Currency invoicing in Norwegian salmon export

Hans-Martin Straume
BI Norwegian Business School

This is the author's final, accepted and refereed manuscript to the article published in

Marine Resource Economics, 29(2014)4: 391-409

DOI: 10.1086/678930

Publisher's version available at http://dx.doi.org/10.1086/678930

Currency Invoicing in Norwegian Salmon Export

HANS-MARTIN STRAUME
University of Bergen
BI Norwegian Business School

Abstract: The purpose of this paper is to examine the choice of currency for Norwegian salmon exporters. The choice of invoicing currency will affect prices in different markets as well as risk, factors that are increasingly important as the supply chain for salmon is becoming more sophisticated and more transactions mechanisms are introduced. The results indicate that destination-specific market characteristics have impacts as to the choice of invoicing strategy. Norwegian salmon exporters primarily invoice in the export market currency (47% of the exported quantity), but also use a vehicle currency and producer pricing (19%) in a significant number of transactions. The euro is the preferred vehicle currency (18%), closely followed by US dollar (USD) (16%). The USD is the dominating invoicing currency for exports beyond Europe.

Key words: Invoicing currency, Multinomial logit, Salmon Aquaculture, Vehicle currencies
JEL Classification Codes: F14, Q22

Hans-Martin Straume is a Ph.D. student, Department of Economics, University of Bergen, N-5020 Bergen, Norway and BI Bergen, BI Norwegian Business School, N-5893 Bergen, Norway (email: hans-martin.straume@bi.no).

The author thanks two anonymous referees for many suggestions that improved the paper. I am also grateful to Erling Vårdal, Frank Asche, Ragnhild Balsvik, Genaro Sucarrat, as well as participants at the PhD Workshop at NHH in 2013, seminar participants at BI Norwegian Business School, the University of Bergen, and participants at the Seafood Markets and Aquaculture Production workshop at UMB in 2013 for valuable comments and suggestions. Financial support from the Research Council of Norway is also acknowledged.

Introduction

Choice of invoicing currency is a topic that has gained much attention in the theoretical literature in international trade for several decades. If one assumes that an exporter is free to determine the invoicing currency, three different strategies are available. An exporter who is concerned about exchange rate risk would set the prices in the domestic currency. This is known as "producer currency pricing" (PCP). The prices can also be set in the importer's currency, a "local currency pricing" strategy (LCP). This would be the case for an exporter who can exercise market power or conduct so-called "pricing-to-market" (Krugman 1987), but can also be due to other factors that do not imply oligopolistic behavior, such as currency convertibility. Finally, the exporter could set the price in a major "world" currency, a "vehicle currency pricing" strategy (VCP), which is typically the US dollar (USD), euro, or Japanese yen. McKinnon (1979) argues that trade in homogenous primary goods should be conducted in a single vehicle currency as market efficiency increases if prices are expressed in the same currency.[1]

The theoretical literature holds a number of insights with respect to the choice of invoicing currency that depends on market and product characteristics. As more detailed data on the transaction level has become available for some countries/industries, empirical testing of the different predictions has become possible. Goldberg and Tille (2009) study invoicing strategies for Canadian imports. They argue that when the traded goods have close substitutes, the trades are rarely invoiced in the exporters' currency, with the exception of exporters from the US[2], and that exporters with a volatile exchange rate make little use of their own currency. Goldberg and Tille (2009) also establish a relationship between transaction size and choice of invoicing currency, where large volumes are generally invoiced in the importers' currency. This finding may indicate that the bargaining power between the exporter and importer matter for the choice of invoicing currency and that the relevant bargaining tool for the importer is transaction size.

In recent years, there have been dramatic changes in the supply chains for many seafood products. The market has become global for a number of species (Asche et al. 2012; Tveterås et al. 2012), and growth of large retail chains has led to increased concentration downstream (Murray and Fofana 2002; Guillotreau, Le Grel, and Simioni 2005; Guillotreau and Jiménez-Toribio 2011; Asche et al. 2011a,b). The focus of retail chains on efficient logistics has led to

increased coordination upstream (Kvaløy and Tveterås 2008; Olson and Criddel 2008) as well as the creation of very large production companies (Asche et al. 2013).[3] Salmon is among the most successful aquaculture species in terms of increased production growth. This is largely due to substantial productivity growth through the supply chain from suppliers (Tveterås and Heshmati 2002), at the farms (Nilsen 2010; Vassdal and Holst 2011; Roll 2013; Asche and Roll 2013, Asche, Guttormsen, and Nielsen 2013) and in the supply chain (Asche, Roll, and Tveterås 2007). Increasingly, more sophisticated transaction methods are being used such as contracts (Larsen and Asche 2011) and futures contracts (Sollibakke 2012; Oglend 2013), as well as integration through mergers (Asche et al. 2013).[4] This has made salmon the species with one of the most varied transaction modes in the seafood market. It also means that the strategy with respect to invoicing currency can be an important factor for a producer's competitiveness.

This article analyzes different determinants of currency invoicing in the exports of fresh and frozen salmon from Norway, the leading salmon producing country.[5] There are two main topics herein; first a descriptive analysis is provided for the invoicing pattern from Norwegian exporters to different destination regions. This is to shed light on issues such as the importance of vehicle currencies in different regions. Second, results from a more stringent empirical analysis, for which more factors can be controlled is conducted using a multinomial logit model. This is a widely used approach in empirical analysis of invoicing currency (Donnenfeld and Haug 2003; Wilander 2006). In this analysis, the effect of factor such as firm size, transaction size, distance, import market size, wealth, exchange rate volatility, trading frequency and competitive pressure in the destination market will be investigated.

Literature Review

There exists a rich theoretical literature on the choice of currency in international trade.[6] Some highlighted findings from theoretical studies is that if the firm's choice of invoicing currency depends on the currency choice of its competitors, it is optimal to invoice their trades in the same currency as its competitors, that currencies from countries with monetary stability are most likely to be chosen as invoicing currencies, and that elasticity of demand and exchange rate volatility are important factors behind currency choice (Kamps 2006).

Grassman (1973) provides the first empirical analysis of choice of invoicing currency. He finds that when there is trade between an industrialized country and a developing country, the trades are mainly invoiced in the currency of the industrialized country or in a third currency, and that invoicing patterns differ by product type. McKinnon (1979) suggests that trade in homogeneous products, such as oil and primary commodities, will mainly be invoiced in USD or another vehicle currency with low transaction costs, while in trades of differentiated products, invoicing in the exporters' currency is preferred. Page (1981) shows that a high share of international trade flows are invoiced in major currencies, some of them used as vehicle currencies. This first strain of empirical studies, which are at an aggregated level and descriptive in nature, indicates that the use of a vehicle currency will be most important for trades between advanced economies and developing countries. Trades between advanced economies are mainly invoiced in the currency of the exporter.

More recently, better data combined with improved econometric techniques have increased the number of empirical studies investigating the choice of invoicing currency. The impact of different explanatory variables on currency choice is not straightforward. In many cases the econometric results seems to depend heavily on the aggregation level, the direction of the trade (import or export), and whether the trading partner country is known. The econometric study by Donnenfeld and Haug (2003) is the first on the choice of invoicing currency. They investigate Canadian import data for 12 different industries at the 6-digit HS-level for the period 1989Q1-1994Q4[7]. They establish a positive relationship between exchange rate risk and the use of LCP in some of their estimations, but they are not able to establish such a relation as an overall finding for all industries. They also argue that a large gross domestic product (GDP) in the exporting country (large home market) relative to the importers' GDP favors PCP.

