Cureus Journal of Business and Economics

Open Access Original Article

Analyzing the Impact of Corruption on Champagne Imports: An Augmented Gravity Model Approach

Received 02/26/2025
Review began 03/04/2025
Review ended 03/31/2025
Published 04/16/2025

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DOI: https://doi.org/10.7759/s44404-025-03416-w

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Abstract

This study examines the impact of income, distance, corruption, wine consumption, and population on champagne import volumes and average prices. Regression analyses, based on basic and augmented gravity models, reveal that income levels significantly drive champagne import volumes, reflecting its luxury nature. Geographical proximity also plays a notable role, capturing cultural similarities in wine consumption and reducing transportation costs. The findings highlight the significant influence of wine culture on import volumes and the role of corruption, with higher corruption levels associated with lower officially recorded import volumes and higher average prices. These results underscore the multifaceted factors shaping champagne trade dynamics, including the impact of corruption on underreporting and potential tax revenue losses. This research enhances the understanding of trade patterns and market behaviors, providing insights for strategic decision-making and policy interventions.

Categories: Corporate Governance & Business Ethics, Political Economy, Trade and economic development
Keywords: champagne imports, corruption, conspicuous consumption, gravity model, wine culture
JEL Classifications: F14, D12, D73, L66, H26

Introduction

"*Consumers are motivated to drink sparkling wine more for symbolic and less for hedonic reasons than is the case with wine in general*" [1].

The gravity model of trade has long been a cornerstone in understanding the dynamics of international trade, positing in its basic form that trade flows between two countries are influenced by their income levels and the distance separating them [2,3]. However, beyond these two traditional factors, the nature of the traded commodity and the characteristics of trading partners can introduce additional complexities into the equation. For instance, Bergstrand recognizes influential factors such as cultural affinity, common language, shared currency, and geographic proximity, and he proposes a generalized gravity equation in log-linear form for the augmentation of the basic model accordingly [4].

Corruption represents one such factor that augments the traditional gravity model by introducing institutional and behavioral considerations. For example, Zander examines corruption's dual role in foreign direct investment (FDI) flows, revealing its positive correlation with inward FDI to the target country and its negative correlation with outward FDI from the source country [5]. His findings highlight the nuanced impact of corruption, showing how context-specific institutional factors influence economic outcomes. In the context of champagne trade, this study proposes a similar extension of the gravity model to explore how corruption, as a conspicuous consumption driver, affects trade dynamics in a high-status commodity.

This complexity is particularly evident in the case of conspicuous consumption goods like champagne, which carry symbolic and status-related value. These goods may lead to trade dynamics that diverge from conventional expectations, influenced by considerations beyond income and distance. This study aims to address this gap by proposing an augmented gravity model à la Bergstrand's generalized gravity equation, delving into the nuanced interplay of factors-such as corruption levels-that shape champagne trade.

Champagne as a conspicuous consumption good

The idea that consumers purchase a product not only for its inherent worth but also for its ability to signal status-to showcase their wealth and capabilities to others-is not new. Dating back to Thorstein Veblen's introduction of "conspicuous consumption" over a century ago [6], economists, social psychologists, and philosophers have extensively explored this idea. For example, Bagwell and Bernheim investigate the conditions leading to "Veblen effects," where individuals seek social recognition by flaunting wealth through conspicuous consumption [7]. Leibenstein [8] and Corneo and Jeanne [9] illustrate how the signaling value varies based on whether consumer behavior leans toward snobbishness or conformity.

How to cite this article
Gokcekus O (April 16, 2025) Analyzing the Impact of Corruption on Champagne Imports: An Augmented Gravity Model Approach. Cureus J Bus Econ 2 : es44404-025-03416-w. DOI https://doi.org/10.7759/s44404-025-03416-w

This behavior involves consuming goods and services to display social status and wealth [10-12], with individuals seeking exclusive and prestigious products to signal affluence [13,14].

As wine consumption rises, there is a natural shift toward premium products like champagne, driven by desires for exclusivity and status [15-17]. This aligns with the concept of conspicuous consumption, where luxury goods reflect social desirability [6,11,12,18]. Champagne consumption in such countries serves to enhance social experiences and showcase lifestyle choices [1,19,20]. Consumption patterns reflect evolving tastes and preferences shaped by cultural traditions and social norms [21]. Wine enthusiasts explore diverse varieties, including champagne, due to its unique production methods and celebratory associations. Marketing strategies emphasizing luxury and prestige also influence consumer perceptions and demand [22,23]. Champagne's association with social gatherings and special events appeals to consumers seeking sophistication and enjoyment [24]. Overall, the interconnected factors of culture, economics, marketing, and lifestyle drive the expectation that countries with higher wine consumption will increasingly embrace champagne as a symbol of indulgence and celebration.

