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Dynamics of buyer-seller relations in Norwegian Wine Imports

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Abstract:

As for all traded products, aggregated wine imports build on numerous trades at the firm level. To ensure consumers access to a variety of wines with different qualities, importers need to connect to different wine exporters. Some of these relationships will last for a long time, while others may rapidly cease to exist. In this paper, we employ transaction level data to analyse the duration of trade relationships in wine imports to Norway from 2004 to 2014. We find that most relationships are short-lived, as more than 75% of trade relationships end after less than two years. Furthermore, we find that higher quality wines, as indicated by the import price, increases trade duration. Deeper firm-to-firm trade relationships for more exclusive wines is likely due to higher search costs for high quality products. The results also show that the size of the initial trade between the partners, or degree of commitment, is a positive determinant for persistent relationships.

Keywords: wine, duration of trade, transaction data

JEL classification: C41, F14, Q27

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I. Introduction

Globalization have strongly influenced international wine markets during the recent decades, resulting in a rapid growth in trade (Campbell & Guibert, 2006), and structural shifts in trade patterns (Anderson & Wittwer, 2013; Angela Mariani, Pomarici, & Boatto, 2012). This is partly due to the introduction of new wine producing countries, and partly due to new destination markets for exports, with a particular emphasis on China. Recent studies on trade patterns for wine investigates the role of factors such as exchange rates, regulations, trade barriers and development of new markets for trade (Dal Bianco, Boatto, Caracciolo, & Santeramo, 2015; A Mariani, Napoletano, Pomarici, & Vecchio, 2014).

However, besides noting that keener competition in the global marketplace have made relationships between buyers and sellers of wine more fickle (Balogh & Jámbor, 2017), duration of trade relationships involving wine has received limited attention. The ability of a firm to maintain established trading-partner relationships over time reduces market-specific search and investment costs at the firm-level, and is thus important for trade cost for firms (Melitz, 2003), and this is true also for trade in wine. For wine products, the fact that specific *terroirs* are necessary for many qualities, may also cause trade duration patterns to deviate from what is observed for other products, as suppliers may have a stronger position due to the uniqueness of their products, particularly for high quality wine.

Trade duration is an important part of firms trade margins, and was first investigated by Besedeš and Prusa (2006a, 2006b) using country-to-country level data. They showed that trade relationships in US imports for all types of products are highly dynamic with a mean survival rate between 2-4 years. Such short durations are much more volatile than what is predicted by standard trade theory. In recent years, there has been an increasing focus on the role of firms in international trade, with a particular focus on trade cost. The seminal model of Melitz (2003) showed that trade costs can vary between firms and markets and contain fixed, as well as variable components, influencing which firms export to any specific market. Esteve-Pérez, Requena-Silvente, and Pallardó-Lopez (2013) use firm data to study duration and shows that trade patterns are more dynamic at the firm level than on the country level.

In this paper, we investigate the duration of trade relationships for wine imports to Norway. The fact that no wine is produced in Norway has two advantages: 1) the trade data completely characterizes the market and 2) there are no discriminatory fees or tariffs for any group of

producers. The data contains all transactions for firms that imports wine to Norway, linking all the individual transactions to specific importing and exporting firms. This level of detail in the data allows us to analyse factors that affects the duration of the individual exporter-importer trade relationship. To our knowledge, this paper is the first to study the duration of such highly disaggregated buyer-seller relationships in wine trade.

The next section provides more background on the determinants of the duration of trade and links this discussion to the international wine industry. In section 3, the empirical strategy is described. Section 4 presents the data, followed by section 5 where the empirical results are discussed. Section 6 concludes.

II. Background

Several theoretical models of trade (e.g. Krugman, 1979; Rauch, 1999), shows that trade in differentiated goods, such as wine, is anticipated to last longer than trade in homogeneous goods. Besedeš and Prusa (2006b) and Nitsch (2009) confirms the fact that trade in homogeneous products will have shorter durations than trade in more differentiated products. This paper does not compare trade duration across different types of goods, but rather different 'versions' of a particular good. Specifically, it investigates what role differentiation through quality, as signalled by unit values of wine, has on trade duration. In particular, one would expect premium wines to behave more like differentiated products due to unique *terroirs*, while cheaper wines may be more commoditized.

The variation in attributes make wine a differentiated product. One can argue that higher quality wines are more differentiated than lower quality wines, as they are more complex in terms of smells and flavours. Wine prices will to some extent reflect quality, but also embed other attributes such as reputational effects that can be based on past quality and achievements (Oczkowski, 2001; Oczkowski & Doucouliagos, 2014). Wine importers have to look beyond the price to fully understand the type of product, its quality and market potential. This implies that search cost are larger for high-quality wines than for lower-quality bulk wines because importers need to obtain more information for trade in high-quality wines.

