NON-TARIFF MEASURES (NTM) AFFECTING SPANISH SWINE MEAT EXPORTS TO CHINA

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Summary

Spanish agrifood exports are viewed as an important engine promoting domestic economic growth. The meat sector and specifically swine meat outstands as one of the main exporting sectors, while meat exports to China have witnessed a significant increase since 2007. International trade is mostly affected by tariffs and non-tariff measures (NTMs). While tariffs are quite straightforward, NTMs are quite complex and there is a general perception that they are replacing tariffs as an alternative form of protectionism, and accordingly, are becoming increasingly relevant in trade negotiations. Our objective is to quantify the trade impact and calculate the ad-valorem equivalent (AVE) of the NTMs affecting Spanish swine meat exports to China. A gravity equation is estimated for this purpose using the Poisson Pseudo Maximum Likelihood (PPML) estimator. Our sample consists of a panel of 40 importers; 152 exporters; 18 HS6-digit products; and four years (2012-2015). The gravity equation is expanded to include, besides the usual economic, cultural and geographical explanatory variables, the frequency of NTMs. NTMs data comes from the Trade Analysis Information System (TRAINS) accessed through the World Integrated Trade Solutions (WITS) portal. We identify 19 NTM subcategories affecting Spanish swine meat exports to China: 16 SPS (Sanitary and Phytosanitary) and 3 TBT (Technical Barriers to Trade). Eight out of the nineteen NTMs categories are found to have a significant impact on trade, six of which have a trade restricting impact. In this sense, our results concur with the recent literature that posits both, a restricting and enhancing trade impact.

Keywords: SPS, TBT, gravity model, Ad-Valorem Equivalent.

1. Introduction and objectives

The swine sector leads global consumption comparing to other meat sectors and it is the main source of protein in many developed and developing countries. The global production has reached record levels, so as the international trade. International organization (i.e. OECD, FAO, USDA) forecast an expansion in production, consumption and international trade in this sector. Spain plays an important role as exporter of the swine meat and other related products, and on the other hand China is a key importer with a considerable market size, thus an attractive destination for the Spanish exporters. As of today there are 26 Spanish companies which have permission to export swine meat to China. For obtaining this permission, the companies must fulfill a strict series of regulations, some of which have been defined through a bilateral protocol signed between both countries in 2007.

International trade is mostly affected by trade policy which is divided into two major groups, tariffs and non-tariff measures (NTMs). While tariffs are quite straightforward, NTMs are more complex and there is a general perception that they are replacing tariffs as an alternative form of protectionism, and accordingly, are becoming increasingly relevant in trade negotiations.

The objective of this study is to quantify the trade impact and calculate the ad-valorem equivalent (AVE) of the NTMs affecting Spanish swine meat exports to China.

2. Methodology

A gravity equation (Tinbergen, 1962; Pullianen, 1963; Anderson, 1979; Anderson et al., 2003) is estimated using the Poisson Pseudo Maximum Likelihood (PPML) estimator (Wooldridge, 2002; Santos Silva et al., 2006 & 2011; Yotov et al., 2016). Our sample consists of a panel of 40 importers; 152 exporters; 18 HS6-digit products; and four years (2012-2015). The gravity equation is expanded to include, besides the usual economic, cultural and geographical explanatory variables, the frequency of NTMs. NTMs data comes from the Trade Analysis Information System (TRAINS) accessed through the World Integrated Trade Solutions (WITS) portal, were we identify 16 NTM subcategories affecting Spanish swine meat exports to China that are used in the estimation stage: 13 SPS (Sanitary and Phytosanitary) NTM subcategories: and 3 TBT (Technical Barriers to Trade).

After obtaining results of our regression analysis we calculate the Marginal Effect (ME) which measures the effect of a change in one unit of an explanatory variable (e.g. NTM) on the conditional mean of the dependent variable (trade, in our case), ceteris paribus the rest of explanatory variables.

After these considerations, we calculate the Ad-Valorem Equivalent of NTMs in the Poisson model, that is, to find the value of the tariff that leads to a percent change in trade equivalent to the percent change in trade induced by the NTM (UNCTAD-WTO, 2015).

3. Results

The main results obtained from the estimated model show that thirteen out of the sixteen NTMs categories affecting Spanish swine meat exports to China are found to have a significant impact on trade, seven of which have a trade restricting impact, while 6 have a trade promoting effect (Table 1). In this sense, our results concur with the recent literature that posits both, a restricting and enhancing trade effect of NTMs.

Removal of all trade restricting NTMs that affect Spanish swine meat exports to China would lead to a total trade value of USD 2.5 billion in the period 2012-2015, doubling observed trade (USD 1.2 billion). Removal of trade enhancing NTMs, on the other hand, would reduce trade to USD 0.5 billion in the same period (Figures 1 & 2).