Corruption and the consumption of luxury goods

Previous research has demonstrated a significant relationship between corruption and the consumption of luxury goods. Gokcekus and Suzuki [18], in their analysis of luxury car sales across 20 Organization for Economic Co-operation and Development countries, find that countries with higher levels of perceived corruption exhibit significantly greater levels of conspicuous consumption. They argue that corruption distorts official income data due to the prevalence of unrecorded economic activity [25], and that individuals in such environments are incentivized to spend illicit or unreported income on visible luxury goods as a means of signaling wealth, power, and access. This signaling serves not only social status purposes but also practical functions such as facilitating access to corrupt networks [26]. Additionally, the use of luxury goods for such purposes may not pose substantial legal risks in many countries, making them a preferred outlet for illicit gains. While this body of work has focused on goods like luxury vehicles [27,28], the current study extends this theoretical framework to luxury beverages-specifically champagne. Given its emblematic status, high price, and visibility, champagne represents a similarly potent vehicle for conspicuous consumption, and this study tests whether higher corruption levels are associated with patterns of underreporting or inflated average prices in champagne imports. In doing so, it contributes to the literature on corruption and conspicuous consumption, offering policy-relevant insights into how corrupt environments may distort trade patterns and reduce tax compliance.

Gravity model

The gravity model of trade has been a foundational framework for understanding international trade flows based on variables like income and distance between trading partners. However, recent developments in economic theory and empirical research have expanded this model to incorporate a broader range of factors that influence trade patterns, including institutional quality and corruption. For instance, Zander [5] utilizes the gravity model to investigate the impact of corruption on FDI flows, leveraging events like the Panama Papers as exogenous shocks. His study highlights how corruption's effects vary between target and origin countries, demonstrating a dual influence where corruption in the target country attracts FDI while corruption in the source country deters it. These findings underscore the importance of examining institutional quality and governance when analyzing international trade flows.

Similarly, in the case of champagne, the interplay between corruption levels and trade patterns may reveal insights into the strategic and symbolic aspects of conspicuous consumption. The augmented gravity model employed in this paper incorporates these institutional factors, extending the traditional framework to account for non-economic drivers like corruption and its signaling role in status-related goods.

Cultural affinity between countries also plays a significant role in shaping trade relationships. Shared cultural values, language similarities, historical ties, and cultural exchange programs enhance trade by fostering trust and understanding between nations [29,30]. Cultural proximity has been found to positively impact trade flows, with countries sharing similar cultural traits exhibiting higher trade volumes [31]. Social networks and interpersonal relationships further influence trade outcomes by facilitating information exchange, reducing transaction costs, and promoting trade linkages [32,33].

Finally, non-economic factors-including political stability, institutional quality, and regulatory frameworks-play a critical role in shaping trade decisions [34,35]. Countries with stable political environments and transparent institutions attract more robust trade partnerships. Thus, the augmented gravity model, which integrates these cultural, social, and institutional factors, offers a comprehensive framework for analyzing and predicting international trade patterns, particularly for high-value, status-driven goods like champagne.

Claims and hypotheses

Drawing on the theoretical and empirical literature on conspicuous consumption, corruption, and international trade, this study puts forward the following five central claims and associated hypotheses to be tested in the empirical analysis. First, as champagne is considered a luxury good, its import volume is expected to increase with higher per capita income. Second, countries with greater per capita wine consumption are assumed to possess a stronger wine culture, which is likely to translate into higher champagne import volumes and prices. Third, in countries with higher perceived corruption-indicated by lower Corruption Perceptions Index (CPI) scores-champagne imports are expected to be underreported due to smuggling and other informal trade practices, resulting in lower officially recorded import volumes. Fourth, in such corrupt environments, champagne may serve as a tool for signaling wealth and status among corrupt individuals, thereby increasing the average import price. Fifth, the visibility and signaling strength of conspicuous consumption diminish as population size increases, suggesting a negative association between population and both the volume and average price of champagne imports.

Research Method

The augmented gravity model for champagne trade can be further customized by incorporating wine consumption, population, and corruption into the basic gravity model. Wine consumption serves as a proxy for wine culture, reflecting the preferences, traditions, and values associated with wine-drinking societies. Countries with a strong wine culture tend to have higher levels of wine consumption, indicating a deeper appreciation for wine products, including champagne.

Corruption levels within a country can serve as a proxy for signaling behavior by corrupt individuals and may, therefore, affect the demand for luxury goods like champagne. It is sensible to send signals via conspicuous consumption to other corrupt individuals to expand and better engage in networking activities, consequently becoming more successful [26]. These signals are stronger when the champagne popped is more expensive and impressive.