The literature on trade duration also shed light on other factors that influence duration. For instance, the initial size of the trade flows is positively linked to duration irrespective of type of good (Besedeš & Prusa, 2006b; Esteve-Pérez et al., 2013). This can be explained by sunk

cost and option theory as well as learning models (Caves, 1998, 2007). Firms start with large initial trades when they commit to the trade relationship, which then give them the option to grow the trade even larger when confirming their initial belief in the trading partnership.

Size of producers matters in terms of participation in wine exports. Larger firms will have a greater propensity to export (Aylward, 2003), but size does not appear to be a prerequisite to participate as both small and large firms participate (Aylward, 2003; Suarez-Ortega, 2003). One explanation for this might be constant returns-to-scale, making the cost advantage of large exporters less obvious (Townsend, Kirsten, & Vink, 1998). Nonetheless, among small and medium large producers, Maurel (2009) find the largest firms have the highest export performance as measured by export intensity.

Ambiguous results about the link between size and export performance can also be related to quality, rather than productivity, as shown in Crozet et al. (2011). Their study analyses the champagne market and find that better quality increases the propensity to export and that price rises monotonically with quality. However, in markets for other wine types reputation appears to be equally important determinant of price (María Angulo, María Gil, Gracia, & Sánchez, 2000; Oczkowski, 2001; Oczkowski & Doucouliagos, 2014). These differing results about price-quality relationship can exist due to different ways of measuring quality and, as Combris, Lecocq, and Visser (1997) discuss, because the judgment of experts might not conform to the taste preferences of wine consumers in general. In any case, the price-quality relationship appears to be reasonably strong as one can assume that reputation is partly based on past quality performance.

Trade duration models often incorporates elements of the gravity model of trade, as standard gravity variables are known to influence trade flows, and thus also potentially duration of trade relations. Nitsch (2009) and Esteve-Perez et al. (2013), Straume (2017) and Asche et al. (2018) shows that trade duration are negatively affected by increased geographical distance to the destination market, while the results are mixed with respect to the economic size of the destination market. Dal Bianco et al. (2015) find that distance have a negative influence on trade flows of wine using a gravity model specifications that include distance as a standard variable to explain the effect from increased transportation costs on trade values.

In other studies of international wine trade geographical distance is seldom discussed as an issue (Anderson & Wittwer, 2013; Angela Mariani et al., 2012). Instead, trade barriers in terms of restrictions or additional taxes on wine imports have received attention as an influence om international trade (Dal Bianco et al., 2015; A Mariani et al., 2014; Wiseman & Ellig, 2007). These studies show that trade barriers have a negative impact on wine exports to different markets. In our analysis, all agents in the market are subject to the same import regulations so these cross-country differences in regulations and taxation do not come into play.

Changing patterns in trade can be driven by different factors that influence the relative competitiveness of different producer countries (Hussain, Cholette, & Castaldi, 2008; Witter and Anderson, 2020). One key factor that influence price competitiveness in wine trade is exchange rates. For example, Anderson and Wittwer (2013) find that changes in the real exchange rate can to a great extent explain why New World producers such as Australia and Southern World producers lost market shares in a period from 2007 to 2011. During this period, Australia experienced an appreciation in the real exchange rate of 33% that led to a reduction of its wine exports. Cardebat and Figuet (2019) argues that French wines became less competitive during the 2000s partially due to the appreciation of the euro against the USD and GBP.

Characteristics of the Norwegian wine market may also influence trade duration. For example, the growth in wine consumption in Norway, which has increased from around 27 thousand litres per year in the early 1990s to around 76 thousand litres per year in 2013 after which it has levelled off, might have influenced trade duration positively. A similar trend is noted in per capita wine consumption, which was just under 8 litres per year in the early nineties, and increased to around 18.5 litres per year in the 2010s.

A particular characteristic of the Norwegian wine market is that all retail sales of beverages with alcohol content above 4.75% has to be conducted by the state-run Wine Monopoly stores (Vinmonopolet). The Norwegian government established the monopoly to control alcohol consumption and, thus, limit negative effects from alcohol on society. One of the key regulations to reduce consumption is a high tax on alcohol. As Casini, Corsi, Rickertsen, Lai, and Cavicchi (2013) note: "*High tax rates per unit of alcohol [in Norway] mean that cheap wines become relatively expensive, while expensive wines become relatively cheap. In other*

words, high-quality wines have more or less the same price as identical wines purchased abroad, while cheap wines are much more expensive than abroad." An effect of this policy is to dampen the quality signal of wine prices.

Although the Wine Monopoly has exclusive retailing rights, the rights to import wines was deregulated in 1995. Since then the number of private importers has grown steadily. In 2004, there were 125 importers that provided wines to the monopoly, while in 2014 this number had increased to 404 importers (Wine Monopoly, 2004, 2014). This means that wine distribution in Norway can be viewed as a public-private partnership. There is a large selection of wines in Norway with more than 8,000 wines available from the main wine-producing countries (Casini et al., 2013). The most-selling wines are available in all of the Wine Monopoly's outlets, while those not stocked in an outlet can be ordered without additional charges.

