fruit and vegetable imports by selected EU Member States

Anexo 1: Carta oficial de aceptación ICAE 2015

Fuente: ICAE 2015 Organizers (29th International Conference of Agricultural Economists), Milan, Italia.

Anexo 2: Justificante de revisión

Inicio del mensaje reenviado:

De: <averdun@uvic.ca<mailto:averdun@uvic.ca>>
Fecha: 7 de agosto de 2015, 7:50:16 CEST
Para: <mlmarti@esp.upv.es<mailto:mlmarti@esp.upv.es>>
Cc: <jcms@bristol.ac.uk<mailto:jcms@bristol.ac.uk>>,
<michelle.cini@bristol.ac.uk<mailto:michelle.cini@bristol.ac.uk>>,
<averdun@uvic.ca<mailto:averdun@uvic.ca>>
Asunto: JCMS: Journal of Common Market Studies - Decision on Manuscript ID JCMS-15-0088

07-Aug-2015

Dear Professor MARTI,

Manuscript ID JCMS-15-0088 entitled "Investigating differences in safety border notifications on fruit and vegetables imports by selected EU Member States" which you submitted to JCMS: Journal of Common Market Studies on 13-May-2015, has been reviewed. The comments of the reviewers are included at the bottom of this email.

The reviewers have recommended some revisions to your manuscript. Please respond to the reviewers' comments and revise your manuscript by 06-Oct-2015.

To revise your manuscript, log into https://mc.manuscriptcentral.com/jocms and enter your Author Centre, where you will find your manuscript title listed under "Manuscripts with Decisions." Under "Actions," click on "Create a Revision." Your manuscript number has been appended to denote a revision. Please DO NOT upload your revised manuscripts as a new submission.

You will be unable to make your revisions on the originally submitted version of the manuscript. Instead, revise your manuscript using a word processing programme and save it on your computer. Please also highlight the changes to your manuscript within the document by using the track changes mode in MS Word or by using bold or coloured text. As it is necessary for your manuscript to remain anonymous, please refer to Microsoft's guidelines on how to anonymise your document correctly:

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Anexo 2: Justificante de revisión

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Because we are trying to facilitate timely publication of manuscripts submitted to JCMS: Journal of Common Market Studies, your revised manuscript should be uploaded as soon as possible. If it is not possible for you to submit your revision in a reasonable amount of time, we may have to consider your paper as a new submission. If you feel that you will be unable to submit your revision within the time allowed please contact me to discuss the possibility of extending the revision time. Please note that you may not be able to resubmit your paper if you exceed the allotted time without letting us know. Thus, please get in touch with us if you need a new deadline.

Once again, thank you for submitting your manuscript to JCMS: Journal of Common Market Studies and I look forward to receiving your revision.

Yours sincerely,

Professor Amy Verdun
Editor-in-Chief, JCMS: Journal of Common Market Studies
averdun@uvic.ca<mailto:averdun@uvic.ca>

Fuente: Editor-in-Chief, Journal of Common Market Studies - Decision on Manuscript ID JCMS-15-0088

Cartas coautores

Valencia, 20 mayo 2015

A quien corresponda,

Como coautor del artículo "Investigating differences in safety border notifications on fruit and vegetables imports by selected EU Member States" en proceso de revisión en la revista *Journal of Common Market Studies* y aceptado como "contributed paper" en el Congreso Internacional de Economistas Agrarios, concretamente en el 29th ICAE Congress (International Conference of Agricultural Economists), en agosto de 2015 en Milan (Italia), autorizo el uso del mismo en la Tesis Doctoral de Lorena Tudela Marco, coautora del artículo y renuncio a utilizarlo como parte de otra tesis doctoral.

Para que así conste a los efectos oportunos firmo la presente en Valencia a 20 de mayo de 2015.

Dr. José María García Álvarez-Coque
Coordinador del Grupo de Economía Internacional
Catedrático del Departamento de Economía y Ciencias Sociales
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Fuente: Departamento de Economía y Ciencias Sociales,
Prof. María Luisa Martí Selva

Capítulo 5. Investigating differences in safety border notifications on fruit and vegetable imports by selected EU Member States

CAPÍTULO 6. DISCUSION GENERAL

La creciente importancia de las MNA respecto a las condiciones de acceso al comercio agroalimentario obedece principalmente a dos factores; en primer lugar, las sociedades cada vez mas globalizadas adoptan un número creciente de normativas sobre los productos que responde a la demanda social en materia de salud, inocuidad y protección del medio ambiente, y en segundo lugar, desde la OMC y la firma del GATT se promueve activamente la reducción de las formas tradicionales de la política comercial.

Apenas existe controversia sobre la liberalización comercial como modelo de desarrollo. En esta línea, es evidente que la sola eliminación de aranceles resulta insuficiente para favorecer el desarrollo (Hammoudi et al., 2015). Abordar las MNA, es un elemento clave para la elaboración de políticas de comercio integradoras y eficaces.Mucho se ha escrito sobre los efectos de las MNA sobre el comercio internacional. Menos se conoce sobre sus factores determinantes. ¿Están la MNA motivadas por preocupaciones técnicas o sanitarias, o pueden verse influenciada por aspectos políticos o intangibles?

Se cuestiona que la aplicación de MNA esté directa o exclusivamente ligada a cuestiones técnicas o relacionadas con la inocuidad de los alimentos y se buscan otras motivaciones que alimenten su aplicación. La investigación desarrolla un análisis de los factores subyacentes que afectan al uso de las MNA aplicadas al comercio agroalimentario en el marco de la región Euro-Mediterránea, a través de dos enfoques que han representado el núcleo central de esta tesis: a) si la aplicación de MNA en PSEM está relacionada con la eliminación de los aranceles para el comercio, en definitiva, la existencia de sustitución de políticas entre MNA y aranceles; b) si la aplicación de MNA que la UE está motivada por una conducta sistemática, guiada por consideraciones económicas y políticas más allá de la apariencia de notificaciones alimentarias específicas y riegos de seguridad alimentaria. De este modo, hemos avanzado en el análisis explicativo de la aplicación de MNA.

Recuperando los objetivos específicos planteados en la introducción y siguiendo el hilo conductor que ha seguido la investigación (coincidente con

el orden cronológico de los artículos elaborados) en este apartado se recogen los principales resultados generales de la tesis, relativos a las siguientes cuestiones:

- Escrutar el avance de los acuerdos en materia de comercio agroalimentario en la región Euro-Mediterránea.

- Analizar la relación entre los aranceles y las MNA en el comercio agroalimentario.

- Identificar los factores que contribuyen a explicar el alcance de la utilización de MNA.

- Explorar el nivel de armonización de las MNA frente a la importación de productos agroalimentarios.

1. El alcance de la integración comercial. El caso Euro-Mediterráneo

¿Ha avanzando la integración de comercio agroalimentario en el área Euro-Mediterránea?. En el marco de la AEM los avances en los tratados en el ámbito del comercio agroalimentario conllevan negociaciones controvertidas, directamente influenciadas por la amplia gama de intereses encontrados de los actores implicados. En Europa, las presiones surgen de los sectores sensibles a la competencia por las importaciones. La liberalización del comercio agroalimentario de los principales productos mediterráneos (el sector hortofrutícola) perjudica especialmente a los pequeños agricultores, que representan el modelo de agricultura familiar mayoritario de las zonas rurales de ambos lados del mediterráneo (Abis, 2012; García Álvarez-Coque et al., 2012). También surgen preocupaciones relacionadas con el impacto sobre el medio ambiente, en particular los efectos de la agricultura intensiva sobre las reservas de agua y el calentamiento global. En los PSEM, se desconfía por la marcada asimetría de poder comercial entre las riberas Sur y Norte del Mediterráneo y se recela del enfoque clásico de la PEV (donde los países desarrollados transfieren valores económicos a los países en desarrollo, a través de preferencias comerciales). Por tanto, ya desde sus inicios eran múltiples los intereses enfrentadosen el proceso de integración de la región Euro-Mediterránea.

A lo largo de la evolución del proceso de integración, el liderazgo adoptado por UE confirma la asimetría de poder comercial entre la UE y los PSEM y evidencia la falta de coordinación Sur-Sur (necesaria para una integración completa) y los diferentes ritmos y necesidades que afrontan estos países.A su vez, tampoco la UE ha otorgado la máxima prioridad a la negociación bilateral con el Mediterráneo, frente a otros procesos, como la propia ampliación al Este, la configuración de un espacio único, y las negociaciones con otras áreas del planeta.

A la hora de evaluar el recorrido de la AEM, existe consenso en considerar que el proceso de integración Euro-mediterráneo requiere un replanteamiento profundo. En general, se coincide en que el proceso de Barcelona ha generado un impacto positivo en el comercio entre la UE y los PSEM, pero ha sido insuficiente para extender el proceso hacia de integración en otros ámbitos como la convergencia en normativas y la cohesión social. Las revueltas de la Primavera Árabe evidencian, desde el Sur del Mediterráneo, la negligencia de las políticas sociales y la falta de una visión compartida global mas allá de las reformas económicas, y por consiguiente su sostenibilidad social y su contribución a la estabilidad de la región. En definitiva, se manifiestan las deficiencias de basar el proceso de integración en la creación de una zona de libre comercio.

Una vez recorrida la trayectoria completa de la AEM surge una discusiónmás concreta: ¿Qué implicaciones políticas sobre el comercio agroalimentario ha supuesto la región Euro-Mediterránea? Se parte de una falta generalizada de entendimiento sobre la forma de incluir la agricultura mediterránea en las políticas agrícolas y comerciales en la región. Para responder sobre la conexión entre la PEV y los avances o retrocesos en la integración del comercio agroalimentario en el área Euro-mediterránea es necesario centrar los esfuerzos en conocer los resultados de dichos procesos y profundizar más allá de los acuerdos bilaterales alcanzados, hacia lo que podríamos denominar una integración profunda que incluya aspectos de orden múltiple, como puede ser la armonización de MNA.