Kamps (2006) explores the use of the euro as invoicing currency and offers a comparison of the use of the euro and the USD as world vehicle currencies. Not surprisingly the euro has become more important both as a vehicle currency, and for LCP and PCP over the last decade. However, Kamps (2006) argues that relative to the USD, the role of the euro as a vehicle currency is limited. If a country exhibits high exchange rate volatility with respect to the euro, the probability for its use as a vehicle currency increases. Kamps (2006) states that, "this is particularly true for the countries with the prospect of adopting the euro at some point in the future".

Goldberg and Tille (2008) also document increasing importance of the euro as invoicing currency for the EU and accession countries. Ito et al. (2010) discuss limited use of the yen in trade invoicing for Japanese exporters. They find that Japanese exporters commonly use LCP in exports to advanced economies, and the USD in exports to East-Asia. One possible reason for regional invoicing differences in the case of salmon can be that the exporters make use of historically dominant vehicle currencies in specific markets. Another possible reason is that firms seek to set prices that do not deviate from the prices of their competitors (Fukuda and Ono 2006). In this setting, if one leading (or sufficiently many) exporter(s) invoices in a vehicle currency on a regular basis, the probability for other exporters to also invoice in the third currency increases.

Wilander (2006) studies the choice of invoicing currency in Swedish exports at the industry level for the period 1999-2002. In his study, exchange rate risk is measured as exchange rate volatility, and he finds a negative relationship between exchange rate volatility and the use of LCP. Wilander (2006) also argues that low inflation will favor LCP, and that increased efficiency in financial markets in the importing country decreases the probability for PCP. In the case of the Swedish export industries, it is found that about 25% of the trades in paper and pulp are invoiced in Swedish krona (SEK), while about 60% of the trades in motor vehicles are invoiced in SEK. This finding may indicate that there is a lower probability for using producer currency pricing for less differentiated products. Friberg and Wilander (2008) survey the currency choice of Swedish exporters. Some interesting findings in this study are that negotiations between the parts in the transaction are important for both choice of currency and price. The most used currency is the currency of the customer. Posted prices are only used by a few firms; almost all export prices are set after negotiations between the parts. The firms also report that in nearly all cases the settlement currency is equal to the invoicing currency. Ito et al. (2010) investigate the choice of invoicing currency for 23 Japanese exporters in 4 different industries and find that Japanese firms tend to favor LCP when the destination country is an advanced economy. They argue that the USD is the most common currency for trades in Asian markets, among exporters of highly differentiated products who tend to invoice in yen as the main exception. Ligthart and Werner (2012) analyze the effect of the introduction of the euro on the pattern of currency invoicing by investigating imports to Norway from different OECD-countries in the period 1996Q1-2006Q4. Their results indicate that the euro has overtaken the role of the USD as the main vehicle currency, as well as an increase in the use of PCP in the export from Eurozone countries. The main reason for the

increased use of euro is explained by lower inflation volatility. They observe a decline in the share of PCP in the Non-Eurozone countries.

Invoicing structure in Norwegian salmon exports

While Norwegian salmon exports are global, with exports to 113 countries, some markets are more important, and this will influence the choice of invoicing currency. About 50% of the total export (volume) of Norwegian seafood products is destined for markets within the EU, with France being the single largest market. In addition, both Russia and the Ukraine are important growth markets in the East, and the Asian market has always been important. In this section an overview with respect to the choice of invoicing currency of Norwegian salmon exports to different destinations is provided. Table 1 summarizes the overall use of different currencies observed in the data[8].

The Euro is the dominant invoicing currency for fresh salmon. It is used in 48% of all observed trades, accounting for 56% of the total export volume over the period 2003-2009. The USD is second most important (12% of the volume), with NOK being the third most favored invoicing currency by the sellers (20% of the total export volume). Of the total volume being invoiced in USD, only about 2% are destined for the US; almost 98% of the volume invoiced in USD employs USD as a vehicle currency. The situation is remarkably different for exports to the EU. The use of the euro as a vehicle currency applies only to about 22.50 % of the total volume invoiced. The use of SEK and GBP are almost 100% LCP[9]; e.g. the currencies are used almost exclusively for export to Sweden and the United Kingdom.

In the case of frozen salmon, the USD is used in 61% of the trades, accounting for 69.5% of the volume. Approximately 8% of the trades invoiced in USD have the US as their destination. The USD is frequently used as a vehicle currency for trades to Russia, the Ukraine, and several Asian markets. For frozen salmon, most of the trades invoiced in NOK are destined for Israel, Sweden, and Russia. About 8% of the trades in euro are those where euro is used as a vehicle currency, with Russia being the most important destination. Hence, the USD is clearly the most common vehicle currency for Norwegian salmon; in some areas the euro is also used as a vehicle currency. In total, the euro is the most important currency due to LCP pricing. As the NOK is the third most common currency, there is also substantial evidence of PCP, indicating that all forms of invoicing strategies are used on a relatively large scale in Norwegian salmon exports.

Considering fresh and frozen salmon combined, PCP is being used for 19% of the volume (16% of the transactions) and LCP is used for 47% of the export volume (55% of the transactions). For the two types of vehicle currencies, the euro is used for 18% of the volume (10% of the transactions) and the USD for 16% of the export volume (19% of the transactions).

The sum of annual export averages of fresh salmon by destination is reported in the left panel of figure 1, with frozen salmon in the right panel. The single most important destination for fresh salmon in the period is France, followed by Denmark and Poland. Russia clearly dominated the demand for frozen salmon.

Figure 2 provides a description of the composition of invoicing currencies to different regions for fresh salmon. The figures indicate substantial heterogeneity in the invoicing pattern to different destination markets when focusing on the major currencies in each region. For fresh salmon, most of exports to Scandinavian countries are invoiced in euros and NOK, but there are also some transactions to Sweden and Denmark where LCP is used. More LCP is used in Sweden, rather than Denmark. One can also observe a decline in the use of PCP (NOK) to the Scandinavian countries over time.

The euro has overtaken as the dominant invoicing currency for exports to Eastern Europe over time, primarily at the expense of NOK, while the use of the USD is relatively stable. Thus the latter has a small decline over the period. In the case of Asia, the use of the USD increased during the period. The use of Japanese yen has declined; a reflection of Japan's reduced share of the exports rather than a shift in invoicing strategy. In the EU, the euro dominates, although there are also a number of transactions in NOK.