According to an in-depth article from Dagens Næringsliv, a Norwegian business newspaper, the competitive climate among Norwegian wine importers hardened substantially over the data period with the increased number of importers (Kristiansen, 2016). A sign of these new times was signalled by incumbent importers accusing new firms of 'stealing' wine brands. Supposedly, this was done by slandering about incumbents lack of sales and promotion in Norway to wine exporters/producers and by other methods perceived as unfair by the incumbents. Structural changes in the competition among the importing firms may therefore also have influenced duration of trade relationships.

III. Empirical strategy

To estimate the duration of trade relations we apply survival analysis. Survival analysis estimates the expected duration of time before some event terminates a relationship. In the health sector this can be the death of a patient. In economics, it is typically related to firms going out of business or the termination of trading partner relationships. In general, the survival function can be specified as

$$f(t) = h(t)S(t) \qquad (1)$$

where *f(t)* is the probability density function of *T* (i.e., the probability of failure at time *t*), *S*(*t*) is the survival function that gives the probability that an observation survives longer than *t*. In other words, the survival function is the probability that there is no failure prior to time *t*. The

Kaplan-Meier nonparametric estimator is a common technique to graph the shape of the survival function.

Finally, *h(t)* is the hazard function which gives the rate of failure at a time *t*, given that the unit of observation has survived up to time *t.* That the hazard function $h(t)$ is a ratio can be seen more easily by rewriting equation (1) as $h(t) = f(t)/S(t)$. The hazard rate can vary from zero (meaning no risk of failure at all) to infinity (certain failure). It can be shown that the hazard rate can be reformulated as a regression of the form (Greene, 2003):

$$h(t|X) = h(t)exp(X\beta), \quad (2)$$

where the hazard rate is conditional on a set of covariates, *X*. In the trade literature the hazard rate is usually estimated using a Cox proportional hazards model (Besedes and Prusa, 2006a; Nitsch, 2009). Even if the baseline hazard $h(t)$ is not specified, the Cox model's results will closely approximate the results for the correct parametric model. Another advantage is that one can obtain the estimated betas, representing the true βs (i.e., the parametric part of the Cox function), without having parameterized the hazard function (i.e., the non-parametric part of the Cox function). The latter also implies that no assumptions about the underlying distribution of the hazard function is required.

One objection to the Cox model is that it assumes the hazard rate to be constant over time. To allow for a more flexible estimation of the hazard rates, we also estimate a parametric Weibull-model[1]. In the Weibull model, the underlying hazard rate is not assumed to be constant over time, but rather modelled as a function of log of time. Some trade relationships can experience multiple failures, meaning that an exporter-importer firm pair stops trading at a certain point in time, but resume the trading relation again at a later point in time.

IV. Data

The data used in this paper is taken from customs records identifying each single import transaction of wine from 2004 to 2014 of HS code 22042109.[2] This means that the individual importers and exporters linked to each trade are matched, and the records identify total

[1] The Weibull model is chosen as the preferred parametric model over the exponential and Gompertz models using the Akaike information criteria.

[2] Other wine of fresh grapes, incl. fortified wines, in bottles with "mushrooms" stoppers held in place by ties or fastenings, holding <= 2 l; wine otherwise put up with an excess pressure due to carbon dioxide in solution of >= 1 bar but < 3 bar measured at 20°C, in containers holding <= 2 l (excl. sparkling wine and varietal wines)

volume, total statistical value (in NOK), invoicing currency, wine production country, and shipping country associated with the trade.

French (30%), Italian (29%), Spanish (13%) and German (7%) wines accounted for around 80% of the total import value during the entire period (see figure 1). This implies that "old world" wine producers clearly dominate the Norwegian market. The four largest countries of origin have actually increased their dominance from 70% in 2004 to 83% in 2014, with Italy's market share growing the most from 20% to 36%.

Figure 1 here

The duration analysis is conducted at the firm-to-firm level for a particular wine producing country. Due to this definition of a trade relationship, the same importer and exporter may share more than one trade relationship since a particular exporter may export wines from more than one country. That is, if firm A export wines from France and Italy handled by importing firm B in Norway, this constitute two distinct trade relationships according to our definition. This distinction between wine-producing countries makes it more clean-cut to identify effects of exchange rates and GDP on trade relationships. Moreover, it makes sense since the trade from two distinct countries will represent different quality wines and generally different wine producers.