Para ello, el estudio aborda algunos mitos y realidades de la liberalización del comercio en la región, con intención de aportar conocimiento de temas específicos. Se estudian los patrones de comercio de los alimentos básicos y se examina la relación con las preocupaciones nacionales y las políticas

agrícolas y de seguridad alimentaria en la región (Ver Gráfico 1, 2, 3 y 4, capítulo 2). Una parte del estudio se centra en el alcance, a través del análisis de varios escenarios,de la liberalización del comercio en el sector hortofrutícola (Ver Tabla 2a, 2b, 2c y 2d. Capítulo 2). El interés de acotar la investigación a este sector está justificado por su importancia en las exportaciones de los PSEM.

En términos generales, los resultados en la investigación han confirmado que los PSEM aumentarían sus exportaciones en escenarios de mayor liberalización del comercio, siendo Turquía uno de los países más beneficiados. Los resultados también indican que la liberalización del comercio no se traduciría en cambios dramáticos en los precios para los productores de la UE, a pesar de que los flujos de importación adicionales podrían aumentar significativamente. Por tanto, las presiones sobre los preciosestán más relacionadas con un débil funcionamiento de la cadena de valor (falta de transparencia y de organización o asimetría en la información) que con los atribuidos a la competencia extranjera.

2. La relación entre MNA y aranceles en los PSEM

Con intención de proporcionar conocimientos sobre el funcionamiento y el proceso de armonización de las MNA en la región mediterránea, se estudian las relaciones entre los aranceles y las MNA, examinado la posible disyuntiva entre protección arancelaria y no arancelaria y poder responder a la hipótesis de estudio ¿Hay sustitución entre MNA y aranceles?.

Para ello, primero, la investigación ha explorado el perfil arancelario y la aplicación de MNA de los países del Sur del Mediterráneo seleccionados. En este sentido, los resultados revelan que, como parte de su proceso de integración, los PSEM se encuentran en diferentes etapas de armonización de sus MNA. Los países estudiados (menos Jordania) presentaban crestas en sus EAV y éstas se concentran en productos frescos y procesados, principalmente frutas y hortalizas frescas y elaboradas (sectores 07,08 y 20), el sector cárnico (02), pesquero (03) y las bebidas (22). La presencia de EAV en estos productos se justifica en parte por la naturaleza intrínseca de estos productos que tienden a conllevar más riegos sanitarios.

En segundo lugar, se ha estudiado la evolución de los aranceles aplicados en los PSEM entre 1998 y 2003 (Ver Tabla 1, Capítulo 4). La investigación refleja que los niveles de aranceles aplicados en los PSEM no siguen una tendencia compartida. Marruecos y Túnez aumentaron sus aranceles a principios de siglo y posteriormente descendieron. Egipto y Líbano mostraron tendencias opuestas, mientras que Jordania y Argelia, con niveles inicialmente bajos, continuaron la tendencia de reducirlos.

Tercero, se ha explorado la posible interdependencia entre las MNA y los aranceles en el comercio agroalimentario. Para ello, cada país ha sido clasificado de acuerdo a su patrón de protección comercial de productos agroalimentarios, combinando el porcentaje de EAV y los niveles arancelarios. Esto permite comparar la protección entre países y grupos de productos. Los resultados obtenidos muestran una situación muy diferente en cada país (Ver Tabla 3, Capítulo 3). Pero en general el estudio indica que, la mayor parte de los productos estudiados se sitúan en la categoría de "baja protección" (bajos niveles tanto de aranceles como de MNA) o "protección transparente" (bajos niveles de MNA y aranceles elevados). La categoría de "protección encubierta" (altos niveles de MNA y bajos aranceles) es significativa en Marruecos, Túnez y Egipto. Por último, Marruecos y Túnez son los que presentan más productos bajo la categoría de "alta protección" (altos niveles de aranceles como de MNA). Otro resultado destacable es que en general los valores de los EAV son inferiores al de los aranceles. Confirmando la presencia observada de protección trasparente y previsible de los aranceles. Este hecho desmonta la idea de un Sur del Mediterráneo con políticas comerciales sujetas a distorsiones. Las reformas han avanzado sustancialmente, lo que conllevaría otro análisis más profundo de las consecuencias de la liberalización, quizás relevante para otro estudio posterior.

Para profundizar en el estudio de la relación entre MNA y aranceles y comprobar la política de sustitución, se aplicó un modelo de regresión múltiple que relaciona los niveles de EAV de las MNA y los niveles y evolución de los aranceles (Ver Tabla 4, Capítulo 4). Los resultados más destacados muestran: a) que los países (Argelia, Marruecos, Túnez y Egipto) donde parece darse sustitución de políticas se produce de forma dinámica. Es decir, el carácter restrictivo de las MNA está influenciado por la evolución

de los aranceles y b) el incremento de MNA se produce en grupos específicos de productos dependiendo de las características de los mercados domésticos de cada uno de los países. En Marruecos la sustitución de políticas dinámicas es significativa en el sector cárnico, mientras que en Túnez y Egipto lo es en el sector hortofrutícola.

Estos resultados sugieren que a pesar de la predominancia de la categoría de protección baja y transparente, todavía hay un largo camino hasta que las MNA pierdan relevancia entre los PSEM (Ver Tabla 3, Capítulo 4). También se confirma en esta investigación que no existe armonización de las MNA entre los PSEM y que el proceso de liberalización del comercio en la región mediterránea implica aumentar las presiones sobre MNA. Si bien esta investigación indica que podría existir sustitución entre MNA y los aranceles, no puede afirmarse que los PSEM sigan estrategias proteccionistas implementando MNA frente a la reducción de aranceles sino, más bien, la convivencia entre ambos tipos de medidas para un grupo especifico de productos. Swinnen y Vandemoortele, (2009) destacan que la relación entre los tipos de normativas alimentarias y el proteccionismo se ve influida por diversas variables. Los resultados sugieren que las políticas de comercio agro-alimentario en la región del Mediterráneo no responden a un comportamiento sistemático o a la lógica general de la relación entre las MNA y niveles arancelarios.

En cualquier caso, hay que señalar que las estimaciones no están libres de limitaciones. Los aranceles y los valores AEV trabajados son multilaterales, y por tanto muestran la orientación general de la política comercial y no reflejan la política comercial bilateral entre los PSEM y la UE. Teniendo en cuenta los cambios específicos relacionados con la relación bilateral que emerge del proceso de integración de la AEM se requeriría un análisis detallado de las preferencias arancelarias. La estimación actualizada de los valores EAV también ayudaría a confirmar o no, si la hipótesis de sustitución es constante.

3. ¿Es la reputación un factor determinante? El caso Europeo

Siguiendo con el tercer punto de discusión y partiendo de la escasa literatura en torno a la valoración del impacto y alcance del uso de MNA, la investigación se planteó abordar los efectos de reputación de MNA aplicadas

en períodos pasados. Respondiendo a la hipótesis de estudio: ¿Las notificaciones recibidas en años anteriores influencian las notificaciones actuales?. La idea que subyace bajo el concepto, efectos de reputación, es estudiar la influencia que ejerce la emisión de una notificación alimentaria sobre producto un año determinado en la probabilidad de la aplicación de futuras notificaciones alimentarias. Es decir, nos preocupa conocer si "la historia importa" o si existe una "dependencia de senda" en la aplicación de MNA. Esta hipótesis la analizamos para seis países de la UE.Se consideraron tres tipos de efectos de reputación: producto, sector y país exportador.

El estudio se basa en la metodología propuesta por Jouanjean et al. (2012, 2015) para las medidas en frontera aplicadas por Estados Unidos, donde la reputación se basa exclusivamente en los eventos sucedidos en el pasado. De un modo similar, en la investigación realizada en la presente tesis la definición de reputación se basa principalmente en las notificaciones de alertas alimentarias actuales y pasadas. El concepto de reputación incluye aspectos como imagen o percepción, que no son abordados de manera explícita en nuestra investigación, aunque son considerados implícitamente en la noción de dependencia de senda. A su vez, cabe preguntarse si la emisión de una notificación en un año aumenta automáticamente la probabilidad de recibir otra notificación al año siguiente. La presencia de una notificación podría tomar un tiempo para activar los mecanismos de control por parte del país exportador. En este sentido, para medir la reputación de manera más explícita, entendida como la consecuencia de hábitos pasados, serian necesario incluir en el estudio más retardos en el lado derecho de los modelos analizados.

En cualquier caso, reconociendo que existen limitaciones en el concepto de efectos de reputación y aceptando que podría ser adecuado hablar también de "memoria de importación" o "respuesta a la exportación", nuestra investigación adaptó la información de las notificaciones obtenidas de la base de datos RASFF para vincularlas con los códigos del SA de comercio correspondientes al nivel de 4 dígitos. Como era de esperar, conforme al aumento de las normativas y las regulaciones de la UE, se observa un ritmo creciente de notificaciones alimentarias entre el 2000 y el 2013. Siendo Turquía el país más notificado de los PSEM. También se confirma que los productos: 03 (pescado), 07 (frutas frescas) y 08 (hortalizas frescas) reciben

más notificaciones, en definitiva, aquellos que conllevan mas riegos sanitarios o son más vulnerables a contaminaciones externas (productos frescos y perecederos).

A continuación se exploró el comportamiento de la UE a través de la emisión de notificaciones alimentarias a las importaciones realizadas de origen en países terceros mediterráneos. El resultado del análisis revela que existen efectos de reputación significativos a nivel de producto. Esto sugiere que las notificaciones de un producto se ven afectadas por las notificaciones en el año anterior. Es decir, las notificaciones en el año "t-1" aumentan la probabilidad de las notificaciones previstas en el año "t" para ese mismo producto. Respecto al trato aplicado por las políticas comerciales EU a los PSEM, nuestra investigación sugiere que no existe efecto regional significativo para los PSEM en conjunto. Es decir, las exportaciones mediterráneas con origen en los PSEM no son especialmente discriminadas en las fronteras de la UE.