Moreover, in countries where corruption is widespread, official income metrics frequently fail to accurately reflect real purchasing power due to substantial unreported economic activities, and using bribe funds for conspicuous expenditures often entails minimal legal risks or consequences [36, 37]. Thus, in a country where corruption is rampant, smuggling and under-reporting result in a smaller number of recorded transactions. As a result, corruption may also have implications regarding tax evasion through underreporting the volume of imported champagne.

Additionally, in this signaling scenario, the size of the population could serve as an indicator of the reach of consuming expensive champagne. A large population might imply that the message conveyed by drinking expensive champagne reaches a smaller percentage of the population. In other words, in countries with smaller populations, consuming more expensive wines could have a more significant impact, leading to increased demand for champagne and a greater willingness to pay higher prices for it.

Accordingly, by considering wine consumption as a reflection of wine culture, population as a magnifier of the demonstration effect, and corruption as a signaling mechanism, we put forward the following augmented gravity model à la Bergstrand's generalized gravity equation [4] to depict the volume of champagne imports and the average price of imported champagne as follows:

$$\ln(\text{champagne volume}_i) = \beta_0 + \beta_1 \ln(\text{distance}_i) + \beta_2 \ln(\text{income}_i) + \beta_3 \ln(\text{CPI}_i) + \beta_4 \ln(\text{wine}_i) + \beta_5 \ln(\text{pop}_i) + \epsilon_i \quad (1)$$

$$\ln(\text{avg. champagne price}_i) = \alpha_0 + \alpha_1 \ln(\text{distance}_i) + \alpha_2 \ln(\text{income}_i) + \alpha_3 \ln(\text{CPI}_i) + \alpha_4 \ln(\text{wine}_i) + \alpha_5 \ln(\text{pop}_i) + v_i \quad (2)$$

where ln denotes the natural logarithm operator. The champagne volume represents champagne imports per 1,000 people; avg. champagne price is the average price of imported champagne; and the subscript i refers to the country (i = 1, 2, …, 131). Distance signifies the miles between Reims-the center of the Champagne region and home to most of the Champagne houses-in France and country i. Income denotes per capita income, while CPI stands for the Corruption Perceptions Index, reflecting the perceived corruption level. Wine indicates wine consumption per 1,000 people, and pop represents population. The terms e and v denote well-behaved disturbance terms. Wine serves as a proxy to capture wine culture in a country, while pop is included to gauge the visibility of conspicuous consumption and its signaling strength.

We compiled statistics for champagne imports volume and average price from the International Organization of Vine and Wine (OIV) databases for the year 2017 [38]. Our champagne dataset includes volume in 75 cl bottles and value in Euros for 131 countries; import volumes are expressed in liters per 1,000 people based on the population aged 15 years and older. Average prices are reported in Euros per liter. Wine consumption data, also in liters per 1,000 people based on the population aged 15 years and older, were sourced from the World Health Organization [39]. The CPI, ranging from 0 to 100 (100 being

least corrupt), from Transparency International, is used as the corruption indicator [40]. Gross National Income (GNI) per capita for 2017, calculated using the Atlas method (in constant 2021 US$), obtained from the World Bank's World Development Indicators database, is used for income [41].

Results

Population figures are in millions, sourced from United Nation databases [42]. Table *1* presents the summary statistics.

Variable	Obs.	Mean	Std. dev.	Min.	Max.
Champagne imports volume (per 1,000)	131	7404.9	19615.2	5.4	162108.7
Average price per liter (in Euros)	131	21.8	4.9	12.4	34.2
Distance (in miles)	131	3459.4	2354.6	152.0	11413.0
GNI per capita (in constant 2021 US$)	131	18372.1	15521.1	1715.8	99215.2
Corruption perception index	131	45.7	18.7	15.0	88.0
Per capita wine consumption (per 1,000)	131	1647.0	4479.1	1.0	31521.0
Population (in millions)	131	492.6	1734.7	1.0	14210.2

TABLE 1: Summary statistics for 131 champagne importing countries

GNI, Gross National Income

Champagne imports volume

The regression results in Table *2* provide insights into the determinants of champagne imports volume, beginning with a basic gravity model as a benchmark and then transitioning to the augmented gravity model in equation (1). In the basic model, as shown in columns (2) and (3), the coefficient for ln(income) is estimated at 1.743 in the ordinary least squares (OLS) regression and 1.849 in the robust regression, both statistically significant at the 1% level. This indicates that a 1% increase in income correlates with a 1.743% to 1.849% increase in champagne import volume, underscoring champagne's status as a luxury good. (For the robust regression result, the F-value of 22.20 with a p-value of 0.0001 indicates a highly significant relationship, rejecting the null hypothesis that the coefficient of "ln(income)" is equal to 1.) A negative coefficient for ln(distance) of -0.474 in OLS and -0.491 in robust regression suggests that a one-unit increase in the natural logarithm of distance corresponds to a decrease in the natural logarithm of champagne import volume by approximately 0.474 to 0.491 units, reflecting the impact of geographical proximity on trade patterns.