The number of importers and the average volume they import are shown in Figure 2. The number of importers increased steadily until the financial crisis started in 2008 after which many appears to have exited. Then in 2011, the number started to increase again, but never exceeded the peak in 2008. Another noteworthy pattern in the graph is that the average imported volume per firm was at its lowest in 2008, and since 2009, it has been on a higher level compared to the pre-financial crisis years. However, it is important to keep in mind that wine consumption in Norway has increased throughout the data period. This may help to explain why average volume per importer has been increasing. We now turn to look at key statistics of the variables in the data set.

Figure 2 here

Table 1 shows descriptive statistics of the variables. The *Distance* variable measure between wine exporter and Norway were obtained from distancefromto.net. This web engine uses

Google Maps to calculate distances between two geographical points. *GDP exporter* is used to measure the size of the exporting countries' economies. The exporters' GDP are denoted in fixed prices of local currency and were collected from the World Bank. *Exchange rate* measures the wine importer's currency, Norwegian kroner (NOK), against the exporters' currencies. A rise in *Exchange rate* implies the import of that country's wine becomes relatively more expensive compared to other countries' wines that use different currencies. The source of the exchange rate data is the central bank of Norway.

Table 1 here

Crozet et al. (2011) found that quality is a far more important predictor of export success among champagne producers than productivity. Unlike Crozet et al. (2011) we do not have a direct measure of quality, but use unit value of imports as a proxy for quality. Price has been found to be a good, but imperfect, measure of quality (Combris et al., 1997; María Angulo et al., 2000). For instance, Oczkowski (2001) found that for Australian wines reputation was a stronger predictor of prices than quality. But reputation is likely linked to past quality of wine, which still means there is a strong quality-price relationship (Landon & Smith, 1997; Oczkowski & Doucouliagos, 2014).

Unit value measures the average price per litre per shipment denoted in NOK. The mean price is 107 NOK per litre imported wine, which corresponds to slightly above 13 USD per litre. As can be expected there is large span between minimum and maximum values given the significant quality differences for wine. The standard deviation of import prices is around 24 USD per litre.

Initial quantity measures the size of the first shipment in every exporter-importer-trade relationship. The main purpose of this variable is to capture scale effects on trade duration. Larger initial quantity are normally associated with longer duration of trade relationships (Besedeš & Prusa, 2006b). Another factor that can influence survival rate is the number of firms in the market. For example, it was discussed earlier that the competitive environment among Norwegian wine importers appears to have changed towards a more cut-throat competition (Kristiansen, 2016). To capture such changes we include # *Importing firms*, which measures the yearly number of Norwegian firms that import wines from the individual wine-producing countries.

Note that this measures contrasts the total number of importers shown in Figure 2, since the variable # *Importing firms* only counts the number of firms importing from a particular wine-producing country, say, from France. The idea is that an importer-exporter relationship of French wines is influenced by the total number of Norwegian importers targeting French wine producers and not the number of wine-importing firms operating in Norway altogether. This can be a reasonable delineation if Norwegian importers must commit large investments when moving from one wine-producing country to another. Similarly, the variable # *Exporting firms* measures how many firms per year exports wine to Norway from a specific wine-producing country.

To account for trade relationships that involve partners that already trade together in wines from other countries of origin, we include a dummy variable for *on-going trade relationships* (OTR). Our hypothesis is that relationships that involves partners that already are familiar with each other will have lower failure rates. *Spell number* is a count variable that counts the number of times the exporter-importer pair has traded together in the sample. For example, for a trade-relationship that breaks down after one year and then retakes trading two years later, the *Spell number* will take the value 1 for the first short spell and then the value 2 for as long as that second spell lasts. If the underlying hazard rate is allowed to vary with time, as in the Weibull model, we would assume that as the number of spells increases and the partners get to know each other better, the survival rate of the trade relationships would increase.

Several dummies are included as independent variables. *Multiple spells* capture the number of observations where exporter-importer trade relationships have several spells. This variable complements the *Spell number* by giving the value 1 to trading-partner relationships that have more than one spell. *Same country* indicates when the wine is shipped to Norway from the same country it is produced. Table 1 shows that almost 95% of the shipments are sent directly form the producing country, so it is quite unusual that a wine is re-exported from another country. *Overseas* is a dummy for wines originating outside of Europe, which is predominantly from Oceania, South Africa, South America, and USA. These overseas producers account for around 12% of the imported wines. *Oldworld* is a dummy for wines originating from the "four big", France, Italy, Spain and Germany. The dummy is included to see if these 'incumbent' producers' position in the Norwegian wine import market influence

trade relationships in any systematic manner. In models (3) and (4) we drop the *Oldworld* dummy and rather include country-specific dummies, representing each of these wine-producing countries individually, to investigate if country-specific fixed effects influence trade relationships.