Data and model specification

The data used is transaction data on all Norwegian exports of fresh and frozen salmon, and is provided by Statistics Norway. The data is recorded from the custom's declaration for each individual export transaction of fresh and frozen salmon in the period 2003-2009. The total number of reported trades of fresh salmon during these years is 519,149, while it is 21,251 for frozen salmon. In each observation it is possible to identify both the exporting firm and the

destination country for the shipment. There are 343 different exporters represented in the data, who supply a total of 113 different destination markets[10]. Other important variables are the date of the transaction, quantity in kilos, transaction value (in NOK), and invoicing currency.[11]

The choice of invoicing currency is assessed using a multinomial logit model (Greene 2008). Thus, the choice of currency made by the firm for each transaction must be made from one of four options: PCP, LCP, euro as a vehicle currency, or USD as vehicle currency. This gives a dependent variable coded with the values 1, 2, 3, or 4, respectively. Formally, the model takes the following form:

$$\Pr(Y_{i,t} = k) = \frac{e^{\beta_j \mathbf{x}_{i,t}}}{\sum_{j=1}^{4} e^{\beta_j \mathbf{x}_{i,t}}}, \text{ where k=1,2,3,4,} \quad (1)$$

Where $Y_{i,t}$ represents the chosen currency for trade between a given firm, *i*, and a given destination in year *t*. The model is normalized by setting invoicing in NOK (PCP) as the base category. The independent variables are included in the vector x. The reported coefficients will be the marginal effects of the individual specific characteristics on the choice probability. The size of the marginal effects in a multinomial logit model can be somewhat difficult to interpret, so in the results section the focus will be on the estimated sign and significance levels.

The following independent variables are used. Total yearly import volume in the destination market is included as a measure of the importance of the market. The number of trades is included as a measure of trade regularity and is expected to work in disfavor of the use of a vehicle currency. The variance in the exchange rate is calculated as the variance of the difference in the log-monthly exchange rates between Norway and the destination country. This variable is included to capture the potential effect of exchange rate variation on choice of currency. The real exchange rate is measured as the real value of the Norwegian currency; i.e., an increase in the real exchange rate means a real depreciation of NOK. A real depreciation of NOK may make it more favorable for the importer to use PCP when the NOK becomes cheaper relative to the local currency. To control for the size of the destination market we include GDP, and GDP per capita is included as a control for consumer wealth. Two dummy-variables are included. One is to control for the EU-countries that have not adopted the euro

as their local currency, as these countries are expected to to have a stronger preference for euros as a vehicle currency. A second dummy is included to control for trade of frozen salmon, which, because of its storability, may differ from fresh salmon. The inflation rate difference between Norway and the destination country is included as a measure for monetary stability. One would expect that high inflation in the destination country will make it less favorable for the importer to use LCP. Data for exchange rates, inflation, GDP and GDP per capita is taken from International Monetary Fund (IMF) and the World Bank[12]. Geographical distance is included, as the literature indicates that this is often an important variable. Data for geographical distance is obtained from CEPII.[13] Most of the explanatory variables are standard in the literature. However, the fact that firm data is available allows some additional factors to be investigated. The firm-specific factors included as independent variables are firm size (total exports), firm to destination-specific export, the number of Norwegian competitors in the destination market, and trade frequency. The number of exporters to a given destination market is included to control for competitive pressure in the destination market. To measure trade frequency, the firm's total number of trades to destination is included.

Finally a set of regional control dummies is included. The data is aggregated to yearly observations and sorted by invoicing currency.

Empirical results

The results from the multinomial logit model outlined above are reported in table 2, with different columns for the probability of pricing in LCP, euro as vehicle, and USD as vehicle relative to PCP in NOK, respectively. Hence, a positive effect indicates that it is less likely that invoicing is in NOK. As one can see, most estimated parameters are statistically significant, and all explanatory variables have a statistically significant impact for at least one of the choices. However, in a few cases the estimated sign of the coefficients is not in accordance with what we would expect.

In table 2 the independent variables are grouped in three categories. In the first group, the estimates from the standard explanatory variables used in the literature are reported. The second group reports the average marginal effects on the choice of invoicing currency from firm-specific variables. Finally, the effects from a set of dummies are reported in the third group.

Geographical distance between the exporter and the destination market is used as a proxy for transportation costs. The probability of invoicing in the producer currency (NOK) increases with distance[14]. This effect is not in accordance with what we expect, since increased distance from home should make the home currency less familiar.[15] We see that increased distance also decreases the probability for the use of the euro as a vehicle currency, and increase the probability for the use of the USD as a vehicle currency. This result is in accordance with what we expect. Increased GDP and GDP per capita increase the probability of invoicing in the importers' currency. One possible explanation for this result is offered in Krugman (1984), who argues that firms from small countries may be more experienced dealing with exchange rates, so when they trade with larger countries the probability of using the large country's exchange rate may increase. This finding is also in line with the findings of Donnenfeld and Haug (2003). Higher GDP and GDP per capita also decrease the probability of using vehicle currencies.

Increased exchange rate variation decreases the probability for the use of LCP[16] and the euro as a vehicle currency, but increases the probability for use of the USD as a vehicle currency relative to the use of NOK (PCP). The latter indicates that if the variation between the NOK and the exchange rate of the importer increases and the firm substitutes towards a vehicle currency, the USD will be the preferred choice. This result is in line with the findings in Wilander (2006), but the opposite is found in Donnenfeld and Haug (2003)[17]. Kamps (2006) also discusses the link between exchange rate variation and the use of LCP and argues that "high exchange rate risk only leads to LCP if the products are not highly differentiated". This may also be interpreted as a preference for hard currencies, which may be particularly prevalent in the seafood trade where the EU, Japan and the USA makes up about three quarters of all seafood imports (Smith et al. 2010; Tveterås et al. 2012).

The inflation difference will be significant at the 10% level, with a positive sign for invoicing in the importers' currency and at the 1% level for use of the USD as a vehicle currency. The finding that increased inflation difference increases the probability for LCP is opposite of the finding in Wilander (2006). But one must be aware that while Wilander (2006) includes inflation in the importing country as his independent variable, it is the inflation difference between Norway and the importing country that is the variable of interest in this study. One explanation for why increased inflation may cause more LCP is that macroeconomic volatility may shift the firms' invoicing strategies towards more stable international fundamentals. The

negative sign on the real exchange measure in the first column of table 2 indicates that a real depreciation of the NOK makes it more favorable for invoicing in PCP than LCP. If a vehicle currency is being used a real depreciation of the NOK decreases the probability of using the USD and increases the probability for using the euro as the vehicle currency. The last independent variable included in the first category in table 2 is the log of the total import of salmon in the destination country. Higher imports of salmon in the destination country increase the probability for invoicing in the importer's currency, and decrease the probability for use of one of the vehicle currencies at the expense of pricing in the domestic currency (PCP).