In the augmented gravity model, as presented in columns (4) and (5) of Table *2*, the coefficient for ln(income) is estimated at 0.860 in the OLS regression and 0.881 in the robust regression, both statistically significant at the 1% level. This indicates that a one-unit increase in the natural logarithm of income is associated with an approximately 0.860 to 0.881 increase in the natural logarithm of champagne import volume, highlighting the positive impact of higher incomes on champagne consumption. (The F-value of 0.43 with a p-value of 0.5144 suggests a lack of statistical significance, failing to reject the null hypothesis that the coefficient of "ln(income)" is equal to 1 in the regression model; suggesting that as incomes rise by 1%, country's champagne imports increase by 1%.) ln(distance) exhibits a negative coefficient of -0.235 in OLS, significant at the 5% level, and -0.138 in robust regression, not statistically significant. This suggests that in the OLS model, a 10% increase in distance is associated with a decrease in champagne import volume by approximately 2.4%, indicating the influence of geographical proximity on trade patterns. However, the robust regression does not find this relationship to be statistically significant, which may imply a less robust association between distance and champagne import volume.

Model	Basic gravity model		Augmented gravity model	
Column (1)	Column (2)	Column (3)	Column (4)	Column (5)
Explanatory variables	OLS	Robust	OLS	Robust
ln(income)	1.743 (0.18)***	1.849 (0.18)***	0.860 (0.21)***	0.881 (0.22)***
ln(distance)	-0.474 (0.17)***	-0.491 (0.17)***	-0.235 (0.14)*	-0.138 (0.15)
ln(corruption index)			1.294 (0.45)***	1.502 (0.45)***
ln(wine consumption)			0.270 (0.08)***	0.276 (0.08)***
ln(population)			-0.550 (0.09)***	-0.539 (0.09)***
Constant	5.819 (1.62)***	5.648 (1.61)***	2.551 (2.01)	0.895 (2.05)
No. of observations	131	131	131	131
F-statistics	73.96	84.14	58.16	58.94
R^2	0.54	0.57	0.7	0.7

TABLE 2: OLS and robust regression results - Dependent variable: ln(champagne imports volume)

OLS, ordinary least squares

Additionally, ln(wine consumption) demonstrates positive coefficients of 0.270 in OLS and 0.276 in robust regression, significant at the 1% level, indicating that an increase in wine consumption is linked to increased champagne import volume, reflecting the positive effect of wine-drinking culture on consumer preferences. Finally, ln(population) exhibits negative coefficients of -0.550 in OLS and -0.539 in robust regression, both significant at the 1% level. This implies that larger populations are associated with lower champagne import volume, ceteris paribus. Finally, ln(corruption index) shows significant positive coefficients of 1.294 in OLS and 1.502 in robust regression, both significant at the 1% level. This suggests that higher levels of perceived corruption (i.e., lower corruption perception score), represented by a decrease in the natural logarithm of the corruption index, are associated with lower officially recorded champagne import volume.

Underreporting and corresponding potential tax revenue losses

After presenting the estimated coefficient for ln(corruption index) in the previous section, we now provide a more detailed illustration of how much underreporting this coefficient implies at different levels of corruption and, consequently, the potential magnitude of tax revenue losses it may cause, given that the study focuses on the impact of corruption on champagne imports.

In 2017, the global average CPI score was 43 out of 100. Countries with CPI scores above approximately 70 were in the top 20 percentiles, indicating very low perceived corruption levels, while those below approximately 30 were in the bottom 20 percentiles, indicating very high perceived corruption levels.

