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To cite this version:

Gero Laurenz Höhn, Martijn Huysmans, Christophe Crombez. The Effect of Delimited Geographical Indication Areas on Retail Prices: A European Study. Worldwide Perspectives on Geographical Indications, Centre de Coopération Internationale en Recherche Agronomique pour le Développement [Cirad], Jul 2022, Montpellier, France. hal-03792034

HAL Id: hal-03792034

https://hal.science/hal-03792034

Submitted on 29 Sep 2022

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The Effect of Delimited Geographical Indication Areas on Retail Prices: A European Study

Gero L. Höhn, Martijn Huysmans, Christophe Crombez[1]

***Abstract* – The spatial delimitations of geographical indications (GIs) are at the heart of GI product specifications. Prior theory suggests that smaller areas result in higher prices due to quantity restrictions and higher (perceived) quality. However, this economic effect of GI areas has not been investigated broadly despite the regulatory prominence of GI delimitations. Our full-sample regressions including 768 hams confirm price premiums for typically stricter regulated Protected Designations of Origin (PDOs). Subsample regressions using newly coded data of GI areas in square kilometres (km^2) provide direct empirical evidence that larger areas are associated with lower prices. Therefore, our findings suggest that keeping GI areas small may be important for policy-makers and producers to effectively leverage regional brand value.**

***Keywords* – Geographical Indications; Price Analysis; European Union; Raw Ham; Protected Designation of Origin (PDO); Protected Geographical Indication (PGI)**

Introduction

The most defining characteristic of every European GI is its specific origin and consequently, the exact delimitation of the respective geographical area. Surprisingly, the effects of the size of GI areas have received limited attention in economic research.

Recently, Deconinck and Swinnen (2021) developed a model that puts the size of a GI area forward as a crucial factor that alters pricing, costs and quality. According to their theory, larger areas with more producers and less specific *terroirs* are likely to result in lower prices. However, there remains a lack of empirical evidence. Therefore, the main contribution of our paper is to examine whether the size of delimitated GI areas indeed influences prices.

Prior studies provide evidence that establishing a GI for e.g. hams can have a positive effect on price (Deselnicu et al., 2013; AND-International, 2019). However, little is known to what extent the size of a GI area mediates this positive price effect. Thus, the need for thorough research that considers differing areas among GIs in price estimates becomes evident.

Based on aforementioned theory and empirical findings we formulate our main hypothesis to test:
Larger GI areas are associated with lower prices.

We provide the first econometric price analysis that explicitly accounts for differing GI areas in the popular GI food category of hams.

Data and method

We focus our analysis on raw ham (pork) because GI ham production is common across Member States and intra-EU trade dominates GI ham export (Török and Jambor, 2016). We gathered data from 36 online supermarkets in 11 EU countries, namely Austria, Belgium, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Slovenia and Spain. Our full sample comprises 768 hams including 22 GIs from 9 countries accounting for 190 observations.

To test our main hypothesis, we calculated the price in € per 100 grams for every ham representing our dependent variable. The basis for our main explanatory variable is the GI area in km^2. Due to skewness the natural logarithm is used (*lnarea*).

All GI production areas are described in the official product specifications and are usually defined by administrative units, e.g. municipalities. The respective surface data are publicly available and were summed to determine the area. In case the GI area is not defined by administrative units, producer organisations or geographical institutes were contacted for approximation. While the smallest GI in our sample of *Prosciutto di Carpegna* has an area of less than 30 km^2, the largest area of *Jambon d'Auvergne* goes beyond 23,000 km^2.

However, we cannot use the area in km^2 for our full-sample regressions because non-GI hams are not regulated regarding their production area. Therefore, we compare PDOs and PGIs to the non-GI reference group in the full-sample regressions. PDOs are usually more strictly regulated and are on average smaller than PGIs in our sample. Thus, we expect PDOs to have a stronger positive association with price.

We estimate expected retail prices of our full sample and subsample based on OLS models with supermarket fixed effects that also account for different consumer price levels across countries. In addition, we control for other price-influencing factors based on previous literature and own elaborations.