Por último, se profundiza en el estudio de los efectos de la reputación mediante la estimación de los modelos NB y ZINB de las notificaciones alimentarias aplicadas sobre las importaciones de frutas y hortalizas (Capítulos 07, 08 y 20 del SA) registrados por el RASFF en la frontera de seis países europeos (Francia, Alemania, Italia, Países Bajos, España y el Reino Unido). El análisis de los resultados refleja que la reputación a nivel de producto es estadísticamente significativa para ambos modelos en la mayoría de los países importadores. Esto significa que al registrar notificaciones de un producto al año siguiente aumenta la probabilidad de registrar notificaciones para ese mismo producto (Ver Tabla 3, Capítulo 4).

No obstante, no se han encontrado efectos significativos a nivel de reputación sector y país exportador. Este resultado, refuerza la teoría de que la dinámica de aplicación de notificaciones alimentarias en frutas y verduras no parece estar ligada al origen de los productos o a un posible efecto "reputación-país".

Respecto el impacto del volumen de importación y la variación del volumen sobre el número de notificaciones, no parece existir una influencia significativa. Esto descarta el carácter proteccionista de los EM en la implementación de las MSF. Asimismo, los países exportadores no parecen

seguir un patrón en función su GDP. Sin embargo, a partir del estudio se pueden extraer grupos de países en función de la relación entre su GPD y el número de notificaciones que reciben. Donde destaca un grupo de grandes países exportadores que acumula el mayor numero de notificaciones: EEUU, Turquía, China, Tailandia y la India.

4. Armonización de las MNA

El último punto de discusión planteado en la investigación cuestiona si es correcto considerar la UE como una unidad en la aplicación de MFS a través de la pregunta: ¿Ha avanzando la armonización de la aplicación de normas alimentarias en la frontera de los EM de la UE frente a la importación de productos agroalimentarios? De acuerdo con las opiniones de Lezaun y Groenleer (2006) y De Frahan y Vancauteren (2006), el mercado único avanza hacia una aplicación uniforme de las normas de seguridad alimentaria. En la investigación, hemos probado esta hipótesis en dos sub-períodos relativamente homogéneos, 2001-07 y 2008-13 con el fin de explorar la evolución a lo largo del tiempo y verificar si el proceso de aplicación de notificaciones a través del RASFF sigue una pauta común en los diferentes EM estudiados.

Para ello, se estimó el modelo BN para cada período (Ver Anexo 1, Capítulo 5). Los resultados revelan diferencias entre los EM estudiados a la hora de aplicar las notificaciones alimentarias. No parece por tanto darse una hipótesis de comportamiento homogéneo entre los EM ante los mismos riesgos sanitarios, aunque el comportamiento tiende a ser más uniforme en el segundo periodo estudiado.

A continuación, se resumen en una tabla esquemática la informacion principal de la discusión.

Tabla 3. Resumen del apartado de discusión

OBJETIVO PRINCIPAL	PREGUNTAS DE INVESTIGACION	OBJETIVOS ESPECIFICOS	HIPOTESIS	RESULTADOS
Mejorar la comprensión del funcionamiento de las MSF en el comercio agroalimentario	P1) ¿La profusión de MNA está relacionada con la eliminación de los aranceles para el comercio?

¿Existe sustitución de políticas entre MNA y aranceles? | O1. Explorar el avance de los acuerdos en materia de comercio agroalimentario | H1. ¿Ha avanzando la integración de comercio agroalimentario en el área Euro-Mediterránea? | Los PSEM se encuentran en diferentes etapas de armonización de sus MNA. Es necesario apostar por un nuevo planteamiento de las políticas de comercio agroalimentario, más allá del ámbito económico, para reforzar la asociación entre la UE y otros países, en particular los PSEM, y entre estos últimos entre sí |
		O2. Analizar la relación entre los aranceles y las MNA	H2. ¿Hay sustitución entre aranceles y MNA? (sustitución de políticas)	Los PSEM se encuentran en etapas muy diferentes de armonización de políticas comerciales, pero en general en el comercio agroalimentario muestran un nivel de protección bajo, aunque los niveles de aplicación de MNA son variables y se reconoce sustitución de políticas en algunos sectores específicos
	P2) ¿La aplicación de MNA está motivada por una conducta sistemática, guiada por consideraciones económicas y políticas?	O3. Identificar los determinantes que contribuyen a explicar la aplicación de las MSF	H3. ¿Las notificaciones recibidas en años anteriores influyen en las notificaciones actuales? (efectos de reputación)	Se ha encontrado una relación a nivel producto entre las notificaciones registradas un año y el número de notificaciones registradas el año siguiente
		O4. Explorar el nivel de armonización de las notificaciones alimentarias	H4. ¿Ha avanzando la armonización de las medidas en frontera de los EM de la UE? frente a la importación de productos agroalimentarios?	Existe una tendencia entre los Estados Miembros estudiados de la UE en la adopción de comportamientos comunes en la aplicación de normas alimentarias en su comercio con países terceros, como caso particular de la aplicación de MSF.

Fuente: Elaboración propia

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Capítulo 6. Discusión general

CAPÍTULO 7. CONCLUSIONES

Las MNA son una herramienta clave del comercio agroalimentario para garantizar la protección de los consumidores, la inocuidad de los alimentos y los intereses de las políticas públicas. Existe abundante bibliografía que aporta información sobre el marco teórico de las MNA. Sin embargo, se conoce poco acerca de su aplicación y los factores que las determinan.

Con este escenario, la investigación trata de aportar en el ámbito del comercio agroalimentario nuevos elementos de discusión. Para ello, se planteó abordar las MNA a través de dos preguntas de investigacion:

> P1) La sustitución de políticas, donde se analiza la relación entre aranceles y las MNA aplicadas.

> P2) Los efectos de reputación de las notificaciones alimentarias, donde se analiza la armonización en la aplicación de medidas en materia de inocuidad de los alimentos, con intención de estudiar su funcionamiento y descartar o comprobar si el conjunto de normas se aplican con fines proteccionistas.

Debido a la naturaleza compleja de las MNA, las limitaciones del estudio están relacionadas con las limitaciones de las fuentes de información utilizadas. La complejidad que implica profundizar en el estudio del impacto cuantitativo de las MNA y la multitud de factores que influencian su comportamiento ha quedado de manifiesto. Las organizaciones internacionanes del comercio y la alimentación, las autoridades de los estados, las empresas y los consumidores, son agentes influenciados de manera directa por las acciones de las MNA. Los intereses y las relaciones entre todos estos actores son muy diversas, pero el objetivo común perseguido: es encontrar un marco de referencia capaz de adaptarse a las necesidades emergentes.

Siguiendo los objetivos específicos planteados como ejes fundamentales de la investigación, las principales conclusiones son las siguientes:

- La AEM no ha servido como foro de cooperación y de diálogo político. Tras la Primavera Árabe de 2011, parece difícil restablecer una dinámica de la integración Euro-mediterránea en una línea de continuidad con la AEM y la UpM, y en concreto mantener la estrategia de negociaciones bilaterales superpuestas.

  Es necesario equilibrar la influencia hasta ahora hegemónica de la UE sobre el proceso. Y apostar por un nuevo planteamiento más allá del ámbito económico capaz de reforzar la asociación entre la UE, los PSEM y entre estos últimos entre sí.

  En el ámbito del comercio agroalimentario, a pesar de la amplia gama de problemas comunes que enfrenta la agricultura y el desarrollo en la región mediterránea, todavía queda un largo camino hasta que los países de la región alcancen una visión común sobre el papel de las políticas agrícolas en el futuro. Sin embargo, cabe destacar que el limitado alcance de las políticas comerciales para resolver las asimetrías existentes en los mercados agroalimentarios. Las presiones sobre los precios de los mercados internos están más relacionadas con un débil funcionamiento de la cadena de valor (falta de transparencia y de organización o asimetría en la información) que con los atribuidos a la competencia extranjera.

- Los PSEM se encuentran en etapas muy diferentes de armonización de sus MNA. Jordania y Egipto parecen tener menor número de productos con una protección significativa, mientras que Túnez y Marruecos destacan con un mayor número de productos en la categoría de alta protección. También el nivel de protección varía en función del producto: los capítulos 02 (sector cárnico), 03(pescados), 07 (frutas frescas), 08(hortalizas frescas), 20 (frutas y hortalizas transformadas) y 22 (bebidas) son los más protegidos.

  A pesar de las diferencias entre países, el panorama general muestra un nivel bajo y transparente de protección aunque aparece protección encubierta en determinados sectores, donde los resultados sugieren la posibilidad de sustitución de políticas en favor de las MNA. En cualquier caso, la aplicación de MNA cuyos fines se ajusten a las

necesidades de inocuidad de los alimentos parece responder a necesidades de políticas públicas o a la inercia de comportamientos administrativos y no siempre a dinámicas de actitudes proteccionistas, como puede sugerir el discurso de la economía política.

- No se ha encontrado un trato diferencial por parte de la UE en la aplicación de notificaciones alimentarias a los flujos de exportación de los países mediterráneos, en comparación con los que se originaron desde otras regiones. Esto es relevante teniendo en cuenta que el área mediterránea es una de las primeras con las que la UE ha finalizado acuerdos de libre comercio. Por tanto, no se han encontrado evidencias de protección especial encubierta a través de las notificaciones alimentarias respecto al origen de las importaciones.

  Asimismo, teniendo en cuenta la escasa importancia de los parámetros relacionados con el volumen de las importaciones y la variación del volumen de las mismas. Se confirma que la implementación de las notificaciones alimentarias en la UE no sigue un patrón proteccionista. Esta conclusión apoyaría la idea de Disdier et al. (2014), que estima que una parte de los EAV se explica por la corrección de los fallos del mercado y las consideraciones de gestión de riesgos y no por una conducta meramente proteccionista.

  Si se ha detectado influencia entre el aumento de las notificaciones un año determinado y en el aumento del número de notificaciones esperadas para ese mismo producto en los EM de la UE estudiados. Por tanto, existe cierta memoria a nivel de producto en relación con las notificaciones alimentarias. Esta "dependencia de senda" podría sugerir que la lógica de las notificaciones puede ser explicada en parte por un efecto reputación, que merece ser investigado con más profundidad en próximas investigaciones.