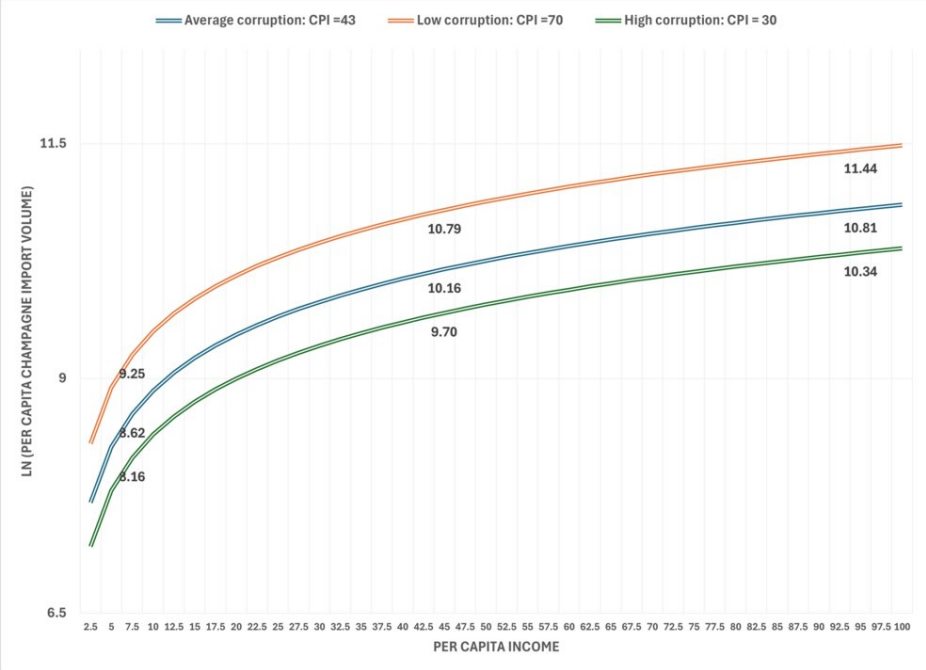

FIGURE 1: Underreporting champagne imports at different income levels with three corruption scenarios

CPI, Corruption Perception Index

Figure *1* illustrates the relationship between income level and the volume of champagne imports for a "typical champagne-importing country," defined as a country with average distance to champagne-producing regions and average wine consumption (among the 131 countries in the dataset). The figure considers three different levels of perceived corruption: (1) an average CPI of 43, (2) a top 20 percentile CPI of 70, and (3) a bottom 20 percentile CPI of 30. For example, at any given per capita income level, a bottom 20 percentile country underreports its champagne imports by 37% compared to a country with an average CPI. Similarly, a country with an average CPI underreports by 47% compared to a top 20 percentile country.

Figure *2* further demonstrates the significant impact of corruption on underreporting and consequent potential tax revenue losses. It depicts how underreporting accelerates with a decline in the CPI score of a “typical champagne-importing country,” highlighting the worsening impact of corruption on reporting accuracy: For instance, a 10-point decline in CPI score from 90 to 80 results in a 14.1% decline in reporting accuracy; from 50 to 40 in 25.1%; and 30 to 20 in 40.8%.

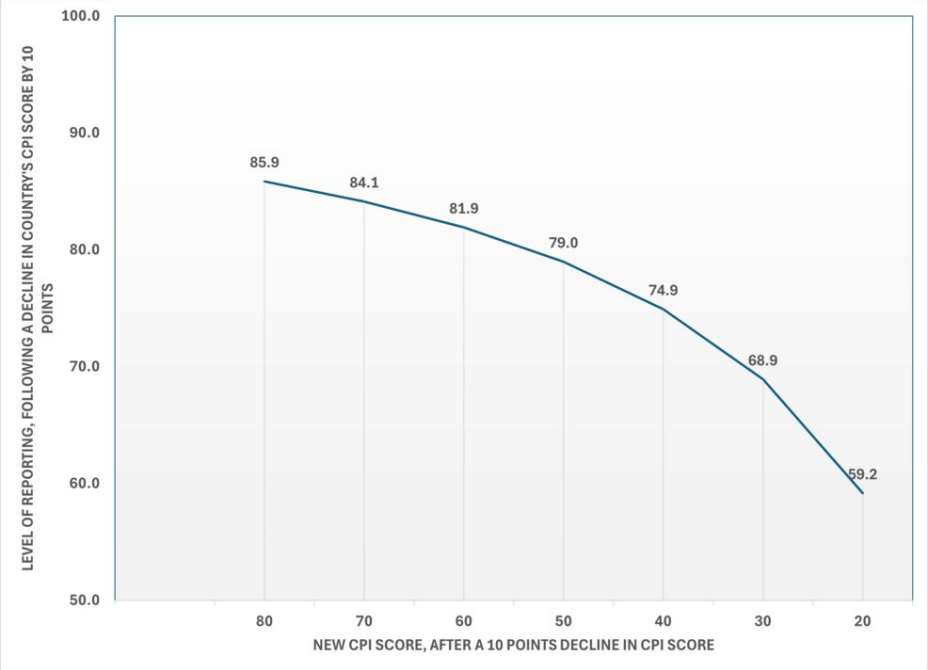

FIGURE 2: Deterioration in corruption and underreporting champagne imports

CPI, Corruption Perception Index

Average champagne price

As explained earlier, in corrupt environments, drinking expensive champagne serves as a way to signal power and social status. The high price of champagne in these settings reflects its signaling value-a willingness to pay a premium for goods that showcase privilege and distinction. To test the validity of the claim that corruption positively affects average champagne prices, we estimate the coefficients in equation (2). Table *3* presents the estimation results. Starting with ln(income), the coefficient is estimated at 0.025 in OLS and 0.023 in robust regression, though neither is statistically significant. This suggests that income levels do not have a significant impact on the average price of champagne imports. Moving to ln(distance), both OLS and robust regression show positive coefficients of 0.049 and 0.055, respectively, both significant at the 5% level. This indicates that an increase in the distance between trading partners is associated with a higher average price of champagne imports.