To control for firm size, the exporters' total yearly export volume to all destination markets, as well as to a specific destination market, is included. The findings reported in the second category in table 2 indicate that increased firm size increases the probability of using LCP or one of the vehicle currencies relative to invoicing in the NOK. This can be interpreted as an indication that larger firms have a greater capacity to engage in specific markets and fits well with the drivers of horizontal and vertical integration described by Asche, Roll, and Tveterås (2007) and Kvaløy and Tveterås (2008), as well as the creation of larger firms due to scale and scope economies at levels in the supply chain downstream from production (Asche et al. 2013). However, the choice of LCP relative to PCP and export volume can also be due to different factors on the import side of the market. For instance, a shift from many small importers to a handful of large retail chains could result in more use of the importer's currency, a development observed in many seafood markets (Murray and Fofana 2002; Guillotreau, Le Grel, and Simioni 2005; Guillotreau and Jiménez-Toribio 2011; Asche et al. 2011a,b). The exporter's yearly number of trades to a destination is included to control for trade frequency. The results indicate that an increase in the firm's overall number of trades increases the probability for invoicing in the importer's currency, which also fits into this picture. However, when destination-specific volume is controlled for, the results indicates that firms that ship large volumes to a given destination prefer PCP at the expense of LCP or the USD as the vehicle currency. The number of Norwegian exporters to a given destination is included as a measure of market concentration. An increase in the number of exporters to a destination increases the probability for PCP instead of LCP or the use of the euro as the vehicle currency. This finding is in line with the prediction in the theoretical model of Bacchetta and van Wincoop (2005). A lower probability for invoicing in the importer's currency when the number of exporters increases is also in line with arguments provided by

Goldberg and Tille (2009). They argue that higher market shares for an exporting country reduce the use of the importers currency. One would expect that an increased market concentration implies higher market shares. Goldberg and Tille (2009) also argue that a firm may have a motive to invoice in the same currency as its competitors to limit fluctuations in relative prices; such a motive is strongest when the traded goods are close substitutes.

The estimated, average marginal effects related to the dummy variables are reported in the third category in table 2. Export to an EU-country that has not adopted the euro decreases the probability for use of LCP relatively to PCP. And export to such countries increases the probability for the use of the euro as a vehicle currency. It is not surprising that there is no tendency to increase use of the USD as the vehicle currency for these destination markets. Bacchetta and van Wincoop (2005) argue that if a firm exports to a currency union, one would expect that the likelihood of choosing LCP would increase. Export of frozen salmon increases the probability for use of the USD as a vehicle currency and decreases the probability for the use of the euro as a vehicle currency.

Furthermore, region-specific dummies have a significant effect on a firm's choice of invoicing currency. For trades destined for Asia, firms prefer PCP relative to LCP, and when their choice is between PCP and the USD, they choose use of the USD. For trades to Nordic countries, LCP is preferred over PCP. This effect is not what we expected to find. A common border should, ceteris paribus, tend firms to use PCP rather than LCP. When it comes to EU countries LCP, is a more common choice than PCP, and firms that trade with EU countries also prefer to use PCP than one of the two vehicle currencies. In the case of Eastern-European countries, the firms choose PCP over LCP and prefer to use the USD over PCP as a vehicle currency.

To check the robustness of the coefficients table 2 is reestimated without the observations from 2008, a year with much volatility in exchange rates. This exercise causes only minor changes in the coefficients. In addition, a multinomial probit model on the full sample is estimated. This additional estimation is reported in table A.2. For most of the independent variables this exercise causes only minor changes in the estimated coefficients[18]. One difference is that there is no longer any significant effect from exchange rate variation and inflation difference for the choice between PCP and LCP in the multinomial probit estimation.

In the multinomial logit reported in table 2, these two variables are significant, but only at the 10% level.

Conclusion

As salmon production continues to increase the market is becoming increasingly global, and transaction modes are becoming more sophisticated. This article provides an empirical analysis of one topic that has been shown to be important in the general international trade literature. An overall description of patterns shows that a number of modes are being used and that a substantial number of transactions are taking place using all the three main invoicing strategies described in the general literature. Given the importance of the European market it is not surprising that euro is the most commonly used currency, this is evidence of substantial LCP in this market. It is somewhat surprising that the USD is so frequently used in the export of salmon, indicating a substantial use of it as a vehicle currency given the moderate exports to the US. The euro is also used as a vehicle currency. But while the euro is confined to trades in Europe, the use of the USD is global. Surprisingly, yen is used (almost) only in trades to Japan, so it is not as a vehicle currency. With the NOK used for 15% of all transactions (19% of volume), PCP is also prevalent. However, most of these trades are with firms located in neighboring countries.

A number of factors influence salmon exporters choice of invoicing currency, and these does not seem to follow any absolute laws. The results indicate that as salmon export have grown over the last decade and new markets have been established, invoicing strategies have changed. An important factor for changes in the use of different currencies is probably the establishment of the euro. As more countries adopt and incorporate the euro, invoicing in euro becomes more attractive for Norwegian exporters. Such invoicing strategy lowers the risk regarding price volatility. Specifically, in the case of fresh salmon, the importance of the NOK as an invoicing currency has largely been overtaken by the euro. In Asia, the role of the Japanese yen has decreased as use of the USD as a vehicle currency has become more prevalent. This is partially due to the declining importance of the Japanese market. For exports of frozen salmon to Asia, the use of the NOK became more important after 2007, at the expense of the USD. Variation in invoicing patterns in different markets and over time, shows that this is another dimension that can influence competitiveness through the supply chain, and is an important factor in the competitiveness of salmon aquaculture (Asche, Roll, and Tveterås 2007). Invoicing strategy is thus one element in the transaction strategy of

salmon exporters in addition to contracts, vertical integration, and futures contracts as investigated by Kvaløy and Tveterås (2008), Larsen and Asche (2011), Solibakke (2012), and Oglend (2013).

NOTES

[1] McKinnon (1979) also argues that highly differentiated products should be invoiced in the home currency.
[2] It is argued that this could be due to industry "herding" behavior in a common invoicing currency.
[3] Increased coordination in the supply chain has also led to more focus on different product attributes that also have value (Roheim, Gardiner, and Asche 2007; Roheim, Asche, and Insignaris 2011; Sogn-Grundvåg, Larsen, and Young 2013).
[4] These tools are also used to address production risk (Asche and Tveterås, 1999; Tveterås 2000; Tveterås and Battese 2006) and price risk (Guttormsen 1999; Oglend and Sikveland 2008) is prevalent. Industry structure can also be used to address risks (Oglend and Tveterås 2009; Hermansen and Heen 2012). More inelastic demand and suppy has also contributed to increased price risk (Asche 1996; Andersen, Roll, and Tveterås 2008; Aasheim et al. 2011).
[5] There has been little focus on the impact of exchange rate movements in the seafood literature in general. Tveterås and Asche (2008) show that exchange rates do not impede market efficiency for salmon and fishmeal, while Larsen and Kinnucan (2009) show efficient price transmission for salmon. Xie, Kinnucan, and Myrland (2009) show that exchange rate movements are split according to slopes of the demand and supply schedules. As demand for salmon becomes more inelastic, consumers take a larger share of the burden (Asche 1996).
[6] A non-exhaustive list of important studies is Baron (1976), Giovanni (1988), Donnenfeld and Zilcha (1991), Johnson and Pick (1997), Friberg (1998), Devereux, Engel, and Storgaard (2004), Bacchetta and van Wincoop (2005), Engel (2006), Floden and Wilander (2006), and Witte (2010).
[7] They do not investigate differences between the industries.
[8] Table A1 summarizes the choice of PCP, LCP, and vehicle currencies, for export to the 25 largest destination markets for fresh farmed salmon. Specifically, we see that exports of salmon from Norway to the largest destinations are predominantly invoiced in the currency of the trading partner (LCP), or USD. Only a little less than 15 % of the trades to the 25 largest destinations are invoiced in Norwegian kroner (PCP). Important destination markets in the EU, such as France, Spain, and Germany, almost exclusively denominate the import of salmon in euro (LCP). Another striking feature is the use of Japanese yen in the imports to Japan; 95% of all trades in the period are being denominated in LCP.
[9] As an example, of all fresh salmon shipments in Swedish kronor (SEK), only 5 are registered with a different destination country.
[10] In some cases, both firms and destinations may contain only one observation.
[11] Given the result of the investigation of settlement currency vs. invoicing currency in Friberg and Wilander (2008), it is assumed that the currency reported as the invoicing currency is also the currency used in the actual settlement of the transaction.
[12] More specifically IMF's "International Financial Statistics", and the World Bank's "World Development Indicators".
[13] CEPII's GeoDist databse (http://www.cepii.fr/CEPII/en/bdd_modele/presentation.asp?id=6).
[14] For the choice between LCP and PCP, the distance variable is significant at the 10% level.
[15] I have done experiments introducing a dummy variable for Denmark and Sweden. Firms from these countries are supposed to be familiar with the use of NOK, and, therefore are less reluctant to use it. In this case, the sign of the distance coefficient goes from negative to positive. However, using this dummy variable interferes with the use of the region dummies. I have, therefore, not reported these results.
[16] For the choice between LCP and PCP, the variable for exchange rate variation is significant at the 10% level.
[17] Donnenfeld and Haug (2003) are able to establish only a significant positive relationship between exchange rate volatility and local currency pricing for 2 out of 24 estimations. This is a fragile result (Kamps 2006).
[18] A well-known problem associated with the multinomial logit model is the independence of irrelevant alternatives assumption. The multinomial probit reported in the appendix relaxes the IIA-assumption (Cameron and Trivedi 2010).