- Se observan diferencias entre los EM estudiados a la hora de aplicar las notificaciones alimentarias. Por tanto, la aplicación en frontera de notificaciones alimentarias por los EM por separado parece no

responder a una lógica conjunta, por lo que, también este ámbito, la Unión Europea es poco "común". Sin embargo, la tendencia compartida es avanzar hacia la armonización en la aplicación de notificaciones alimentarias. Esta situación se entiende al comprobar que las medidas de control están siendo monitoreadas y aplicadas por las autoridades nacionales con diferentes interpretaciones. Por tanto, el proceso de armonización sigue siendo imperfecto.

La investigación concluye que respecto a las normas de inocuidad de alimentos los EM de la UE están evolucionando hacia la implementación de sistemas de control comunes, y que la experiencia en el uso del RASFF está progresando.

El sistema RASFF contiene una información de gran valor, que ha sido procesada en una base de datos que, en esta tesis, se relaciona con los flujos bilaterales expresados en una clasificación arancelaria coherente con el SA de comercio (Ver Anexo 2. Manual Codificador del RASSF).

La investigación ha constatado, teniendo en cuenta la diferencia entre los PSEM, que los conceptos de inocuidad de alimentos y la aplicación de MNA en el comercio agroalimentario no siempre responden a dinámicas de actitudes proteccionistas. Una gran cantidad de estudios ha puesto en relieve la necesidad de superar las polémicas alimentadas por los grupos de interés que se oponen o lideran la aplicación de barreras al comercio (Martin, 2012).

Las metodologías aplicadas en esta tesis abren un campo interesante de investigación. En la misma se ha analizado el comercio Euro-mediterráneo o la aplicación de normas a determinados productos y el contraste consiguiente de hipótesis. Dicha metodología es susceptible de ser replicada a otros contextos geográficos o sectoriales.

El peso de las MNA en el comercio agroalimentario, su impacto sobre la alimentación, el desarrollo rural, el medio ambiente y las políticas públicas justifican su constante investigación.

Sin embargo, teniendo en cuenta que la mayoría de los espacios de negociación internacionales aceptan la idea de ofrecer un trato diferenciado para la agricultura, junto con la diversidad de modos de producción.

Entendemos que en el futuro, el enfoque de estudio sobre las MNA debe ir más allá del mero análisis de comportamientos proteccionistas para pasar a la evaluación de políticas que conllevan diversos grados de integración comercial profunda, incluyendo el análisis de las MNA. Teniendo en cuenta la variedad de factores y actores que intervienen en la aplicación de MSF y la tendencia creciente de sociedades globalizadas, se requieren políticas coordinadas que equilibren los intereses y cubran todos los aspectos que condicionan la inocuidad de los alimentos. Para ello, la selección de prioridades, el uso eficiente de los recursos y el establecimiento de normativas y sistemas de monitoreo y control deben ser tenidos en cuenta en el diseño de estas políticas.

El reto a la hora de abordar las MNA va más allá de separar las actitudes proteccionistas y no proteccionistas para identificar criterios y mecanismos que reflejen las necesidades sociales y se incluyan en las políticas comerciales.

Se plantean reflexiones surgidas a partir de la investigación, con el fin de promover el debate sobre posibles futuras líneas de investigación:

- Proseguir el análisis del proceso de integración Euro-mediterránea hasta ahora trabajado y plantear nuevas estructuras de cohesión mas ligadas a las necesidades de sociedades globalizadas ¿tiene sentido seguir manteniendo este esquema regional? ¿Cuál es el valor añadido del Mediterráneo? ¿Cómo enfocarlo en una situación de inestabilidad institucional como el que vive la región en la actualidad?

- Explorar y completar el concepto de efectos de reputación, considerando otros factores que pueden influir sobre el proceso de notificaciones alimentarias (acuerdos bilaterales o multilaterales, años de experiencia exportadora, políticas nacionales, infraestructuras o la estructura de la cadena agroalimentaria de cada pais, el acceso a información, etc.). La limitación existente es la reducida disponibilidad de datos en algunos casos y la complejidad de cuantificar y estas variables.

- Ampliar los años de estudio del estudio aumentaría las posibilidades de comprobar los efectos de reputación o la memoria de las notificaciones a largo plazo.

- Y, finalmente, profundizar en el análisis a nivel de país y sobre productos específicos con estimaciones actualizadas tanto de medidas arancelarias como los equivalentes ad valorem de las MNA.

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ANEXO 1. Lenguaje de Programación. Código R.

Investigating differences in safety border notifications on fruit and vegetables imports by selected EU Member State

R Console:

```
R version 3.1.0 (2014-04-10) -- "Spring Dance"
Copyright (C) 2014 The R Foundation for Statistical Computing
Platform: x86_64-w64-mingw32/x64 (64-bit)

R is free software and comes with ABSOLUTELY NO WARRANTY.
You are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.

R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.
```

##

R Sript:

```
### Investigating differences in safety border notifications on fruit
and vegetables imports by selected EU Member States

### Lorena Tudela
### 22 Ene 2015
```

##

 # Install Packages

```
library(pscl)
library(MASS)
library(AER)
library(VGAM)
library(truncreg)
library(censReg)
library(sampleSelection)
library(ggplot2)
library(boot)

library(aod)
library(lmtest)
library(zoo)
library(nlme)
library(lmtest)
library(boot)
library(spatcounts)
```

#Data reading via

Anexo 1. Lenguaje de Programacion. Código R.

```
R8<-read.csv("DB8.csv", sep=";", dec=";", header=T)
attach(R8)
str(R8)
```

Count Models - Data base R8

#QUASI POISSON MODEL:

```
Qpoisson<-glm( Nijt ~ X8 + X20 + SPAIN + Netherlands+ Italy + France +
United.Kingdom + Nijt.1 +   Nijt.1.UK + Nijt.1.IT + Nijt.1.NL +
Nijt.1.SP + Nijt.1.FR + Njt.1 + Njt.1.SP + Njt.1.IT + Njt.1.UK +
Njt.1.NL + Njt.1.FR + NIjt.1 + NIjt.1.SP + NIjt.1.IT + NIjt.1.NL +
NIjt.1.UK + NIjt.1.FR + From.Morocco + From.Mexico + From.EGYPT +
From.BRAZIL + From.ARGENTINA + From.CHINA + From.GHANA + From.TURKEY +
From.INDONESIA + From.Vietnam + From.SOUTH.AFRICA + From.NEW.ZEALAND +
From.CHILE + From.INDIA + From.THAILAND + From.CANADA + From.Ecuador +
From.Australia + From.Costa.Rica + From.Peru + from.Philippines +
From.Israel    +   From.Guatemala   +   as.numeric(Ln.GPD.1)    +
SPAIN:as.numeric(Ln.GPD.1)    +   United.Kingdom:as.numeric(Ln.GPD.1)+
Italy:as.numeric(Ln.GPD.1)    +        France:as.numeric(Ln.GPD.1)    +
Netherlands:as.numeric(Ln.GPD.1)   +   as.numeric(NetWeightD.1)    +
as.numeric(t.t.1), family = "quasipoisson", data = R8)
summary(Qpoisson)
```

#ZERO INFLATED MODEL#

```
ZIM<-zeroinfl(formula = Nijt ~ X8 + X20 + SPAIN + United.Kingdom +
Italy + France + Netherlands + Nijt.1 + Nijt.1.SP + Nijt.1.UK +
Nijt.1.FR + Nijt.1.NL + Nijt.1.IT + Njt.1 + Njt.1.SP + Njt.1.IT +
Njt.1.UK + Njt.1.NL + Njt.1.FR + NIjt.1 + NIjt.1.SP + NIjt.1.IT +
NIjt.1.FR + NIjt.1.UK + NIjt.1.NL + From.Morocco + From.Mexico +
From.EGYPT + From.BRAZIL + From.ARGENTINA + From.CHINA + From.GHANA +
From.TURKEY + From.INDONESIA + From.Vietnam + From.SOUTH.AFRICA +
From.NEW.ZEALAND + From.CHILE + From.INDIA + From.THAILAND +
From.CANADA + From.Ecuador + From.Australia +
From.Costa.Rica + From.Peru + from.Philippines + From.Israel +
From.Guatemala + as.numeric(Ln.GPD.1) + SPAIN:as.numeric(Ln.GPD.1) +
United.Kingdom:as.numeric(Ln.GPD.1)  +  Italy:as.numeric(Ln.GPD.1)  +
as.numeric(Ln.GPD.1):France   +   Netherlands:as.numeric(Ln.GPD.1)   +
as.numeric(t.t.1) + as.numeric(NetWeightD.1) | t.1 + Nijt.1 + Njt.1 +
as.numeric(Ln.GPD.1) + as.numeric(t.t.1), data = R8, dist = "negbin",
link = "logit")
summary(ZIM)
```

#NEGATIVE BINOMIAL MODEL#

```
NegativeB<-glm.nb( Nijt ~ X8 + X20 + SPAIN + Netherlands+ Italy +
France + United.Kingdom + Nijt.1 +  Nijt.1.UK + Nijt.1.IT + Nijt.1.NL
+ Nijt.1.SP + Nijt.1.FR + Njt.1 + Njt.1.SP + Njt.1.IT + Njt.1.UK +
Njt.1.NL + Njt.1.FR + NIjt.1 + NIjt.1.SP + NIjt.1.IT + NIjt.1.NL +
NIjt.1.UK + NIjt.1.FR   + From.Morocco + From.Mexico + From.EGYPT +
From.BRAZIL + From.ARGENTINA + From.CHINA + From.GHANA + From.TURKEY +
From.INDONESIA + From.Vietnam + From.SOUTH.AFRICA + From.NEW.ZEALAND +
From.CHILE + From.INDIA + From.THAILAND + From.CANADA + From.Ecuador +
From.Australia + From.Costa.Rica + From.Peru + from.Philippines +
From.Israel    +   From.Guatemala   +   as.numeric(Ln.GPD.1)    +
SPAIN:as.numeric(Ln.GPD.1)    +   United.Kingdom:as.numeric(Ln.GPD.1)+
Italy:as.numeric(Ln.GPD.1)    +      France:as.numeric(Ln.GPD.1)     +
Netherlands:as.numeric(Ln.GPD.1)   +   as.numeric(NetWeightD.1)    +
as.numeric(t.t.1), data = R8)
summary(NegativeB)
```