Regarding ln(corruption index), the coefficient is estimated at -0.177 in both OLS and robust regression, and it is statistically significant at the 1% level. This negative coefficient suggests that higher levels of perceived corruption, represented by a lower corruption index, are associated with higher average prices of champagne imports. Moving on to ln(wine consumption), both OLS and robust regression show positive coefficients of 0.032 and 0.033, respectively, both statistically significant at the 1% level. This indicates that higher levels of wine consumption are associated with higher average prices of champagne imports. Finally, ln(population) exhibits negative coefficients of -0.050 in both OLS and robust regression, both significant at the 1% level. This suggests that larger populations are associated with lower average prices of champagne imports.

Column (1)	Column (2)	Column (3)
Explanatory variables	OLS	Robust
ln(income)	0.025 (0.03)	0.023 (0.04)
ln(distance)	0.049 (0.02)**	0.055 (0.03)**
ln(corruption index)	-0.177 (0.07)***	-0.177 (0.08)**
ln(wine consumption)	0.032 (0.01)***	0.033 (0.01)***
ln(population)	-0.050 (0.01)***	-0.050 (0.02)***
Constant	3.338 (0.32)***	3.300 (0.35)***
No. of observations	131	131
F-statistics	3.33***	3.15***
R^2	0.12	0.11

TABLE 3: OLS and robust regression results - Dependent variable: ln(champagne imports average price)

OLS, ordinary least squares

Discussion

This study examines the dynamics shaping champagne imports, focusing on the impact of factors such as corruption, income, geography, wine consumption, and population size. By contrasting the basic gravity model with the augmented model, the findings provide nuanced insights into the interplay of economic, social, and geographic forces influencing champagne import volumes and average prices. First, the basic gravity model reveals income as a significant driver of champagne import volumes, reflecting the luxury nature of champagne consumption. Additionally, the negative coefficient for distance underscores the role of geographical proximity in trade patterns, capturing both cultural similarities and transportation costs. Champagne bottles are heavy and fragile, requiring careful handling. Overall, the basic gravity model effectively explains champagne trade volume, as expected. Transitioning to the augmented model, income's impact persists, albeit with slightly reduced coefficients, highlighting its positive association with champagne import volumes. The robustness of the distance coefficient diminishes, suggesting a still negative but less definitive relationship in this model. Meanwhile, wine consumption emerges as a significant factor driving champagne import volumes in the augmented model, affirming the positive effect of wine culture on consumer preferences. Conversely, population size exhibits a negative association with champagne import volumes, perhaps capturing the diminishing demonstration effect of high status and outperforming others on a significant portion of the population. These findings reinforce the notion that economic transactions are not solely determined by economic factors; the augmented model provides a more nuanced understanding of the complex dynamics shaping the champagne trade.

The augmented model's focus on corruption perceptions reveals intriguing insights that further support the notion that economic transactions are not solely driven by economic factors. In particular, the regression results indicate that higher corruption levels, signified by lower corruption index scores, correspond to lower officially recorded champagne import volumes. This aligns with the premise of smuggling and underreporting in corrupt environments. These findings underscore corruption's systemic impact on trade metrics, influencing market behaviors and regulatory compliance. For instance, underreporting and potential tax revenue calculations shed light on the extent of this problem.

Corruption's role in trade dynamics connects to broader issues. As Zander [5] suggests, corruption exhibits nuanced effects depending on the roles of origin and target countries in trade. In the case of champagne imports, corruption not only affects trade volume but also skews average prices through conspicuous consumption. The findings align with broader international political economy debates that highlight how weak institutions and governance failures amplify trade inefficiencies. Corruption can act as both a barrier to equitable trade and a distortionary force, where luxury goods are disproportionately consumed as status symbols in corrupt environments.

In addition to its effects on trade volumes, corruption significantly influences average prices for champagne imports. The negative coefficient for corruption suggests that higher corruption levels are

linked to higher average champagne prices, supporting the idea that corrupt individuals engage in conspicuous consumption. Expensive champagne serves as a signaling mechanism to enhance networking and demonstrate social status. This dual impact-reducing recorded trade volumes while inflating average prices-underscores the complex economic consequences of corruption in trade.