References

Aasheim, L. J., R. E. Dahl, S. C. Kumbhakar, A. Oglend, and R. Tveterås. 2011. "Are Prices or Biology Driving the Short-Term Supply of Farmed Salmon?" *Marine Resource Economics* 26 (4)**;** 343-357.

Andersen, T. B., K. H. Roll and S. Tveterås. 2008. "The Price Responsiveness of Salmon Supply in the Short and Long Run." *Marine Resource Economics* 23 (4); 425-438.

Asche, F. 1996. "A System Approach to the Demand for Salmon in the European Union." *Applied Economics* 28 (1)**;**97-101.

Asche, F., L. Bennear, A. Oglend and M.D. Smith. 2012. "US shrimp market integration." *Marine Resource Economics* 27 (2);181–192.

Asche, F., R. E. Dahl, D. V. Gordon, T. Trollvik and P. Aandahl. 2011a. "Demand Growth for Salmon in the European Market." *Marine Resource Economics* 26 (4);255-265.

Asche, F., A. G. Guttormsen, and R. Nielsen. 2013. "Future Challenges for the Maturing Norwegian Salmon Aquaculture Industry: An analysis of Total Factor Productivity Change from 1996 to 2008." *Aquaculture* 396;43-50.

Asche, F., L. Nøstbakken, A. Oglend and S. Tveterås. 2011b. "Buying Power in UK Retail Chains: A Residual Supply Approach." *Aquaculture Economics and Management* 15 (1); 1-17.

Asche, F., and K. H. Roll. 2013." Determinants of inefficiency in Norwegian salmon aquaculture." *Aquaculture Economics & Management* 17 (3); 300-321.

Asche, F., K. H. Roll, H. N. Sandvold, A. Sørvig and D. Zhang. 2013. "Salmon aquaculture: Larger companies and increased production." *Aquaculture Economics & Management* 17 (3); 322-339.

Asche, F., K. H. Roll and R. Tveterås. 2007. "Productivity Growth in the Supply Chain – Another Source of Competitiveness for Aquaculture." *Marine Resource Economics* 22 (3);329-334.

Asche, F., and R. Tveterås. 1999. "Modeling Production Risk with a Two-Step Procedure." *Journal of Agricultural and Resource Economics* 24**;** 424-439.

Bacchetta, P., and E. van Wincoop. 2005. "A theory of the Currency Denomination of International trade." *Journal of International Economics* 67 (2);295-319.

Baron, D.P. 1976. "Fluctuating exchange rates and the pricing of exports. "*Economic Inquiry. Oxford University Press* 14 (3);425-438.

Cameron, A. C. and P.K. Trivedi. 2010. "Microeconometrics using stata." *College Station, TX: Stata Press*.

Devereux, M., C. Engel and P. Storgaard. 2004. "Endogenous exchange rate pass-through when nominal prices are set in advance. " *Journal of International Economics* 63 (2);263-291.

Donnenfeld S. and A. Haug. 2003. “Currency Invoicing in International Trade: an Empirical Investigation.” *Review of International Economics* 11 (2); 332-345

Donnenfeld S. and I. Zilcha. 1991. “Pricing of Exports and Exchange Rate Uncertainty.” *International Economic Review* 32 (4); 1009-1022.

Engel, C. 2006.” Equivalence results for optimal pass-through, optimal indexing to exchange rates and optimal choice of invoicing currency for export pricing.” *Journal of the European Economic Association* 4 (6);1249-1260.

Floden M., and F. Wilander. 2006. “State dependent pricing, invoicing currency, and exchange rate pass-through.” *Journal of International Economics* 70 (1);178-196.

Friberg R. 1998. “In which currency should exporters set their prices?” *Journal of International Economics* 45 (1);59-76.

Friberg R., and F. Wilander. 2008. “The currency denominations of exports – A questionnaire study.” *Journal of International Economics* 75 (1); 54-69.

Fukuda, S. I. and M. Ono. 2006. “On the determinants of exporters' currency pricing: History vs. expectations.” *Journal of the Japanese and International Economies* 20 (4);548-568.

Giovanni A. 1988. “Exchange Rates and Traded Goods Prices*.” Journal of International Economics* 24 (1);45-68.

Goldberg L. and C. Tille. 2008. “Vehicle currency use in international trade.” *Journal of International Economics* 76 (2);177-192.

Goldberg, L. S., and C. Tille. 2009. “Micro, macro, and strategic forces in international trade invoicing.” (No. w15470). *National Bureau of Economic Research*.

Grassman S. 1973. “A Fundamental Symmetry in International Payment Patterns.” *Journal of International Economics* 3 (2); 105-116.

Greene, W. H. 2008. “Econometric Analysis.” *Pearson Education Inc., Upper Saddle River, New Jersey, 07458*

Guillotreau, P., L. Le Grel and G. Simioni. 2005. *“*Price–Cost Margins and Structural Change: Sub-contracting within the Salmon Marketing Chain.” *Review of Development Economics* 9 (4);581-587.

Guillotreau, P. and R. Jiménez-Toribio. 2011. “The Price Effect of Expanding Fish Auction Markets.” *Journal of Economic Behavior & Organization* 79 (3);211-225.

Guttormsen, A.G. 1999. “Forecasting weekly salmon prices: risk management in salmon farming.” *Aquaculture Economics and Management* 3 (2);159–166.

Hermansen, Ø. and K. Heen. 2012. “Norwegian Salmonid Farming and Global Warming: Socioeconomic Impacts.” *Aquaculture Economics and Management* 16 (3);202:21.

Johnson M., and D. Pick. 1997. “Currency Quandary: The Choice of Invoicing Currency under Exchange-Rate Uncertainty.” *Review of International Economics* 5 (1);118-128.