We make use of the estimations of each NTM subcategory to calculate their tariff equivalent (AVE). The highest AVE is calculated for the NTM subcategory A120 (34%), which is related to 'prior inspection and clearance of establishments wishing to export swine meat in China'. This figure is highly consistent with the European Commission assessment of this measure as a key barrier. Other categories with high AVEs are A220 (24%) and A851 (20%), related to the use of food additives and country of origin disclosure in pre-packaged food, respectively. Interestingly, not necessarily more regulation through a greater number of NTMs and more coverage of subsectors imply higher AVEs or trade-restricting effects.

On the other hand, the most trade promoting effect is calculated for NTM subcategories A210 and A820 with an AVE of -14% each. The measures cover sanitary and health issues, establishing, for instance, maximum residues limits of contaminants, radioactive materials and veterinary drugs. Accordingly, complying with these specific NTMs increases demand in importing countries, and facilitates access to the Chinese market.

4. Conclusions

As a conclusion, we can distinguish between trade restricting categories of NTMs that negatively affect Spanish exports of swine meat to China (A120, A220, A310, A410, A851, B810 and B820) and trade promoting categories (A210, A820, A840, A850, A860 and B310).

After analysis of AVEs and the trade impact of NTMs we can conclude that the structure of NTMs is more relevant to explain bilateral trade than the absolute number of measures, confirming our initial guess.

We hope that this information will help different actors involved in international trade and policy to consider the simplification and/or strengthening of compliance with these NTMs.

One important consideration to keep in mind prior to any dialog aiming at the structuring of the trade policy between two countries is that AVE results are intended to explain the effect these NTMs have from an economic perspective, while to establish societal welfare impacts, such as taking into account impact on public health or the environment, further scientific research is required.

Bibliography

Tinbergen J. (1962). *Shaping the world economy: Suggestions for and international economic policy*. Twentieth Century Fund, New York.

Pullianen K.A. (1963). World Trade Study: An Econometric Model of the Patterns of the Commodity Flows in International Trade 1948-1960. *Economiska Samfundets Tidskrift*, 2, 78-91.

Anderson J. (1979). A Theoretical Foundation for the Gravity Equation. American Economic Review, 1979, vol. 69, issue 1, 106-16

Anderson J.E., Van Wincoop E. (2003). Gravity with gravitas: a solution to the border puzzle. *American Economic Review,* 93, 170-192.

Wooldridge, J.M. (2012). *Econometric Analysis of Cross Section and Panel Data*. MIT Press, Cambridge, MA.

Santos Silva J.M.C., Tenreyro S. (2011). Further simulation evidence on the performance of the Poisson pseudo-maximum likelihood estimator. *Economic Letters*, 112, 220-222.

Santos Silva J.M.C., Tenreyro S. (2006). The log of gravity. *Review of Economics and Statistics,* 88, 641-658.

UNCTAD-WTO, (2015). *A Practical Guide to Trade Policy Analysis*. WTO Publications.

Yotov V. Y., Piermartini R., Monteiro J.A., Larch M., (2016). *An Advanced Guide to Trade Policy Analysis: The Structural Gravity Model.* UNCTAD-WTO. WTO Publications.

Tables and graphs

Table 1: *AVE estimations*

NTM	A120	A190	A210	A220	A310	A410	A640	A820	A840	A850	A851	A852	A860	B310	B810	B820
AVE	34%	-	-14%	24%	6%	15%	-	-14%	-3%	-7%	20%	-	-7%	-2%	19%	6%

Figure 1: *China's actual and predicted imports of swine meat and related products from Spain after removal of trade impeding NTMs (000' USD)*
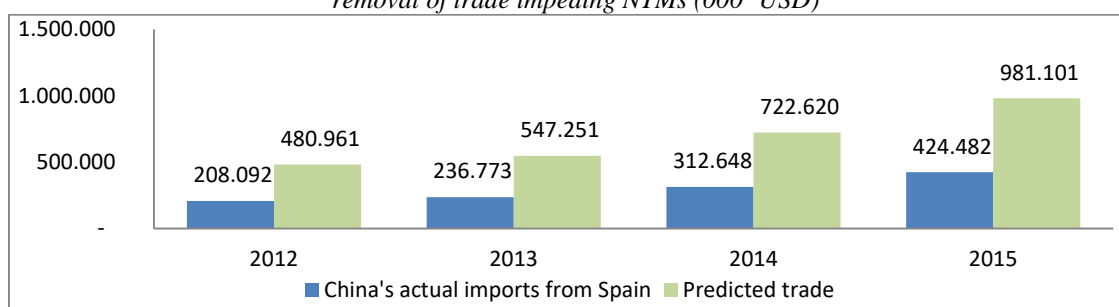
Figure 2: *China's actual and predicted imports of swine meat and related products from Spain after removal of trade promoting NTMs (000' USD)*