Figure 3 shows the Kaplan-Meier estimates of the survival rates for the trade relations from year-to-year. More than 60 % of the established relations trade together for only one year, and more than 75% of the relations end after two years. Hardly any trade relationships survive the entire sample period of eleven years. There appears to be little variation in this survival pattern if we break down the data sample on the source country of imported wines, at least not among the large wine producers. Hence, the general pattern of short-lived trading relationships is common across wine-producing regions.

Figure 3 here

V. Empirical results

Table 2 reports the results from the Cox proportional hazard and the parametric Weibull model. The estimated coefficients from these models are hazard rates, and they are interpreted differently form OLS-estimates. Coefficients that are larger than one scale up the hazard ratio, coefficients lower than one scales the hazards down, and coefficients that equals one do not influence the hazard ratio. Model 1 and 2 in table 2 report the estimated coefficients for the hazard rates for the Cox- and Weibull models. We further include a set of country fixed effects and interaction terms to the two models to investigate the robustness of the hazard rates, these estimations are reported in model 3 and 4 in table 2.

For most of the independent variables, the magnitude of the estimated parameters remain similar in the Cox- and Weibull models. An estimated hazard rate with a value below one indicates that an increase in the corresponding variable decreases the probability for failure in the trade relationship, while a value larger than one indicates increased probability for failure. Of the two estimation methods, the Akaike information criteria clearly favours the Weibull model as the statistic reported in the bottom of Table 2 is much lower than that of the Cox model.

The first covariate reported in the estimations in table 2 is the geographical distance to the wine producing countries. The *Distance* coefficient is statistically insignificant in models 1-3, indicating that distance does not influence duration. In model 4 we see that the estimated

model indicates that increased distance to the country of origin will increase the survival probability. Trade towards distant markets may invoke larger search costs, and force the trading partners to invest more in the relationships making them more stable. From the trade literature, we know that trade in perishable products are most sensitive to the geographical distance between markets.

The exporters' GDP, with a coefficient approximately equal to one, has no impact on trade duration. Although the exporters GDP could proxy other characteristics of the exporting country relevant for trade duration, it is not that obvious what this should be in this particular context where we analyse flows of a specific product type to a single import market.

Table 2 here

The estimated coefficient for *Exchange rate* is lower than one and statistically significant in the Cox-estimations, implying that a weakening of the exporter's currency relative to the importers currency, NOK, increase trade duration. We find no statistical significance for this variable in the Weibull estimations, but the estimated coefficients are lower than one, as in the Cox model.

The *unit value* is statistically significant at the one percent level in models 1-3, indicating that an increase in the unit value increase the duration of the trading partners' relationship. In model 4 this effect is picked up by the interaction term between the unit value and imports from France and Italy. The overall interpretation of the results is that wine quality is a positive factor for trade duration. The results with respect to wine prices is an extension of the findings in Crozet et al. (2011) who analysed export propensity. Our results shows that not only trade propensity is affected by wine quality, but also the duration of trade relationships. The results from model 4, singles out France and partly Italy as countries where wine quality influences trade duration, this does not seem to be the case for Germany and Spain. This asymmetry could be influenced by strong competition for French and Italian wines. Such competition may motivate additional sunk investments in long-term relationships to access high-quality wines from these regions.

Another highly significant factor in all four models is *Initial quantity*. A large first shipment between a specific wine exporter and importer pair increases the probability of a lasting trade relationship between those two partners. A large initial trade may signal commitment. From

model 4, we see that initial trade is particularly important for trade relationships involving one of the four largest countries of origin. Further, model 2 and 4 shows that while a growth in the number of importers increase the hazard of a breakdown in trade relationships, the number of exporters have the opposite effect. This asymmetric effect could be because wine exporters have several international markets where they can sell their product. In contrast, importers compete for limited shelf space in the Norwegian wine monopoly's retail stores and in Norwegian restaurants, and for importing the best-selling wines to the Norwegian public. This finding lends support that a tougher competitive climate has influenced trade duration in Norwegian wine imports. This argument is reinforced by the development of importer/exporter ratio from the four largest countries of origin over the period, as shown in figure 4.

Figure 4 here

The estimated coefficients for the OTR-dummy are lower than one and highly statistically significant across all models. Partners that already know each other has a higher probability for establishing new lasting relations, than partners that do not have prior trading experience with each other from before. When partners that know each other from previous trades create short new relations, these will typically involve a large initial volume. We suspect that this, for instance, could be the case when well-known partners become aware of a particular good wine season in a country that they normally do not source wine from, and thus collaborates in one-off imports.

We get conflicting results between the Cox- and the Weibull model when it comes to the spell number variable. The estimated hazard rates in the Cox model indicates that hazard is increasing in spell number, while the opposite is true for the Weibull model. This difference is probably due to the underlying assumptions of the two models. We find the results from the Weibull model to be the most appropriate in this case, since this parametric model does not assume that hazard are constant over time. Moreover, as previously mentioned, the AIC statistics favour the Weibull model as the preferred choice. The interpretation of the Weibull coefficients is that as the number of spells between trading partners increases, so does the survival probability of new trade relationship.