#observed zero counts are compared to the expected number of zero counts#

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Anexo 1. Lenguaje de Programacion. Código R.

```
round(c("Obs"=sum(R8$Nijt<1)))
sum(dnbinom(10,mu=fitted(NegativeB),size=NegativeB$theta))
sum(predict(ZIM,type="prob")[,1])
sum(dpois(0, fitted(Qpoisson)))
```

#Excepted counts#

```
library(COUNT)
pred<-round(colSums(predict(ZIM, type="prob") [,1:14]))
prednb<-predict(NegativeB, se.fit=FALSE, type="terms")
obs<-table(R8$Nijt)[1:14]
rbind( pred, obs, prednb)
rbind(prednb)

prednb<-predict(NegativeBdigits=12)
```

#Compute predicted probabilities from fitted models, optionally at new covariate values#

predprob(ZIM)

```
predprob(NegativeB)[1:13]

proptest<-(NegativeB, digits=12)

#Table of Poisson counts: observed vs predicted proportions and
difference (Proporcion de 0,1,2,3...)
prednb<-nb2.obs.pred(len=13, model=NegativeB)
predzi<-poi.obs.pred(len=13, model=ZIM)

hist(predzi, prednb)
```

#test de vuong#

```
vuong(NegativeB, ZIM)
print(vuong(NegativeB, ZIM))
```

#Print Model#

```
library(texreg)
htmlreg(list(ZIM, NegativeB), file = "mytable7doc", single.row = TRUE,
custom.model.names  =  c("ZIM",  "NBM",),  digits=5,bold  =  0.05,
inline.css = FALSE, doctype = TRUE, html.tag = TRUE, head.tag = TRUE,
body.tag = TRUE)
```

#Table of Poisson counts: observed vs predicted proportions and difference #

```
prednb<-nb2.obs.pred(len=10, model=negbin)
predzi<-poi.obs.pred(len=10, model=zeroinfl)
rbind(predzi)
rbind2(prednb)
pred<-round(colSums(predict(zeroinfl, type="prob") [,1:14]))
prednb<-predict(negbin, se.fit=FALSE, type="terms")
obs<-table(IB$nijt)[1:14]
rbind( pred, obs)
rbind(prednb)
```

Anexo 1. Lenguaje de Programacion. Código R.

```
#Statistical Negative Binomial models: estimated parameters by periods
2001-2007 and 2008 - 2013#

R0.7<-read.csv("DB200.2007.csv", sep=";", dec=";", header=T)
attach(R0.7)
str(R0.7)

NegativeBinomial00.07<-glm.nb( Nijt ~ X8 + X20 + SPAIN + Netherlands+
Italy + France + United.Kingdom + Nijt.1 +  Nijt.1.UK + Nijt.1.IT +
Nijt.1.NL + Nijt.1.SP + Nijt.1.FR + Njt.1 + Njt.1.SP + Njt.1.IT +
Njt.1.UK + Njt.1.NL + Njt.1.FR + NIjt.1 + NIjt.1.SP + NIjt.1.IT +
NIjt.1.NL + NIjt.1.UK + NIjt.1.FR    + From.Morocco + From.Mexico +
From.EGYPT + From.BRAZIL + From.ARGENTINA + From.CHINA + From.GHANA +
From.TURKEY + From.INDONESIA + From.Vietnam + From.SOUTH.AFRICA +
From.NEW.ZEALAND  +  From.CHILE  +  From.INDIA  +  From.THAILAND  +
From.CANADA  +  From.Ecuador  +  From.Australia  +  From.Costa.Rica  +
From.Peru  +  from.Philippines  +  From.Israel  +  From.Guatemala  +
as.numeric(LOG.GPD.1)         +         SPAIN:as.numeric(LOG.GPD.1)         +
United.Kingdom:as.numeric(LOG.GPD.1)+ Italy:as.numeric(LOG.GPD.1) +
France:as.numeric(LOG.GPD.1)   +   Netherlands:as.numeric(LOG.GPD.1)   +
as.numeric(NetWeightD.1) + as.numeric(t.t.1), data = R0.7)
summary(NegativeBinomial00.07)


R8.13<-read.csv("DB2008.2013.csv", sep=";", dec=";", header=T)
attach(R8.13)
str(R8.13)

NegativeBinomial08.13<-glm.nb( Nijt ~ X8 + X20 + SPAIN + Netherlands+
Italy + France + United.Kingdom + Nijt.1 +  Nijt.1.UK + Nijt.1.IT +
Nijt.1.NL + Nijt.1.SP + Nijt.1.FR + Njt.1 + Njt.1.SP + Njt.1.IT +
Njt.1.UK + Njt.1.NL + Njt.1.FR + NIjt.1 + NIjt.1.SP + NIjt.1.IT +
NIjt.1.NL + NIjt.1.UK + NIjt.1.FR   + From.Morocco + From.Mexico +
From.EGYPT + From.BRAZIL + From.ARGENTINA + From.CHINA + From.GHANA +
From.TURKEY +  From.INDONESIA  +  From.Vietnam  +  From.SOUTH.AFRICA  +
From.NEW.ZEALAND   +   From.CHILE   +   From.INDIA   +   From.THAILAND   +
From.CANADA  +  From.Ecuador  +  From.Australia  +  From.Costa.Rica  +
From.Peru  +  from.Philippines  +  From.Israel  +  From.Guatemala  +
as.numeric(LOG.GPD.1)        +        SPAIN:as.numeric(LOG.GPD.1)        +
United.Kingdom:as.numeric(LOG.GPD.1)+ Italy:as.numeric(LOG.GPD.1) +
France:as.numeric(LOG.GPD.1)   +   Netherlands:as.numeric(LOG.GPD.1)   +
as.numeric(NetWeightD.1) + as.numeric(t.t.1), data = R8.13)
summary(NegativeBinomial08.13)

R8<-read.csv("DB8.csv", sep=";", dec=";", header=T)
attach(R8)
str(R8)

NegativeBinomial<-glm.nb( Nijt ~ X8 + X20 + SPAIN + Netherlands+ Italy
+  France  +  United.Kingdom  +  Nijt.1  +    Nijt.1.UK  +  Nijt.1.IT  +
Nijt.1.NL  +  Nijt.1.SP  +  Nijt.1.FR  +  Njt.1  +  Njt.1.SP  +  Njt.1.IT  +
Njt.1.UK + Njt.1.NL + Njt.1.FR + NIjt.1 + NIjt.1.SP + NIjt.1.IT +
NIjt.1.NL + NIjt.1.UK + NIjt.1.FR   + From.Morocco + From.Mexico +
From.EGYPT + From.BRAZIL + From.ARGENTINA + From.CHINA + From.GHANA +
From.TURKEY +  From.INDONESIA  +  From.Vietnam  +  From.SOUTH.AFRICA  +
From.NEW.ZEALAND   +   From.CHILE   +   From.INDIA   +   From.THAILAND   +
From.CANADA  +  From.Ecuador  +  From.Australia  +  From.Costa.Rica  +
From.Peru + from.Philippines +
```

Anexo 1. Lenguaje de Programacion. Código R.

```
From.Israel    +    From.Guatemala    +    as.numeric(LOG.GPD.1)    +
SPAIN:as.numeric(LOG.GPD.1)  +  United.Kingdom:as.numeric(LOG.GPD.1)+
Italy:as.numeric(LOG.GPD.1)    +    France:as.numeric(LOG.GPD.1)    +
Netherlands:as.numeric(LOG.GPD.1)    +    as.numeric(NetWeightD.1)    +
as.numeric(t.t.1), data = R8)
summary(NegativeBinomial)


htmlreg(list(NegativeBinomial00.07,NegativeBinomial08.13,
NegativeBinomial),    file    =    "mytable7.doc",    single.row    =
TRUE,custom.model.names = c("NBM 2001-2007", "NBM 2008-2013", "NBM"),
digits=3,bold = 0.05, inline.css = FALSE, doctype = TRUE, html.tag =
TRUE, head.tag = TRUE, body.tag = TRUE)
```

#Restrictions: Testing common EU MS food control behavior#

#1º restriccion – efectos fijos importadores iguales

```
NegativeBinomial00.07<-glm.nb( Nijt ~ X8 + X20 + SPAIN + Netherlands+
Italy + France + United.Kingdom + Nijt.1 + Nijt.1.UK + Nijt.1.IT +
Nijt.1.NL + Nijt.1.SP + Nijt.1.FR + Njt.1 + Njt.1.SP + Njt.1.IT +
Njt.1.UK + Njt.1.NL + Njt.1.FR + NIjt.1 + NIjt.1.SP + NIjt.1.IT +
NIjt.1.NL + NIjt.1.UK + NIjt.1.FR
+ From.Morocco +  From.Mexico +  From.EGYPT +  From.BRAZIL +
From.ARGENTINA  +  From.CHINA  +  From.GHANA  +  From.TURKEY  +
From.INDONESIA + From.Vietnam + From.SOUTH.AFRICA + From.NEW.ZEALAND +
From.CHILE + From.INDIA + From.THAILAND + From.CANADA + From.Ecuador +
From.Australia + From.Costa.Rica + From.Peru + from.Philippines +
From.Israel    +    From.Guatemala    +    as.numeric(LOG.GPD.1)    +
SPAIN:as.numeric(LOG.GPD.1)  +  United.Kingdom:as.numeric(LOG.GPD.1)+
Italy:as.numeric(LOG.GPD.1)    +    France:as.numeric(LOG.GPD.1)    +
Netherlands:as.numeric(LOG.GPD.1)    +    as.numeric(NetWeightD.1)    +
as.numeric(t.t.1), data = R0.7)
summary(NegativeBinomial00.07)


NBR1<-glm.nb( Nijt ~ X8 + X20 + SPAIN +  Nijt.1 +  Nijt.1.UK +
Nijt.1.IT + Nijt.1.NL + Nijt.1.SP + Nijt.1.FR
  + Njt.1 + Njt.1.SP + Njt.1.IT + Njt.1.UK + Njt.1.NL + Njt.1.FR +
NIjt.1 + NIjt.1.SP + NIjt.1.IT + NIjt.1.NL + NIjt.1.UK + NIjt.1.FR
+ From.Morocco + From.Mexico + From.EGYPT + From.BRAZIL +
From.ARGENTINA + From.CHINA + From.GHANA + From.TURKEY +
From.INDONESIA + From.Vietnam + From.SOUTH.AFRICA + From.NEW.ZEALAND +
From.CHILE + From.INDIA + From.THAILAND + From.CANADA + From.Ecuador +
  From.Australia + From.Costa.Rica + From.Peru + from.Philippines +
From.Israel    +    From.Guatemala    +    as.numeric(LOG.GPD.1)    +
SPAIN:as.numeric(LOG.GPD.1)  +  United.Kingdom:as.numeric(LOG.GPD.1)+
Italy:as.numeric(LOG.GPD.1) +
France:as.numeric(LOG.GPD.1)  +  Netherlands:as.numeric(LOG.GPD.1)  +
as.numeric(NetWeightD.1) + as.numeric(t.t.1), data = R0.7)
summary(NBR1)
anova(NegativeBinomial00.07, NBR1, test="Chis")
```