The findings further reinforce the relevance of cultural and institutional dimensions in shaping international trade flows. Champagne trade provides a lens to examine how non-economic factors, such as corruption, cultural integration, and institutional quality, influence market dynamics. By situating these findings within the broader context of international political economy, this study contributes to a deeper understanding of the interplay between governance, consumer behavior, and trade in luxury goods. These insights have critical implications for policymakers aiming to mitigate the adverse effects of corruption on trade and promote transparency and equity in global markets.

Conclusions

This study highlights the intricate interplay of economic, geographic, regulatory, and cultural factors shaping the dynamics of the champagne trade. By incorporating non-economic factors such as corruption and wine culture alongside income and geographic considerations, the analysis provides a comprehensive understanding of trade patterns and market behaviors. Income levels emerge as a significant driver of champagne import volumes, reflecting the luxury nature of champagne consumption. Geographical proximity, represented by distance, also plays a vital role, capturing the influence of cultural similarities and transportation costs. The augmented model reveals additional insights, with wine consumption positively influencing champagne imports, reflecting the impact of wine culture on consumer preferences. Conversely, population size negatively affects import volumes, suggesting a saturation effect in the visibility of high-status consumption in larger populations.

The study underscores the systemic impact of corruption on champagne trade. Higher corruption levels correspond to lower officially recorded import volumes, likely due to smuggling and underreporting, while also correlating with higher average prices. These findings support the idea of conspicuous consumption by corrupt individuals, who use luxury goods as signaling mechanisms to enhance social status and networking opportunities. While this study offers valuable insights, its focus on champagne trade limits the generalizability of findings to other wine or luxury goods markets. Potential endogeneity concerns and the cross-sectional nature of the analysis further constrain the scope. Future research could address these limitations by expanding the geographical and product scope to other wine regions or luxury markets, incorporating primary data collection through surveys or interviews, and adopting a longitudinal approach to capture industry dynamics over time. Advanced econometric techniques could also help address endogeneity concerns, while integrating behavioral and marketing perspectives would provide a more holistic understanding of the factors shaping the champagne industry. By addressing these limitations, future studies could build upon this study's findings, providing more comprehensive guidance for policymakers. Addressing corruption's impact on trade could help reduce underreporting of import volumes and mitigate its negative effects on tax revenues, ultimately promoting transparency and equity in global markets.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Omer Gokcekus

Acquisition, analysis, or interpretation of data: Omer Gokcekus

Drafting of the manuscript: Omer Gokcekus

Critical review of the manuscript for important intellectual content: Omer Gokcekus

Disclosures

Human subjects: All authors have confirmed that this study did not involve human participants or tissue. **Animal subjects:** All authors have confirmed that this study did not involve animal subjects or tissue. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

Acknowledgements

The data of this study were collected from different websites notably those of the World Bank: World Development Indicators (https://databank.worldbank.org/source/world-development-indicators); Transparency International: Corruption Perception Index 2017 (https://www.transparency.org/en/cpi/2017); and the OIV Databases: Champagne Imports (https://www.oiv.int/index.php/what-we-do/statistics). The datasets are available.