The Cox model indicates hazard rates larger than one, but not significant, for trade relationships that are associated with multiple spells. The two Weibull estimations indicates that the presence of multiple spells decreases hazard significantly. This finding is not in line with the common findings in the trade literature, but may indicate an interesting characteristic of the wine market. An importer who knows an exporter from earlier relations, and know that this firm can source high quality wines, could be willing to establish a new relation when trying, e.g., to source the same type of wine as they have previous trading experience in. We also know that not all partners source from all countries each year, e.g. due to bad seasons with low quality. Given these characteristics of wine trade, it is not surprising to find lower hazards associated with the presence of multiple spells.

Neither the *Same country* dummy nor the *Overseas* dummy is significant. As it is only in a small fraction of the trade relationships where the exporters actually are located in a different country than the origin-country of the wine, it is not very surprising that the *Same country* does not give significant effects. The mean value of *Same country* dummy reported in Table 1 indicates that almost 95% of trades correspond to exporters being situated in the same country where the wine they export is produced. Note that we attempted to remove the *Overseas* dummy as it could be correlated with distance. However, the *Distance* parameters remained similar in either model. This may be due to the dominance of the European producers.

VI. Conclusion

Global wine trade continues to grow with new agents entering the market (Balogh & Jámbor, 2017). The increased competition and participation in the wine market is bound to influence trade dynamics, including duration of trade relationships. In this paper we have access to highly disaggregated data on wine imports to Norway which allows us to link exporter and importer firms. This high-quality data is used to analyse how duration of firm-to-firm trade relationships are affected by different factors in an eleven-year period stretching from 2004 to 2014. The first result from the study is that most trade relationships are very short. This is a result that aligns with previous findings in the literature, both for duration of overall trade between countries, as well as for trade at the product level.

The main focus of this study is how trade duration is influenced by wine quality as reflected by the price (Oczkowski & Doucouliagos, 2014). Wine is a highly differentiated product with a large spectrum of different qualities and tastes. We show that imports of higher priced wines

is associated with longer duration of trade relationships. As expected a weakening of the exporters currency seems to have contributed to lengthen the duration of trade relationships. A growing share of Norwegian wine imports has come from France, Germany and Italy. Especially Italy's market share has grown sharply from 19% in 2004 to 34% in 2014. This corresponds to a period when for most of the time the long-term trend of Euro has been of weakening relative to the import currency Norwegian kroner. This indicates that the exchange rate has influenced changes in the relative pattern of trade relationship, geographically speaking.

Our estimations underlines the importance of the price, the size of the initial trade quantity and on-going trade between the partners for duration of trade relationships. Another interesting result is that there is an asymmetric effect of the number of importers from the number of exporters. We argue that this result arise because for most wine sellers Norway is just one of several markets where they can export their product, while for Norwegian importers there is a competition for limited number of wines known to sell among Norwegian consumers. The fact that there exist a monopoly of retailing wines in Norway makes shelf-space even limited compared to the normal where wine is also retailed in grocery stores, supermarkets and specialized wine retailers. The limited shelf-space available to efficiently market imported wines can further enhance competition among importers. This underlines that the particular market institutions also can influence competition.

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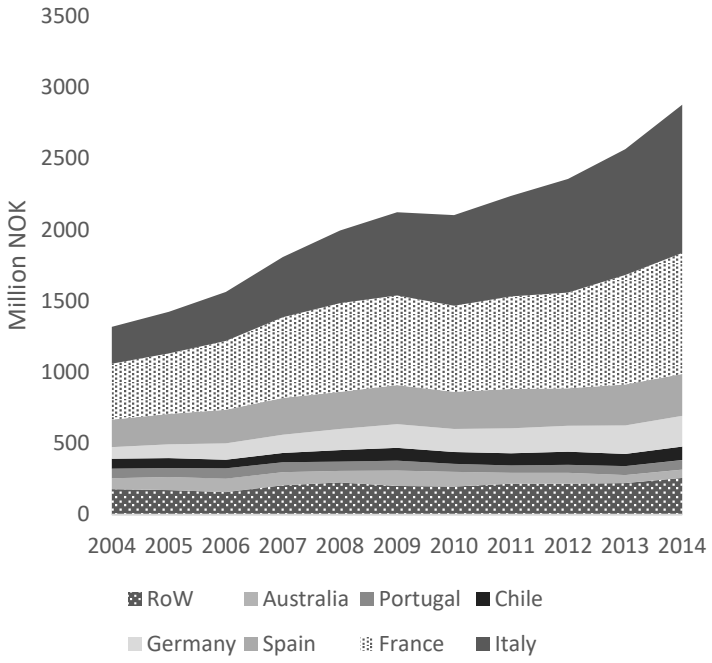