#2º restriccion – reputacion producto iguales

```
NBR2<-glm.nb( Nijt ~ X8 + X20 + SPAIN + Netherlands+ Italy +
France + United.Kingdom + Nijt.1 +    Njt.1 + Njt.1.SP + Njt.1.IT +
Njt.1.UK + Njt.1.NL + Njt.1.FR +    NIjt.1 + NIjt.1.SP + NIjt.1.IT +
```

```
NIjt.1.NL + NIjt.1.UK + NIjt.1.FR    + From.Morocco + From.Mexico +
From.EGYPT + From.BRAZIL +     From.ARGENTINA + From.CHINA + From.GHANA
+ From.TURKEY + From.INDONESIA + From.Vietnam + From.SOUTH.AFRICA +
From.NEW.ZEALAND +       From.CHILE + From.INDIA + From.THAILAND +
From.CANADA + From.Ecuador + From.Australia + From.Costa.Rica +
From.Peru + from.Philippines + From.Israel + From.Guatemala +
as.numeric(LOG.GPD.1)      +      SPAIN:as.numeric(LOG.GPD.1)     +
United.Kingdom:as.numeric(LOG.GPD.1)+  Italy:as.numeric(LOG.GPD.1)  +
France:as.numeric(LOG.GPD.1)  + Netherlands:as.numeric(LOG.GPD.1)  +
as.numeric(NetWeightD.1) + as.numeric(t.t.1), data = R0.7)
summary(NBR2)
anova(NegativeBinomial00.07, NBR2, test="Chis")
```

#3º restriccion - reputacion sector

```
NBR3<-glm.nb( Nijt ~ X8 + X20 + SPAIN + Netherlands+ Italy +
France + United.Kingdom + Nijt.1 +  Nijt.1.UK + Nijt.1.IT + Nijt.1.NL
+ Nijt.1.SP + Nijt.1.FR + Njt.1 + Njt.1.SP + Njt.1.IT + Njt.1.UK +
Njt.1.NL + Njt.1.FR + NIjt.1 + From.Morocco + From.Mexico +
From.EGYPT + From.BRAZIL + From.ARGENTINA + From.CHINA + From.GHANA +
From.TURKEY + From.INDONESIA + From.Vietnam + From.SOUTH.AFRICA +
From.NEW.ZEALAND + From.CHILE + From.INDIA + From.THAILAND +
From.CANADA + From.Ecuador +From.Australia + From.Costa.Rica +
From.Peru + from.Philippines + From.Israel + From.Guatemala +
as.numeric(LOG.GPD.1)      +      SPAIN:as.numeric(LOG.GPD.1)     +
United.Kingdom:as.numeric(LOG.GPD.1)+ Italy:as.numeric(LOG.GPD.1) +
France:as.numeric(LOG.GPD.1)  + Netherlands:as.numeric(LOG.GPD.1)  +
as.numeric(NetWeightD.1) + as.numeric(t.t.1), data = R0.7)
summary(NBR3)

anova(NegativeBinomial00.07, NBR3, test="Chis")
```

#4º restriccion - reputacion pais iguales

```
NBR4<-glm.nb(Nijt ~ X8 + X20 + SPAIN + Netherlands+ Italy + +
United.Kingdom + Nijt.1 +   Nijt.1.UK + Nijt.1.IT + Nijt.1.NL +
Nijt.1.SP + Nijt.1.FR + Njt.1 + NIjt.1 + NIjt.1.SP + NIjt.1.IT +
NIjt.1.NL + NIjt.1.UK + NIjt.1.FR   + From.Morocco + From.Mexico +
From.EGYPT + From.BRAZIL + From.ARGENTINA + From.CHINA + From.GHANA +
From.TURKEY + From.INDONESIA + From.Vietnam + From.SOUTH.AFRICA +
From.NEW.ZEALAND + From.CHILE + From.INDIA + From.THAILAND +
From.CANADA + From.Ecuador + From.Australia + From.Costa.Rica +
From.Peru + from.Philippines + From.Israel + From.Guatemala +
as.numeric(LOG.GPD.1)      +      SPAIN:as.numeric(LOG.GPD.1)     +
United.Kingdom:as.numeric(LOG.GPD.1)+ Italy:as.numeric(LOG.GPD.1) +
France:as.numeric(LOG.GPD.1)  + Netherlands:as.numeric(LOG.GPD.1)  +
as.numeric(NetWeightD.1) + as.numeric(t.t.1), data = R0.7)
summary(NBR4)

anova(NegativeBinomial00.07, NBR4, test="Chis")
```

#5º restriccion - Efecto GDP

```
NBR5<-glm.nb( Nijt ~ X8 + X20 + SPAIN + Netherlands+ Italy +
France + United.Kingdom + Nijt.1 +  Nijt.1.UK + Nijt.1.IT + Nijt.1.NL
+ Nijt.1.SP + Nijt.1.FR + Njt.1 + Njt.1.SP + Njt.1.IT + Njt.1.UK +
Njt.1.NL + Njt.1.FR + NIjt.1 + NIjt.1.SP + NIjt.1.IT + NIjt.1.NL +
NIjt.1.UK + NIjt.1.FR + From.Morocco + From.Mexico + From.EGYPT +
From.BRAZIL + From.ARGENTINA + From.CHINA + From.GHANA + From.TURKEY +
```

```
From.INDONESIA + From.Vietnam + From.SOUTH.AFRICA + From.NEW.ZEALAND +
From.CHILE + From.INDIA + From.THAILAND + From.CANADA + From.Ecuador +
From.Australia + From.Costa.Rica + From.Peru + from.Philippines +
From.Israel     +     From.Guatemala     +    as.numeric(LOG.GPD.1)     +
as.numeric(NetWeightD.1) + as.numeric(t.t.1), data = R0.7)
summary(NBR5)

anova(NegativeBinomial00.07, NBR5, test="Chis")
```

#6º restriccion - MODELO RESTRINGIDO (efectos fijos sin interacciones)

```
NBR6<-glm.nb( Nijt ~ X8 + X20 + Nijt.1 +    Njt.1 + NIjt.1 +
From.Morocco + From.Mexico + From.EGYPT + From.BRAZIL + From.ARGENTINA
+  From.CHINA  +  From.GHANA  +  From.TURKEY  +  From.INDONESIA   +
From.Vietnam + From.SOUTH.AFRICA + From.NEW.ZEALAND + From.CHILE +
From.INDIA   +   From.THAILAND   +   From.CANADA   +   From.Ecuador   +
From.Australia + From.Costa.Rica + From.Peru + from.Philippines +
From.Israel     +     From.Guatemala     +    as.numeric(LOG.GPD.1)     +
as.numeric(NetWeightD.1) + as.numeric(t.t.1), data = R0.7)
summary(NBR6)

anova(NegativeBinomial00.07, NBR6, test="Chis")
```

#2008-2013

```
NegativeBinomial08.13<-glm.nb( Nijt ~ X8 + X20 + SPAIN + Netherlands+
Italy + France + United.Kingdom + Nijt.1 +   Nijt.1.UK + Nijt.1.IT +
Nijt.1.NL + Nijt.1.SP + Nijt.1.FR + Njt.1 + Njt.1.SP + Njt.1.IT +
Njt.1.UK + Njt.1.NL + Njt.1.FR + NIjt.1 + NIjt.1.SP + NIjt.1.IT +
NIjt.1.NL + NIjt.1.UK + NIjt.1.FR + From.Morocco + From.Mexico +
From.EGYPT + From.BRAZIL + From.ARGENTINA + From.CHINA + From.GHANA +
From.TURKEY + From.INDONESIA + From.Vietnam + From.SOUTH.AFRICA +
From.NEW.ZEALAND +     From.CHILE  +  From.INDIA  +  From.THAILAND  +
From.CANADA  +  From.Ecuador  +  From.Australia  +  From.Costa.Rica  +
From.Peru + from.Philippines + From.Israel + From.Guatemala +
as.numeric(LOG.GPD.1)           +          SPAIN:as.numeric(LOG.GPD.1)
+United.Kingdom:as.numeric(LOG.GPD.1)+ Italy:as.numeric(LOG.GPD.1) +
France:as.numeric(LOG.GPD.1)  +  Netherlands:as.numeric(LOG.GPD.1)  +
as.numeric(NetWeightD.1) + as.numeric(t.t.1), data = R8.13)
summary(NegativeBinomial08.13)
```

#1º restriccion - efectos fijos importadores iguales

```
NBR1<-glm.nb( Nijt ~ X8 + X20 +   Nijt.1 +   Nijt.1.UK + Nijt.1.IT +
Nijt.1.NL + Nijt.1.SP + Nijt.1.FR + Njt.1 + Njt.1.SP + Njt.1.IT +
Njt.1.UK + Njt.1.NL + Njt.1.FR + NIjt.1 + NIjt.1.SP + NIjt.1.IT +
NIjt.1.NL + NIjt.1.UK + NIjt.1.FR   + From.Morocco + From.Mexico +
From.EGYPT + From.BRAZIL + From.ARGENTINA + From.CHINA + From.GHANA +
From.TURKEY + From.INDONESIA + From.Vietnam + From.SOUTH.AFRICA +
From.NEW.ZEALAND  +  From.CHILE  +  From.INDIA  +  From.THAILAND  +
From.CANADA  +  From.Ecuador  +  From.Australia  +  From.Costa.Rica  +
From.Peru  +  from.Philippines  +  From.Israel  +  From.Guatemala  +
as.numeric(LOG.GPD.1)        +        SPAIN:as.numeric(LOG.GPD.1)        +
United.Kingdom:as.numeric(LOG.GPD.1)+ Italy:as.numeric(LOG.GPD.1) +
France:as.numeric(LOG.GPD.1)   +   Netherlands:as.numeric(LOG.GPD.1)   +
as.numeric(NetWeightD.1) + as.numeric(t.t.1), data = R8.13)
summary(NBR1)
anova(NegativeBinomial08.13, NBR1, test="Chis")
```

Anexo 1. Lenguaje de Programacion. Código R.