References

1. Charters S: Drinking sparkling wine: an exploratory investigation. International Journal of Wine Marketing. 2005, 17:54-68. 10.1108/eb008783
2. Tinbergen J: Shaping the World Economy: Suggestions for an International Economic Policy. Twentieth Century Fund, New York; 1962.
3. Anderson JE: A theoretical foundation for the gravity equation. The American Economic Review. 1979, 69:106-16.
4. Bergstrand JH: The generalized gravity equation, monopolistic competition, and the factor-proportions theory in international trade. The Review of Economics and Statistics. 1989, 71:143-53. 10.2307/1928061
5. Zander T: Does corruption matter for FDI flows in the OECD? A gravity analysis. International Economics and Economic Policy. 2021, 18:347-77. 10.1007/s10368-021-00496-4
6. Veblen T: The Theory of the Leisure Class. Macmillan, New York; 1899.
7. Bagwell LS, Bernheim BD: Veblen effects in a theory of conspicuous consumption. American Economic Review. 1996, 86:349-73.
8. Leibenstein H: Bandwagon, snob, and Veblen effects in the theory of consumers' demand. Quarterly Journal of Economics. 1950, 64:183-207. 10.2307/1882692
9. Corneo G, Jeanne O: Conspicuous consumption, snobbism, and conformism. Journal of Public Economics. 1997, 66:55-71. 10.1016/S0047-2727(97)00016-9
10. Belk RW: Possessions and the extended self. Journal of Consumer Research. 1988, 15:139-68. 10.1086/209154
11. Phau I, Prendergast G: Consuming luxury brands: the relevance of the 'rarity principle'. Journal of Brand Management. 2000, 8:122-38. 10.1057/palgrave.bm.2540013
12. Han S, Nunes JC, Drèze X: Signaling status with luxury goods: the role of brand prominence. Journal of Marketing. 2010, 74:15-30. 10.1509/jmkg.74.4.015
13. Veblen T: The Theory of Business Enterprise. Charles Scribner's Sons, New York; 1904.
14. Sivanathan N, Pettit NC: Protecting the self through consumption: status goods as affirmational commodities. Journal of Experimental Social Psychology. 2010, 46:564-70. 10.1016/j.jesp.2010.01.006
15. Schor JB: The Overspent American: Why We Want What We Don't Need. Harper Perennial, New York; 1998.
16. Heath J, Potter A: The Rebel Sell: Why the Culture Can't Be Jammed. HarperCollins, Toronto, Canada; 2004.
17. Epstein SE: Champagne: A Global History. Reaktion Books, 2005.
18. Gokcekus O, Suzuki Y: Is there a corruption-effect on conspicuous consumption?. Margin: The Journal of Applied Economic Research. 2014, 8:215-35. 10.1177/0973801014531135
19. Wilson I: Champagne Campaign. International Journal of Wine Marketing. 2005, 17:75-80. 10.1108/eb008791
20. Charters S, Menival D: Wine Tourism in Champagne. Journal of Hospitality & Tourism Research. 2011, 35:102-18. 10.1177/1096348010384597
21. Meyer J: The Book of Wine: An Introduction to Choosing, Serving, and Drinking the Best Wines. Adams Media; 2014.
22. Ko E: Luxury brand advertising: theory and practice. International Journal of Advertising. 2020, 39:757-60. 10.1080/02650487.2020.1786916
23. Riedmeier J, Kreuzer M: Me versus we: the role of luxury brand managers in times of co-creation. Journal of Business Research. 2022, 145:240-52. 10.1016/j.jbusres.2022.02.085
24. Lecocq S, Visser M: What determines wine prices: objective vs. sensory characteristics. Journal of Wine Economics. 2006, 1:42-56. 10.1017/S1931436100000080
25. Schneider F, Enste DH: Shadow economies: size, causes, and consequences. Journal of Economic Literature. 2000, 38:77-114.
26. Lambsdorff JG: Making corrupt deals: contracting in the shadow of the law. Journal of Economic Behavior and Organization. 2002, 48:221-41. 10.1016/S0167-2681(01)00217-7
27. Rose AK: One money, one market: the effect of common currencies on trade. Economic Policy. 2000, 15:8-45. 10.1111/1468-0327.00056
28. Guiso L, Sapienza P, Zingales L: Does culture affect economic outcomes?. Journal of Economic Perspectives. 2006, 20:23-48.
29. Johansson-Stenman O, Martinsson P: Honestly, why are you driving a BMW?. Journal of Economic Behavior & Organization. 2006, 60:129-46. 10.1016/j.jebo.2004.08.006
30. Heffetz O: A test of conspicuous consumption: visibility and income elasticities. The Review of Economics and Statistics. 2011, 93:1101-17. 10.1162/rest_a_00116
31. Disdier AC, Head K: The puzzling persistence of the distance effect on bilateral trade. The Review of Economics and Statistics. 2008, 90:37-48.
32. Gould DM: Immigrant links to the home country: empirical implications for U.S. bilateral trade flows. Review of Economics and Statistics. 1994, 76:302-16. 10.2307/2109884
33. Rauch JE: Business and social networks in international trade. Journal of Economic Literature. 2001, 39:1177-203.
34. Rose-Ackerman S: Corruption and Government: Causes, Consequences, and Reform. Cambridge University Press, Cambridge; 1999. 10.1017/CBO9781139175098
35. Egger P, Larch M, Staub KE, Winkelmann R: The trade effects of endogenous preferential trade agreements. American Economic Journal: Economic Policy. 2011, 3:113-43.
36. Schneider F, Frey BS: Economic and political determinants of foreign direct investment. World Development. 1985, 13:161-75. 10.1016/0305-750x(85)90002-6

37. Gokcekus O, Bagirzade E, Scribner D: The shadow economy and corruption in ECO countries. Sosyoekonomi. 2023, 31:179-90. 10.17233/sosyoekonomi.2023.04.09
38. International Organisation of Vine and Wine (OIV). Databases-Statistics. Accessed: March 4, 2024: https://www.oiv.int/index.php/what-we-do/statistics.
39. World Health Organization: Global Status Report on Alcohol and Health 2018. World Health Organization, Geneva; 2018.
40. Transparency International: Corruption Perceptions Index 2017. 2018.
41. World Bank: World Development Indicators: Gross national income (GNI) per capita, Atlas method (constant 2021 US$), 2017. World Bank, 2022.
42. United Nations Population Data Portal. Accessed: March 4, 2024: https://pdp.unfpa.org/.