Ito T., S. Koibuchi, K. Sato and J. Shimizu. 2010. “Why has the Yen failed to become a dominant invoicing currency in Asia? A firm-level analysis of Japanese exports invoicing behavior.” *(No. w16231). National Bureau of Economic Research.*

Kamps, A. 2006. “The euro as invoicing currency in international trade.” *Working Paper 665, Frankfurt, Germany: European Central Bank.*

Krugman, P. R. 1984. “The international role of the dollar: theory and prospect.” In: *Exchange rate theory and practice, pp 261-278, University of Chicago Press.*

Krugman, P. R. 1987. “Pricing to Market When the Exchange Rate Changes.” In: *Real-financial linkages among open economies, pp. 49-70,* Cambridge, MA: MIT Press.

Kvaløy, O., and R. Tveterås. 2008. “Cost structure and vertical integration between farming and processing”. *Journal of Agricultural Economics* 59 (2);296–311.

Larsen, T. A., and F. Asche. 2011. “Contracts in the salmon aquaculture industry: an analysis of Norwegian salmon exports.” *Marine Resource Economics* 26 (2);141-150.

Larsen, T. A., and H.W Kinnucan. 2009. “The Effect of Exchange Rate on International Market Margins.” *Aquaculture Economics and Managemen*t 13 (2);124-137.

Ligthart J. E., and S. E. V Werner. 2012. “Has the euro affected the choice of invoicing currency?” *Journal of International Money and Finance* 31 (6);1551-1573.

McKinnon R. I. 1979. Money in International Exchange: The Convertible Currency System, *Oxford University Press, Oxford.*

Murray, A. D., and A. Fofana. 2002. “The changing nature of UK fish retailing.” *Marine Resource Economics* 17 (4);335-340.

Nilsen, O. B. 2010. “Learning-by-doing or Technological Leapfrogging: Production Frontiers and Efficiency Measurement in Norwegian Salmon Aquaculture”. *Aquaculture Economics and Management* 14 (2)**;** 97-119.

Oglend, A. 2013. “Recent trends in salmon price volatility.” *Aquaculture Economics & Management* 17 (3);281-299.

Oglend, A., and M. Sikveland. 2008. “The Behaviour of Salmon Price Volatility.” *Marine Resource Economics* 23 (4);507-526.

Oglend, A., and R. Tveterås. 2009. “Spatial Diversification in Norwegian Aquaculture.” *Aquaculture Economics and Management* 13 (2)**;**94-111.

Olson, T.K., and K. Criddle K. 2008. “Industrial evolution: A case study of Chilean salmon aquaculture. ”*Aquaculture Economics & Management* 12 (2);89–106.

Page, S. A. B. 1981. “The choice of Invoicing Currency in Merchandise Trade.” *National Institute Economic Review* 98 (1);60-72.

Roheim, C. A., F. Asche, and J. Insignares. 2011. “The Elusive Price Premium for Ecolabeled Products: Evidence from Seafood in the UK Market.” *Journal of Agricultural Economics* 62 (3);655-668.

Roheim, C. A., L. Gardiner and F. Asche 2007. “Value of Brands and other Attributes: Hedonic Analyses of Retail Frozen Fish in the UK.” *Marine Resource Economics* 22 (3);239-254.

Roll, K. H. 2013. “Measuring Performance, Development and Growth when Restricting Flexibility”. *Journal of Productivity Analysis* 39 (1);15-25.

Smith, M.D., C.A Roheim, L.B Crowder, B.S. Halpern, M. Turnipseed, J.L. Anderson, F. Asche, L. Bourillón, A.G. Guttormsen, A. Kahn, L.A. Liguori, A. McNevin, M. O’Connor, D. Squires, P. Tyedemers, C. Brownstein, K. Carden, D.H. Klinger, R. Sagarin and K.A. Selkoe. 2010. “Sustainability and Global Seafood”. *Science* 327 (5967);784-786.

Sogn-Grundvåg, G., T.A. Larsen and J.A. Young. 2013. “The value of line-caught and other attributes: An exploration of price premiums for chilled fish in UK supermarkets.” *Marine Policy* 38;41-44.

Solibakke, P.J. 2012. “Scientific stochastic volatility models for the salmon forward market: Forecasting (un)conditional moments.” *Aquaculture Economics & Management* 16 (3);222–249.

Tveterås, R. 2000. “Flexible panel data models for risky production technologies with an application to salmon aquaculture”. *Econometric Reviews* 19;367-389.

Tveterås, R., and G.M. Battese. 2006. “Agglomeration externalities, productivity and technical inefficiency.” *Journal of Regional Science* 46 (4)*; 605–625.*

Tveterås, R., and A. Heshmati. 2002. “Patterns of productivity growth in the Norwegian salmon farming industry.” *International Review of Economics and Business* 49 (3);367–393.

Tveterås, S., and F. Asche. 2008. “International Fish Trade and Exchange Rates: An Application to the Trade with Salmon and Fishmeal.” *Applied Economics* 40 (13);1745-1755.

Tveterås, S., F. Asche, M.F. Bellemare, M.D. Smith, A.G. Guttormsen, A. Lem, K. Lien and S. Vannuccini. 2012. “Fish Is Food - The FAO’s Fish Price Index.” *PLoS One* 7(5), e36731. doi:10.1371/journal.pone.0036731.

Vassdal, T., and H. M. S. Holst. 2011.”Technical Progress and Regress in Norwegian Salmon Farming: A Malmquist Index Approach.” *Marine Resource Economics* 26 (4)**;**329-342.

Wilander, F. 2006. ”An empirical analysis of the currency denomination in international trade.” *mimeo, Stockholm School of Economics*

Witte, M. D. 2010. “Currency invoicing: The role of “Herding” and Exchange Rate Volatility.” *International Economic Journal* 24 (3);357-374.

Xie, J., H. W. Kinnucan and Ø. Myrland. 2009. “The Effects of Exchange Rates on Export Prices of Farmed Salmon.” *Marine Resource Economics* 23(4); 439-57.

Table 1: Types and shares of currencies and volume by product, 2003-2009

	Fresh Salmon				Frozen Salmon			
Currency	# Obs.	Share, Currency	Tons	Share Tons	# Obs.	Share, Currency	Tons	Share Tons
Euro	249,008	47.96	1,689,821	56.04	2,390	11.25	20,901	6.61
USD	108,815	20.96	362,086	12.01	12,959	60.98	219,581	69.48
NOK	78,959	15.21	608,145	20.17	4,871	22.92	59,441	18.81
Japanese yen	43,778	8.43	129,343	4.29	394	1.85	6,684	2.12
Swedish kr.	14,816	2.85	24,406	0.81	63	0.30	293	0.09
British pound	12,105	2.33	171,502	5.69	509	2.40	8,985	2.84
Swiss franc	7,147	1.38	6,004	0.20	12	0.06	10	0.00
Singapore dollar	2,372	0.47	3,958	0.13	0	0	0	0.00
Danish kr.	2,072	0.40	19,694	0.65	28	0.13	0	0.00
Australia dollar	46	0.01	45	0.00	20	0.09	92	0.03
Polish zloty	16	0	201	0.01	0	0	0	0.00
Canadian dollar	10	0	14	0.00	5	0.02	27	0.01
Latvian Lat	2	0	25	0.00	0	0	0	0.00
Estonian Kroon	1	0	20	0.00	0	0	0	0.00
Pakistani Rupi	1	0	2	0.00	0	0	0	0.00
Indian Rupi	1	0	17	0.00	0	0	0	0.00
Total	519,149	100	3,015,281	100	21,251	100	316,014	100