Many GI price analyses rely on survey-based data and determine willingness to pay of respondents based on stated preferences (Deselnicu et al., 2013; Leufkens, 2018). We opt for a price analysis based on actual retail price data, which is not prone to hypothetical bias and represents the final price observed in the market.

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Results

In our full-sample regressions, PDOs are the only GI label with a statistically significant price premium compared to non-GI products. PDO products with typically stricter rules realize a price premium of 67% compared to the non-GI reference product. This finding also supports extant studies that show price premiums for GI meat products and PDOs (Deselnicu et al., 2013; AND-International, 2019).

Most importantly, in our subsample regressions on GI hams, our main hypothesis is confirmed. *Lnarea* is statistically significant at the 1% level. Going from the smallest observed area to the largest in our sample, the expected price drops from about 6 to 4 euro (see also Fig. 1).

Table 1. OLS fixed effects regressions: Dependent variable price in € per 100 grams.

Regressor	(1)	(2)
Lnarea		-0.25***
		(0.07)
GI label (in (1) reference is non-GI)		
PDO	1.65***	-0.12
	(0.55)	(0.55)
PGI	-0.08	
	(0.14)	
National brand	0.98***	0.92***
	(0.12)	(0.25)
Organic product	3.14***	2.51***
	(0.35)	(0.21)
Package size in grams	-0.01***	-0.01***
	(0.00)	(0.00)
Maturation time in months	0.10***	0.16***
	(0.02)	(0.05)
Special pig breed (e.g. ibérico)	4.69***	14.07***
	(0.67)	(2.79)
Longevity of GI in years		0.02
		(0.04)
Constant	2.45***	4.37***
	(0.25)	(1.13)
Supermarket fixed effects	Yes	Yes
Summary Statistics		
N	768	187
Adjusted R^2	0.64	0.83

Notes: *P<0.1, **P<0.05 and ***P<0.01. Robust (1) and clustered (2) standard errors in parentheses.

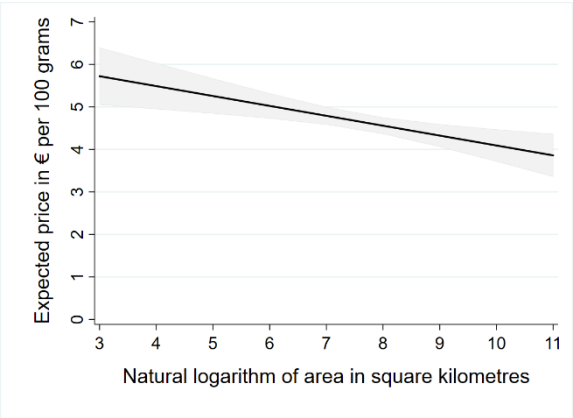

Figure 1. Plot of predictive margins of lnarea on expected price in € per 100 grams (based on model 2, Table 1).

Discussion and conclusion

In our subsample regressions, the relative size of a GI is even more influential than obtaining a PDO or PGI label specifically. We do not find a statistically significant difference between expected prices of PDOs and PGIs once we control for their areas and ham-specific attributes. Thus, the decision for the GI area should be as thoroughly made as for the GI label.

However, GI areas may affect ham prices differently compared to other GI categories such as cheeses and wines. Products of animal origin such as meats and cheeses may be less soil dependent, especially when livestock is raised indoors. Thus, our analysis should be replicated in other contexts.

Moreover, the less common two-level or so-called umbrella GIs encompass several smaller GIs within a larger GI area. A very large area of the umbrella GI is likely to be less influential regarding prices if ancillary GIs are delimited to much smaller areas.

Finally, more research on producer objectives is clearly needed to understand why producers decide to opt for smaller or larger GI areas. The latter may still positively affect turnover and profits through higher sales and benefit producers accordingly.

To conclude, we provide the first direct empirical evidence of a negative association between GI area size and prices of GI foods. This association has been outlined by extant theory on GIs. Thus, GI delimitations should be carefully determined to optimally appropriate value from protected regional origins.

Acknowledgements

The authors would like to thank seminar participants at KU Leuven, Universiteit Utrecht and Università di Foggia for discussions of earlier drafts. Finally, we thank official representatives of GI producer organisations and geographical institutes for their useful information. All shortcomings remain our own.

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