#2º restriccion - reputacion producto iguales

```
NBR2<-glm.nb( Nijt ~ X8 + X20 + SPAIN + Netherlands+ Italy +
France + United.Kingdom + Nijt.1 +  + Njt.1 + Njt.1.SP + Njt.1.IT +
Njt.1.UK + Njt.1.NL + Njt.1.FR +NIjt.1 + NIjt.1.SP + NIjt.1.IT +
NIjt.1.NL + NIjt.1.UK + NIjt.1.FR  + From.Morocco + From.Mexico +
From.EGYPT + From.BRAZIL + From.ARGENTINA + From.CHINA + From.GHANA +
From.TURKEY + From.INDONESIA + From.Vietnam + From.SOUTH.AFRICA +
From.NEW.ZEALAND + From.CHILE + From.INDIA + From.THAILAND +
From.CANADA + From.Ecuador + From.Australia + From.Costa.Rica +
From.Peru + from.Philippines + From.Israel + From.Guatemala +
as.numeric(LOG.GPD.1)      +      SPAIN:as.numeric(LOG.GPD.1)      +
United.Kingdom:as.numeric(LOG.GPD.1)+ Italy:as.numeric(LOG.GPD.1) +
France:as.numeric(LOG.GPD.1)  +  Netherlands:as.numeric(LOG.GPD.1)  +
as.numeric(NetWeightD.1) + as.numeric(t.t.1), data = R8.13)
summary(NBR2)
anova(NegativeBinomial08.13, NBR2, test="Chis")
```

#3º restriccion - reputacion sector

```
NBR3<-glm.nb( Nijt ~ X8 + X20 + SPAIN + Netherlands+ Italy +
France + United.Kingdom + Nijt.1 +  Nijt.1.UK + Nijt.1.IT + Nijt.1.NL
+ Nijt.1.SP + Nijt.1.FR + Njt.1 + Njt.1.SP + Njt.1.IT + Njt.1.UK +
Njt.1.NL + Njt.1.FR + NIjt.1      + From.Morocco + From.Mexico +
From.EGYPT + From.BRAZIL + From.ARGENTINA + From.CHINA + From.GHANA +
From.TURKEY + From.INDONESIA + From.Vietnam + From.SOUTH.AFRICA +
From.NEW.ZEALAND + From.CHILE + From.INDIA + From.THAILAND +
From.CANADA + From.Ecuador + From.Australia + From.Costa.Rica +
From.Peru + from.Philippines + From.Israel + From.Guatemala +
as.numeric(LOG.GPD.1)      +      SPAIN:as.numeric(LOG.GPD.1)      +
United.Kingdom:as.numeric(LOG.GPD.1)+ Italy:as.numeric(LOG.GPD.1) +
France:as.numeric(LOG.GPD.1)  +  Netherlands:as.numeric(LOG.GPD.1)  +
as.numeric(NetWeightD.1) + as.numeric(t.t.1), data = R8.13)
summary(NBR3)
anova(NegativeBinomial08.13, NBR3, test="Chis")
```

#4º restriccion - reputacion pais iguales

```
NBR4<-glm.nb(Nijt ~ X8 + X20 + SPAIN + Netherlands+ Italy +
France + United.Kingdom + Nijt.1 +  Nijt.1.UK + Nijt.1.IT + Nijt.1.NL
+ Nijt.1.SP + Nijt.1.FR + Njt.1 + NIjt.1 + NIjt.1.SP + NIjt.1.IT +
NIjt.1.NL + NIjt.1.UK + NIjt.1.FR  + From.Morocco + From.Mexico +
From.EGYPT + From.BRAZIL + From.ARGENTINA + From.CHINA + From.GHANA +
From.TURKEY + From.INDONESIA + From.Vietnam + From.SOUTH.AFRICA +
From.NEW.ZEALAND + From.CHILE + From.INDIA + From.THAILAND +
From.CANADA + From.Ecuador + From.Australia + From.Costa.Rica +
From.Peru + from.Philippines + From.Israel + From.Guatemala +
as.numeric(LOG.GPD.1)      +      SPAIN:as.numeric(LOG.GPD.1)      +
United.Kingdom:as.numeric(LOG.GPD.1)+ Italy:as.numeric(LOG.GPD.1) +
France:as.numeric(LOG.GPD.1)  +  Netherlands:as.numeric(LOG.GPD.1)  +
as.numeric(NetWeightD.1) + as.numeric(t.t.1), data = R8.13)
summary(NBR4)
anova(NegativeBinomial08.13, NBR4, test="Chis")
```

#5º restriccion - Efecto GDP

```
NBR5<-glm.nb( Nijt ~ X8 + X20 + SPAIN + Netherlands+ Italy +
France + United.Kingdom + Nijt.1 +  Nijt.1.UK + Nijt.1.IT + Nijt.1.NL
+ Nijt.1.SP + Nijt.1.FR + Njt.1 + Njt.1.SP + Njt.1.IT + Njt.1.UK +
```

Anexo 1. Lenguaje de Programacion. Código R.

```
Njt.1.NL + Njt.1.FR + NIjt.1 + NIjt.1.SP + NIjt.1.IT + NIjt.1.NL +
NIjt.1.UK + NIjt.1.FR   + From.Morocco + From.Mexico + From.EGYPT +
From.BRAZIL + From.ARGENTINA + From.CHINA + From.GHANA + From.TURKEY +
From.INDONESIA + From.Vietnam + From.SOUTH.AFRICA + From.NEW.ZEALAND +
From.CHILE + From.INDIA + From.THAILAND + From.CANADA + From.Ecuador +
From.Australia + From.Costa.Rica + From.Peru + from.Philippines +
From.Israel    + From.Guatemala    +    as.numeric(LOG.GPD.1)    +
as.numeric(NetWeightD.1) + as.numeric(t.t.1),  data = R8.13)
summary(NBR5)
anova(NegativeBinomial08.13, NBR5, test="Chis")
```

#6º restriccion - MODELO RESTRINGIDO (efectos fijos sin interacciones)

```
NBR6<-glm.nb( Nijt ~ X8 + X20 + Nijt.1 +
Njt.1 + NIjt.1 + From.Morocco + From.Mexico + From.EGYPT + From.BRAZIL
+ From.ARGENTINA + From.CHINA + From.GHANA + From.TURKEY +
From.INDONESIA + From.Vietnam + From.SOUTH.AFRICA + From.NEW.ZEALAND +
From.CHILE + From.INDIA + From.THAILAND + From.CANADA + From.Ecuador +
From.Australia + From.Costa.Rica + From.Peru + from.Philippines +
From.Israel    + From.Guatemala    +    as.numeric(LOG.GPD.1)    +
as.numeric(NetWeightD.1) + as.numeric(t.t.1), data = R8.13)
summary(NBR6)
anova(NegativeBinomial08.13, NBR6, test="Chis")
```

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Anexo 1. Lenguaje de Programacion. Código R.

ANEXO 2. Manual Codificador del RASSF

Departamento de
Economía y
Ciencias Sociales

Manual Codificador del RASSF al Sistema Armonizado de Comercio

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Julio 2015

Anexo 2. Manual Codificador del RASSF

1. Introducción

El RASFF (Rapid Alert System for Food and Feed)[65] es el Sistema de alerta rápida para alimentos y piensos de la Unión Europea[66]. El RASFF se basa en el intercambio rápido de información sobre riesgos para la salud humana relacionados con alimentos y piensos.

Es un portal gratuito y de libre acceso en Internet, que permite la búsqueda interactiva de información sobre las notificaciones alimentarias presentes y de años anteriores.

Cabe destacar que la base de datos RASFF no publica la numeración en el Sistema Armonizado de Designación y Codificación de Mercancías (SA)[67], de aquellos productos en los que se ha registrado una notificación alimentaria. Para salvar esta limitación, se ha construido una herramienta lexicográfica capaz de codificar la información en formato texto extraída del RASFF en códigos del SA hasta el nivel de 4 dígitos.

Este documento pretende servir como manual para facilitar y guiar al usuario en la interpretación de la herramienta codificadora. Para ello, se describen los pasos seguidos a lo largo de esta investigación para construir la base de datos a partir de la información obtenida del RASFF.

2. Acceso a la Base de datos RASFF

2.1 Descarga de datos

Para comenzar a descargar los datos deseados ha de completarse la ficha de datos de descarga del portal RASFF. En la figura 1 se muestra el formato actual del portal RASFF, donde se han de introducir las características de los datos que se quiera descargar.

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[65] Para mas información: <*http://ec.europa.eu/food/safety/rasff/index_en.htm*>(Fecha de consulta: 18/02/2015)
[66] El Reglamento (CE) nº 178/2002 constituye el fundamento jurídico RASFF. Los artículos 50, 51 y 52 de este Reglamento establecen el ámbito y los procedimientos del RASFF.
[67] El SA es el principal instrumento utilizado para la clasificación de mercancías (desde 1988), y en el cual se basan la mayoría de las Tarifas arancelarias del Mundo.