Figure 1. Wine imports to Norway by producing country

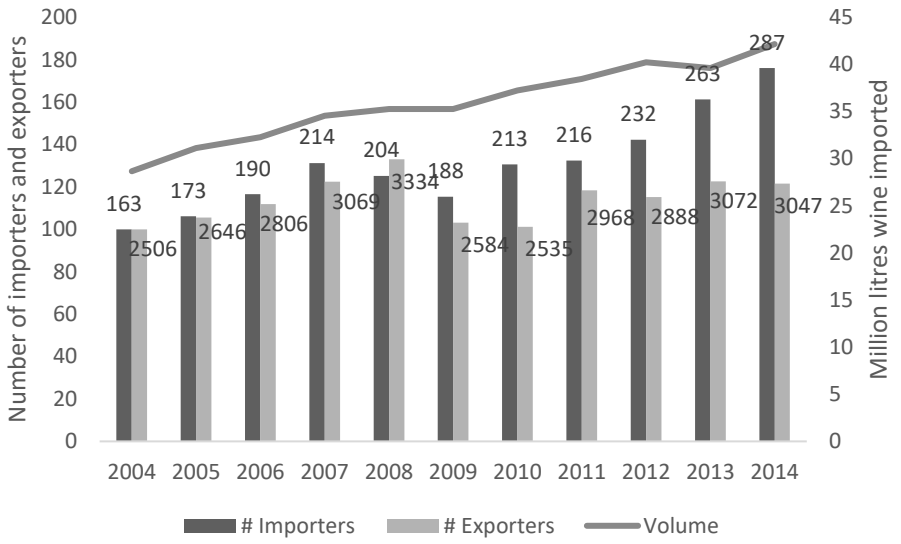

Figure 2. Number of wine importers and exporters and annual imported volume of wine.