Figure 1: The 25 Most Important Destinations by Product (annual averages over the whole period)

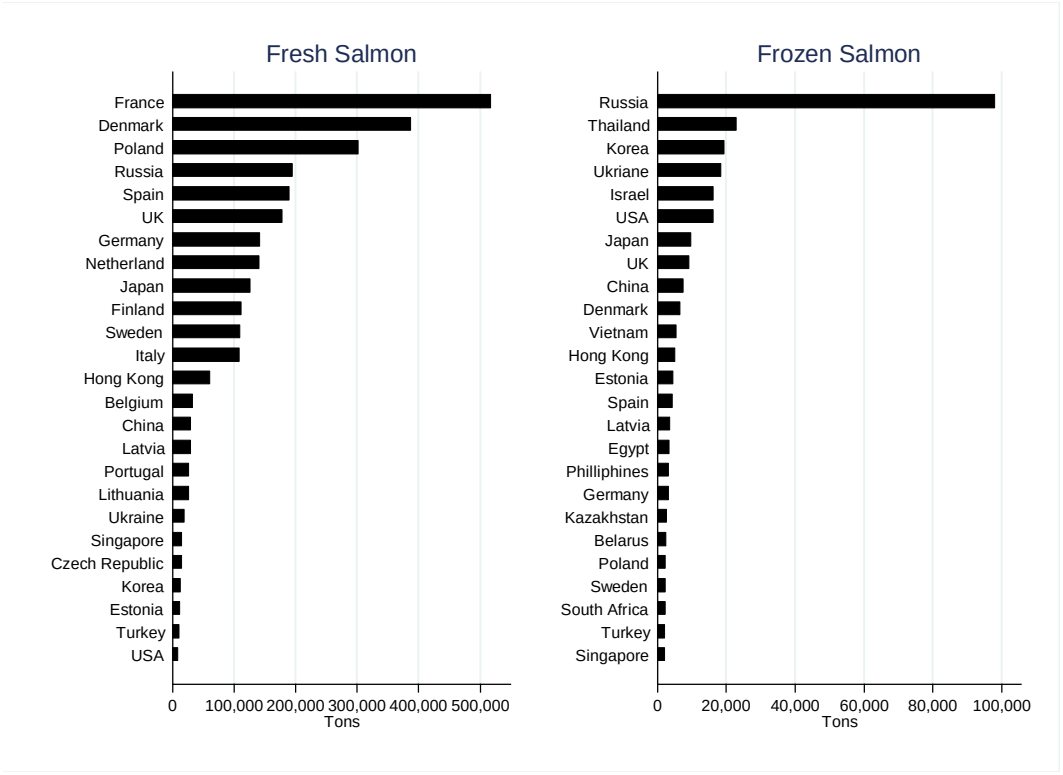

Figure 2. Regional Invoicing Differences, Fresh Salmon

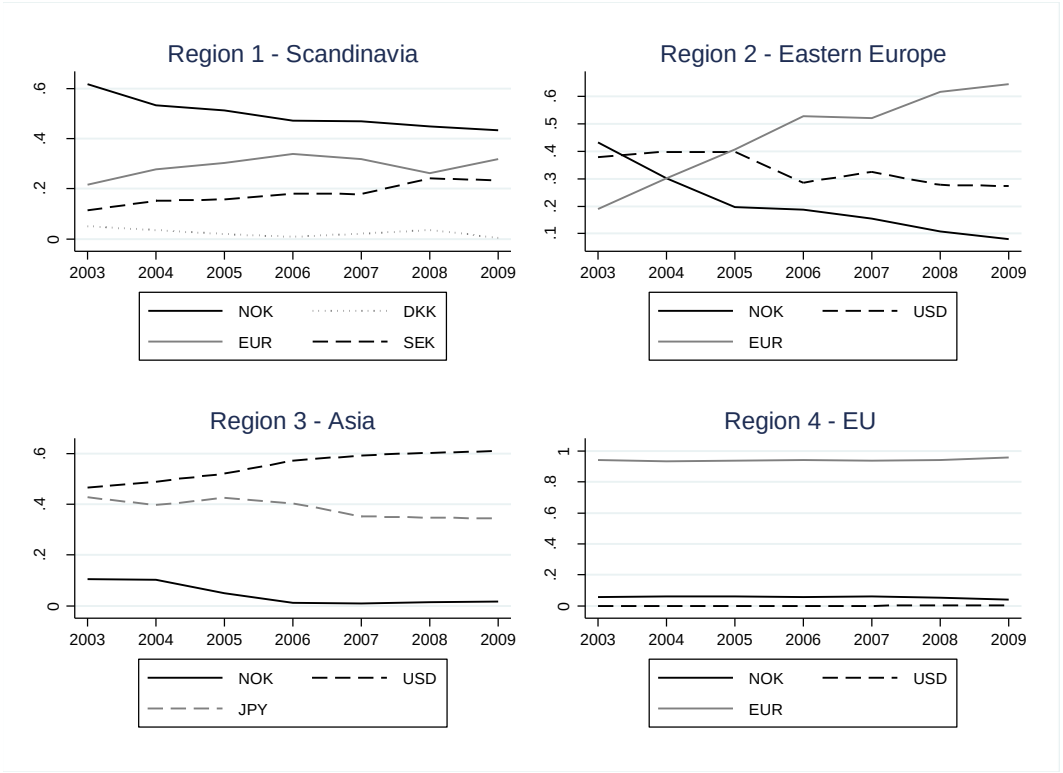

Table 2. Average Marginal Effects, Choice of Invoicing Currency

	PCP vs. LCP	PCP vs. Vehicle (EUR)	PCP vs. Vehicle (USD)
ln Geographical distance	-0.028	-0.110***	0.088***
	(0.015)	(0.013)	(0.013)
ln GDP	0.061***	-0.013**	-0.026***
	(0.006)	(0.005)	(0.005)
ln GDP per capita	0.114***	-0.032***	-0.014**
	(0.016)	(0.009)	(0.007)
Exchange rate variation	-0.009	-0.015***	0.026***
	(0.005)	(0.005)	(0.006)
Inflation difference	0.005	-0.000	0.006***
	(0.003)	(0.002)	(0.002)
ln-diff. Real Exchange Rate	-0.250***	0.298***	-0.192***
	(0.041)	(0.047)	(0.055)
ln Total import in destination country	0.016***	-0.011**	-0.015**
	(0.006)	(0.005)	(0.007)
ln Total export firm	0.012***	0.007**	0.013***
	(0.003)	(0.003)	(0.003)
ln Firm-to-destination volume	-0.034***	0.013***	-0.025***
	(0.005)	(0.004)	(0.006)
ln # trades to destination by firm	0.021***	-0.006	0.003
	(0.003)	(0.003)	(0.003)
ln # competitors in destination market	-0.038***	-0.023***	0.047***
	(0.012)	(0.009)	(0.012)
EU-member, no euro	-0.151***	0.093***	-0.011
	(0.022)	(0.013)	(0.017)
Trade of frozen salmon	-0.015	-0.090***	0.124***
	(0.013)	(0.010)	(0.012)
Asia	-0.200***	0.001	0.143***
	(0.059)	(0.034)	(0.022)
Nordic countries	0.082***	-0.098***	-0.058
	(0.028)	(0.023)	(0.038)
EU	0.133***	-0.177***	-0.115**
	(0.023)	(0.037)	(0.038)
East-Europe	-0.205**	-0.035	0.183***
	(0.032)	(0.025)	(0.028)
Obs.	7,425		

Note: Clustered standard errors in parentheses (exporting firm, destination country). Year dummies included. *** and ** denote significance at 1% and 5%, respectively.