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En esta investigación incluimos:

- ▪ El país notificador (importador o destino)[68]
- ▪ La fecha o periodo de trabajo entre 01/01/2000 y el 31/12/2013
- ▪ Tipo de notificación (Food)
- ▪ Nombre del país notificado (exportador u origen)[69]

Figura 1. Portal RASFF de descarga de notificaciones alimentarias

Fuente: Elaboración propia

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[68] En la investigación realizada los países importadores son: España, Italia, Alemania, Francia, Países Bajos y Reino Unido.

[69] La lista de los principales países exportadores de frutas y verduras seleccionados son: Argentina, Australia, Brasil, Canada, Chile, China, Costa Rica, Ecuador, EEUU, Egipto, Filipinas, Ganna, Guatemala, India, Israel, Marruecos, Mexico, Nueva Zelanda, Peru, Sudáfrica, Tailandia, Turquía y Vietnam.

Al pulsar el botón de descarga, se obtiene un archivo en formato Excel con la información de las notificaciones seleccionadas.

3. Trabajando con los datos RASFF

Se recomienda homogeneizar <u>el archivo Excel</u> resultado de la descarga del RASFF, siguiendo los siguientes pasos:

1. <u>Nombrar la hoja Excel</u> haciendo referencia a los datos que contiene. Intentar siempre seguir el mismo formato: "XX -YY" (las XX hacen referencia a las iníciales del país importador y las YY al país exportador). Como resultado en esta investigacion para cada país importador se ha generado un Excel con 23 pestañas, correspondientes a los 23 países exportadores.
2. <u>Modificar la hoja</u> para poder trabajar sobre ella directamente.
   - Eliminarla primera columna.
   - Eliminar las filas en color azul con la clasificación original del RASFF de los productos (por tratarse de una clasificación básica no compatible con la numeración del SA de comercio).
   - Eliminar aquellas notificaciones cuyo origen no coincida con el país exportador. Para ello, una opción es aplicar filtros en el criterio "país de origen" y eliminar aquellos países que actúen como distribuidores. El objetivo final es conseguir que todas las celdas correspondientes al criterio país de origen contengan la misma información en texto "from YY" (Siendo YY el nombre del país exportador) para facilitar el análisis posterior.

Nota: Es importante no duplicar notificaciones ni dejar ninguna fila en blanco (para evitar errores en el análisis posterior). Los criterios elegidos para filtrar las notificaciones son: a) eliminar las filas de los países distribuidores b) prevalece el país de materia prima de origen y c) si hay dos países de origen de una misma notificación prevalece el orden de lista de los países.

Una vez incluidos estos cambios en la hoja de datos RASFF el siguiente paso es codificar las notificaciones, que presentan formato texto al SA. De

modo, que cada fila o notificación quede asociada un número de 4 dígitos del SA.

4. Codificador RASFF

4.1 Estructura y funcionamiento

El codificador de RASFF es una herramienta en Excel construida expresamente para asociar un código arancelario del SA a las notificaciones extraídas del RASFF. Su capacidad de codificar varía en función de las características de la notificación pero en general según nuestra experiencia se puede afirmar que codifica el 80 % de las notificaciones descargadas.

Básicamente su funcionamiento consiste en la búsqueda de la "palabra clave" de la información que describe cada notificación para asociarla a un número de 4 dígitos.

El RASFF se divide en dos hojas de trabajo (pestañas) con las siguientes funciones:

- RASFF: es la matriz donde se asigna a cada una de las notificaciones en formato texto un código de 4 dígitos del SA. Es recomendable que a medida que se introducen nuevas notificaciones se incluyan también las nuevas palabras de búsqueda la base de datos del codificador. Con la idea de ir mejorándola a medida que se trabaja con la herramienta.

- RASFF-Seguridad: es la matriz resultado de la codificación del RASFF, donde cada notificación tiene asociado un numero de 4 dígitos del SA. Es el paso intermedio entre el proceso de codificación y la construcción de la matriz de datos definitiva. Contiene una formula en la columna número 10 y 11 que extrae el código definitivo de 4 dígitos y el sector (2 dígitos) de cada notificación.

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4.2 Codificar las notificaciones

Para codificar la información descargada del RASFF seguimos los siguientes pasos:

1. De cada hoja de trabajo "XX-YY" se copia la información de las notificaciones de las ocho primeras columnas de la hoja de datos descargada y previamente filtrada (Figura 2).

Figura 2. Copiar de la información de hoja descargada XX-YY

Fuente: Elaboración propia

2. A continuación, como indica en la figura 3 pegar como valores en el Codificador (Rasff 5 v 0.1) en la pestaña RASFF (mantener el orden de las columnas).

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Figure 3. Pegar la información del RASFF en la hoja codificadora

Fuente: Elaboración propia

La mayoría de las notificaciones se codifican directamente porque la matriz lleva incorporadas las fórmulas de búsqueda (aparece un código de 4 dígitos en la columna número 11). En caso de que haya quedado alguna casilla vacía (no aparezca el codigo) se recomenda:

- Si se trata de una nueva notificación añadir la palabra de búsqueda (palabra clave) a la matriz codificadora en el sector al que pertenezca. De este modo se alimenta y mejora la base de datos.
- En caso de falta/error y/o cambio/omisión de la palabra clave, se recomienda completarla a mano en la columna de la derecha "*revised code"* (columna número 12) según la información texto asociada a cada notificación (columna H). Normalmente puede interpretarse por la descripción de la notificación o por las notificaciones anteriores.
- Si no fuese posible interpretar la notificación para clasificarla, se deja en blanco y se anota una X en la columna "*nondescript"* (columna número 13), De esta forma se contabilizan las notificaciones que no han podido ser codificadas.
- En caso de aparecer más de un producto en la descripción de la notificación se anota una X en la columna "*more than one product"* (columna número 14) para contabilizar y tener un registro de las

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notificaciones que no han podido ser codificadas y presentan varios productos a la vez en la descripción.

Nota: Es importante para que la herramienta codificadora funcione correctamente, arrastrar la "fórmula de codificación" de la matriz, para que al añadir la nueva información las celdas de trabajo contengan la fórmula de codificación.

Nota: la columna número 15 "*Verification*" sirve de aviso o alerta de posibles duplicaciones en la matriz. Recoge la suma del número des palabras claves encontradas en la descripción de las notificaciones. Funciona de la siguiente manera:

- Solo si aparece un uno (una única asociación de la notificación a una palabra clave de la matriz) codificará la notificación directamente con el número de 4 dígitos correspondiente.
- Si no encuentra ninguna palabra clave aparecerá un cero, que indica que esa notificación en su descripción en texto no presenta ninguna palabra clave codificable.
- Por ultimo podrá presentar cualquier numero en función del número de palabras clave encontradas, en ese caso no asociará ningún código a la notificación. Si esto sucede, es recomendable interpretar la notificación, porque pueden darse descripciones confusas o duplicidades en la matriz.

4.3 Organizar la información codificada

Una vez codificada las notificaciones en la hoja RASFF:

- Copiar las 8 primeras columnas de la hoja de trabajo RASFF en la hoja RASFF-seguridad (coincidiendo los nombres de las columnas).
- Copiar las 5 siguientes columnas de la hoja de trabajo RASFF sobre las columnas con los mismos nombres en la en la hoja RASFF-seguridad. Y en la comuna "Code" reemplazar todas las celdas vacías por ceros.
- A continuación, extraer de la fecha de cada notificación (dd/mm/aa) el año. Para ello, es necesario arrastrar la formula (=EXTRAE (B2;1;4)) y se extraerán los 4 primeros dígitos del la columna de la

derecha (el número de referencia de la notificación) que coincide con el año de emisión. De esta manera se obtiene el año de la notificación para el posterior análisis de los datos.

▪ La hoja de trabajo RASFF-seguridad está construida para que las columnas Sector y Final code se completen directamente a partir de la información de la columna de Code y Resived code.

Nota: Es importante para que la pestaña RASFF-seguridad funcione correctamente arrastrar la "fórmula de seguridad" (alargar las fórmulas de las columnas I y J). De modo que al añadir la nueva información y pegar las columnas de la pestaña de RASFF se aplique la fórmula que extrae los 4 dígitos del código definitivo de cada notificación.

5. Base de datos final

5.1 Estructura de la Base de datos

Por último, una vez codificadas las notificaciones, es necesario pasar la información codificada a la base de datos general que servirá para realizar los análisis. Abrir la hoja Excel DB 07-08-20 formada por cinco pestañas y seguir las siguientes indicaciones:

▪ Paste from RASFF: es la hoja intermedia entre la herramienta codificadora y la matriz final de datos, su función es servir como fuente de datos para la matriz general DB4. Es la copia directa de las 15 primeras columnas de las notificaciones ya codificadas de la hoja RASFF-seguridad que se quiera pasar a la base de datos final (pegadas como valores).

▪ Import: contiene los datos del volumen de importación de cada país exportador incluido en el estudio.

▪ GDP: contiene los datos del GDP cada país exportador incluido en el estudio.

▪ Datos: es el resumen de los datos seleccionados para el análisis de esta investigación.

▪ DB4: es la base de datos completa de EN FORMATO EXCEL. Para poder procesar la información y abrir la base de datos en el Software R es necesario pasar esta matriz a formato csv separado por comas.

5.2 Funcionamiento de la Base de datos

La hoja DB4 bebe del resto de pestañas y para codificar la información se utiliza una columna de código único que sirve como buscador de la información por filas en el resto de pestañas.

Cada fila de la base de datos se interpreta como una observación correspondiente a un producto, perteneciente a un sector, realizada un año determinado, desde un país de origen y con un país importador concreto.

Nota: es importante tener en cuenta que la inclusion de un año de retardo (t-1) reduce el número de observaciones.

Nota: la DB4 está compuesta por fórmulas de búsqueda (es muy pesada y lenta procesando nuevas fórmulas) si se quiere modificar/añadir algún dato es recomendable copiar la base entera y trabajar como valores en una hoja aparte.