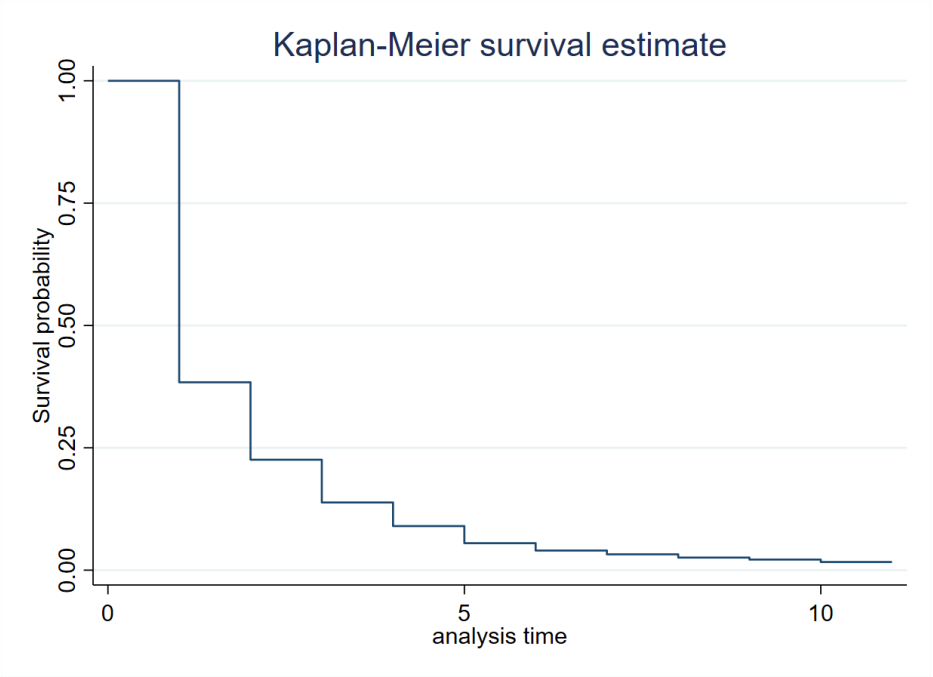

Figure 3. Survival rate of trading partners from year-to-year

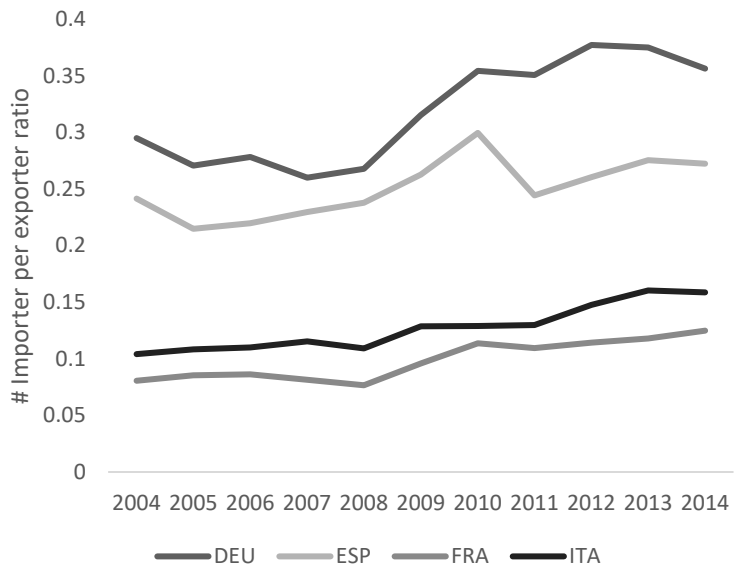

Figure 4. Number of importers per exporters for the four most important wine exporting countries to the Norwegian wine import market

Table 1. Descriptive statistics

Variables	Obs	Mean	Std. Dev.	Min	Max
Distance	37,224	3,065	3,477	472.3	17,668
GDP exporter (million LCU)	37,224	4.290	16.33	167,611	14,0500,000
Exchange rate	36,146	0.150	0.151	0.081	1.723
Unit value	37,224	18.24	62.27	0	3,572
Initial quantity	37,224	8,621	34,832	1	1,008,000
# Importing firms	37,224	95.25	41.43	8	187
# Exporting firms	37,224	729.7	451.1	10	1,370
On-going trade relationship (OTR)	37,224	0.0376	0.190	0	1
Spell number	37,224	1.082	0.301	1	4
Multiple spells	37,224	0.075	0.264	0	1
Samecountry	37,224	0.947	0.224	0	1
Overseas	37,224	0.117	0.322	0	1
Oldworld	37,224	0.790	0.408	0	1

Table 2. Estimated hazard rates. Full sample[3].

	(1) Cox	(2) Weibull	(3) Cox	(4) Weibull
ln Distance	1.009	0.969	0.999	0.934**
	(0.026)	(0.025)	(0.031)	(0.029)
ln GDP exporter	1.002	0.997	0.998	0.985
	(0.010)	(0.010)	(0.011)	(0.011)
ln Exchange rate	0.934***	0.968	0.942**	0.995
	(0.023)	(0.024)	(0.026)	(0.028)
ln Unit value	0.930***	0.957***	0.949***	1.011
	(0.010)	(0.009)	(0.018)	(0.018)
ln Initial quantity	0.895***	0.808***	0.911***	0.845***
	(0.004)	(0.003)	(0.007)	(0.006)
ln # Import firms	1.083	1.145**	1.151	1.174*
	(0.071)	(0.077)	(0.104)	(0.107)
ln # Export firms	0.972	0.947**	0.900	0.854**
	(0.026)	(0.026)	(0.060)	(0.057)
Ongoing trade relationship (OTR)	0.789**	0.494***	0.808*	0.537***
	(0.095)	(0.060)	(0.099)	(0.066)
Spell number	1.310**	0.749***	1.310**	0.748***
	(0.143)	(0.080)	(0.144)	(0.080)
Multiple spells	1.058	0.438***	1.057	0.440***
	(0.129)	(0.052)	(0.129)	(0.052)
Same country	1.022	1.010	1.023	1.020
	(0.039)	(0.039)	(0.039)	(0.040)
Overseas	0.945	1.021	0.969	1.119
	(0.062)	(0.066)	(0.069)	(0.078)
Oldworld	0.935	0.910**		
	(0.044)	(0.043)		
France			1.342*	2.299***
			(0.207)	(0.344)
Italy			1.301*	1.924***
			(0.193)	(0.274)
Germany			1.134	1.063
			(0.237)	(0.207)
Spain			1.102	1.278*
			(0.173)	(0.179)
ln Initial_q × OTR	1.036**	1.054***	1.031*	1.036**
	(0.017)	(0.017)	(0.017)	(0.018)
ln Initial_q × France			0.973**	0.926***
			(0.0103)	(0.009)
ln Initial_q × Italy			0.973**	0.940***
			(0.011)	(0.009)
ln Initial_q × Germany			0.975	0.969*
			(0.018)	(0.017)

[3] Excluding left-censored observations from the sample does not result in substantially differences.

ln Initial_q × Spain			0.989	0.975**
			(0.014)	(0.012)
ln Unit value × France			0.973	0.902***
			(0.024)	(0.022)
ln Unit value × Italy			0.980	0.951*
			(0.027)	(0.025)
ln Unit value × Germany			0.979	1.009
			(0.049)	(0.048)
ln Unit value × Spain			0.988	0.980
			(0.035)	(0.032)
Constant		1.686***		1.693***
		(0.009)		(0.009)
AIC	336,891	36,455	336,897	36,367
Observations	36,146	36,146	36,146	36,146
Year dummies	Yes	Yes	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1