Appendix

Table A 1: Share of Invoicing Currencies used in the 25 Largest Destination Markets. Fresh Salmon (Number of trades in parentheses)

Country	PCP (=NOK)	LCP	Vehicle (EUR)	Vehicle (USD)	Other Currencies, # Obs. in Parentheses	No.Obs.
France	*9.36 (6,191)*	*90.55% (59,888)*	*0*	*0% (2)*	*Swiss franc (1), British pound (44), Swedish kroner (2), Danish kroner (7)*	*66,135*
Denmark	*43.90 % (14,065)*	*6.34 % (2,032)*	*48.74 % (15,617)*	*0.11 % (35)*	*Swiss franc (256), British pound (27), Swedish kroner (2), Polish zloty (1)*	*32,035*
Poland	*23.23 % (5,600)*	*0.06 % (15)*	*76.63 % (18,471)*	*0.08 % (16)*	*British pound (1), Danish kroner (1)*	*24,104*
Russia	*11.73 % (1,568)*	*0*	*6.95 % (929)*	*81.30 % (10863)*	*British pound (1), Indian ruupi (1)*	*13,362*
Spain	*2.78 % (1,093)*	*97.20 % (38,168)*	*0*	*0.01 % (4)*	*Swedish kroner (1)*	*39,266*
United Kingdom	*7.25 % (961)*	*90.10% (11,941)*	*2.02 % (268)*	*0.60% (79)*	*Danish kroner (4)*	*13,253*
Germany	*1.91 % (399)*	*98.06% (20,528)*	*0*	*0*	*British pound (4), Danish kroner (4)*	*20,935*
Netherland	*7.27% (1,322)*	*90.88% (16,527)*	*0*	*0.86% (157)*	*Estonian kroon (1), British pound (3), Japanese yen (172), Swedish kroner (1)*	*18,186*
Japan	*3.67 % (1,672)*	*95.36% (43,447)*	*0% (1)*	*0.97 % (440)*	*Pakistani ruupi (1), Singapore dollar (1)*	*45,562*
Finland	*14.21% (1,271)*	*85.15% (7,618)*	*0*	*0.65% (58)*		*8,947*
Sweden	*62.36 % (25,794)*	*35.81% (14,810)*	*2.59% (658)*	*0.14% (59)*	*Danish kroner (20), British pound (7), Japanese yen (14)*	*41,362*
Italy	*7.36 % (2,069)*	*92.64% (26,051)*	*0*	*0% (1)*	*British pound (1)*	*28,122*
Hong Kong	*1.72% (544)*	*0*	*0.12% (39)*	*98.02% (30942)*	*Japanese yen (42)*	*31,567*
Belgium	*0.60% (89)*	*99.38% (14,672)*	*0*	*0.01% (1)*	*Japanese yen (1)*	*14,763*
China	*0.38% (63)*	*0*	*0.46% (77)*	*98.66% (16434)*	*Japanese yen (84)*	*16,658*
Latvia	*0.31% (14)*	*0.04% (2)*	*65.70% (2,948)*	*33.94% (15223)*		*4,487*
Portugal	*0.02% (2)*	*99.98% (9,212)*	*0*	*0*		*9,214*
Lithuania	*0.56% (18)*	*0*	*68.50% (2,185)*	*30.94% (987)*		*3,190*
Ukraine	*0.53% (11)*	*0*	*0.76% (16)*	*98.71% (2066)*		*2,093*
Singapore	*7.85% (675)*	*27.47% (2361)*	*0.01% (1)*	*64.63% (5554)*	*Danish kroner (1), Japanese yen (2)*	*8,594*
Czech Republic	*1.50% (44)*	*0*	*98.39% (2,879)*	*0.07% (2)*	*Swiss franc (1)*	*2,926*
Korea	*21.07% (1,581)*	*0*	*0.15% (11)*	*78.76% (5910)*	*Japanese yen (2)*	*7,504*
Estonia	*69.19% (1,534)*	*0*	*13.08% (290)*	*17.73% (393)*		*2,217*
Turkey	*95.42% (1,854)*	*0*	*4.27 (83)*	*0.31% (6)*		*1,943*
United States	*39.53% (1,532)*	*60.37% (2,340)*	*0.08% (3)*	*0*	*Japanese yen (1)*	*3,876*
Total (25 largest)	*14.76% (69,966)*	*56.88% (269,612)*	*9.38% (44,476)*	*18.82% (89,232)*	*0.15% (712)*	*473,998*

Table A.2. Average Marginal Effects, Choice of Invoicing Currency

	PCP vs. LCP	PCP vs. Vehicle (EUR)	PCP vs. Vehicle (USD)
ln Geographical distance	-0.028**	-0.105***	0.089***
	(0.014)	(0.012)	(0.013)
ln GDP	0.062***	-0.014***	-0.027***
	(0.006)	(0.005)	(0.005)
ln GDP per capita	0.112***	-0.028***	-0.019***
	(0.015)	(0.008)	(0.007)
Exchange rate variation	-0.007	-0.014***	0.025***
	(0.005)	(0.005)	(0.006)
Inflation difference	0.003	-0.000	0.006***
	(0.003)	(0.001)	(0.002)
ln-diff. Real Exchange Rate	-0.230***	0.270***	-0.200***
	(0.041)	(0.044)	(0.055)
ln Total import in destination country	0.013**	-0.010	-0.011
	(0.006)	(0.005)	(0.006)
ln Total export firm	0.012***	0.006**	0.014***
	(0.003)	(0.003)	(0.003)
ln Firm-to-destination volume	-0.033***	0.012***	-0.020***
	(0.005)	(0.004)	(0.005)
# Trades to destination by firm	0.021***	-0.005	-0.000
	(0.003)	(0.003)	(0.003)
# Competitors in destination market	-0.033***	-0.020**	0.040***
	(0.011)	(0.009)	(0.012)
EU-member, no euro	-0.141***	0.092***	-0.011
	(0.021)	(0.013)	(0.017)
Trade of frozen salmon	-0.018	-0.085***	0.123***
	(0.012)	(0.010)	(0.012)
Asia	-0.161***	0.014	0.132***
	(0.041)	(0.026)	(0.021)
Nordic countries	0.076***	-0.113***	-0.044***
	(0.026)	(0.022)	(0.032)
EU	0.140***	-0.174***	-0.081***
	(0.022)	(0.029)	(0.030)
East-Europe	-0.042	-0.053**	0.147***
	(0.059)	(0.023)	(0.026)
Obs.	7,425		

Note: Clustered standard errors in parentheses (exporting firm, destination country). Year dummies included. *** and ** denote significance at 1% and 5%, respectively.