Intermediation in Foreign Trade: When do Exporters Rely on Intermediaries?

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Abstract

The paper explores theoretically and empirically why trade intermediaries (TIs) are frequently used as agents for exports to some countries but not to others. We adapt a standard intra-industry trade model with variable export costs (e.g. transport) and fixed export costs (e.g. market access) to include a TI that is able to pool market access cost. From this framework explanatory factors for the TI share in a country's exports are derived and subsequently tested with a new data set based on French customs information. The paper finds that: (i) higher market access costs increase the TI share, (ii) smaller export markets feature a larger TI share, (iii) the TI share is independent from variable (distance-dependent) export costs.

Key Words: trade intermediation, indirect exports, transaction costs, monopolistic competition.
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1 Introduction

One of the striking discrepancies between theory and reality in international trade concerns trade intermediaries (TIs). Theory maintains the fiction that producers sell directly across borders to consumers. But as Hanson and Feenstra (2001: 1) have noted "... how goods are actually traded appears to be more complicated." While TIs simply do not exist in the pure theory of international trade, they have played major roles in ancient, medieval (see e.g. Greif, 1993) and modern world trade (see e.g. Jones, 1998). To this day, trade intermediaries dominate the foreign trade of a number of countries (e.g. Hong Kong) or account for the major part of trade in specific commodities or products. In the 1990s, Japan's nine general trading companies (sogo shoshas) exported over 40% and imported over 70% of the country's merchandise (Jones 1998: 1). Wholesale and trading firms accounted for 28% of Germany's exports in 1993. Intermediated exports are unevenly distributed by country of destination. Furthermore intermediaries of a home country trade intensively with some destination countries, but not with others. In France, for example, TIs accounted for 70% of exports to Ethiopia, but for only 3% of exports to Indonesia.

An intermediary can be defined as "... an economic agent who purchases from suppliers for resale or who helps sellers and buyers to meet and transact." (Spulber 1998: 3). Intermediaries are an important institution in economic systems. They match buyers and sellers indirectly. In the absence of intermediation there is a substantial possibility of a non-match, as Baye and Cosimano (1990) have shown. Consequently, a large number of markets are characterized by a high share of intermediated, rather than directly exchanged goods or services, e.g. financial markets or real estate markets. A key distinction must be drawn between intermediaries who work on a commission basis for buyers and sellers (brokers) and intermediaries who trade on their own account (traders).[1] Brokers never actually own the goods. Hence, their economic function is best described as contract intermediation. Traders, on the other hand, own the goods at some point in time and also bear the risk associated with trading. They are trade intermediaries in the true sense of the word and the focus of this paper is on trade intermediation rather than contract intermediation.[2]

[1] See Hackett (1992) for a comparative formal analysis of the two types of intermediaries.

[2] Trading firms are probably the best known group within the trade intermediaries. However, foreign trade can also be intermediated by wholesale firms, retail firms, or chains of supermarkets. Furthermore, the dividing line between brokers and traders which is clear-cut in theory often becomes blurred in reality. Intermediary firms frequently act as brokers one day and as traders the next (Chalmin 1987: 37).

In this paper, we examine why and when trade intermediaries are used as agents for exporting to different countries in both theoretical and empirical terms. As the theory of foreign trade intermediation is still in its infancy, the present paper serves a twofold purpose. First, it presents a model with trade intermediation placed in a framework of intra-industry trade (monopolistic competition). From the model we identify a variety of factors responsible for the choice of direct versus intermediated trade which correspond nicely to the themes raised in the TI literature in general. In particular we postulate three hypotheses which emerge as key factors explaining the TI share in a country's exports to certain markets. Second, we test these predictions econometricaly by using a newly developed data set based on enterprise-related French customs data.

Section 2 presents a standard intra-industry trade model adapted to include the possibility of trade intermediation. Predictions as to the intensity with which intermediaries are used in exports to different markets are derived from this framework and discussed. In section 3 these predictions are tested empirically. Section 4 concludes.

2 Determinants of Export Intermediation

International trade theory assumes that trade occurs directly between producers and final users. Firms in the home country produce a good, which they export directly to consumers abroad (Hanson and Feenstra, 2001: 1). Yet, intermediation theory (e.g. Spulber 1998) argues that intermediaries can gain advantages over direct exchange in a number of ways, especially by pooling and diversifying risk, reducing transaction costs, and lowering costs of matching and searching. The present paper incorporates and examines this possibility of trade intermediation.

Our model builds on the intra-industry trade models pioneered by Krugman (1980), but replaces the usual iceberg costs assumption with trade cost assumptions following Venables (1987) (transport costs are explicitly introduced as marginal cost increases) and Venables (1994) (effects of fixed and variable cost to trade). We start by reproducing the basic result of a wedge between exporters and non-exporters which was first presented by Venables (1994). Then we incorporate indirect trade by allowing non-exporting firms to pool part of the fixed costs of exporting via a trade intermediary. Or put differently, the trade intermediary has some technology of pooling the industry specific fixed costs of exporting. In the resulting equilibrium we find that there exist large direct exporters (not using the intermediary), smaller indirect exporters (going via the intermediary) and small non-exporting firms

(servicing the home market only). Further results are: first, the higher the fixed cost of exporting, the higher the share of indirect trade in total trade (the intermediary share); second, larger export markets feature a smaller share of intermediated trade; and third, an increase in the variable (transport) costs has no effect on the intermediary share. These theoretical results are supported by our empirical findings.

The paper closest to ours is perhaps Yu (2002), who also uses the Krugman (1980) and Venables (1994) approach, but studies the issue of entrepreneurship. In Yu (2002) the additional fixed costs of exporting to the foreign market can only be carried by certain individuals in the economy, i.e. each firm has to hire its own entrepreneurs. In contrast to the present paper the possibility to pool resources using intermediate trading companies is explicitly ruled out.

2.1 A Simple Model

The starting point for the present model is Krugman's (1980) application of the Chamberlinian monopolistic competition approach – building on Spence (1976) and Dixit and Stiglitz (1977) – to international trade.

It is assumed that the world consists of two symmetric countries. Firms of both countries produce in the same industry; market conditions are described by monopolistic competition, increasing returns to scale in production and differentiated goods. The industry has a large number of potential variants, which enter symmetrically into demand. Variants at home and abroad are different. Consumers want to consume both home and foreign variants.

The utility function of the model is based on Krugman (1981); it reinterprets the original feature of two industries as a distinction into home and foreign products and applies the specific functional form from Krugman (1980) to both product groups. As the two countries are completely identical, it is sufficient to concentrate on the specification of the home country. Foreign variables are indicated by *. All individuals are assumed to have the same utility function,

$$U = \ln \sum_{i=1}^{N_H} c_{H,i}^{\theta} + \ln \sum_{i^*=1}^{N_M} c_{M,i^*}^{\theta} \tag{1}$$

where $0 < \theta < 1$ and c_{M,i^*} is consumption of the i^*th variant of imports and $c_{H,i}$ is consumption of the ith variant of home products.[3] In this set-up, the imports (M) of one country equal the exports (Z^*) of the other country and vice versa, i.e. an implicit balanced trade assumption is employed. N_H

[3]See the discussion in Venables (1994) for an introduction to the consumer budgeting procedure that underlies such a utility function.

and N_M define large numbers of potential variants in both home and foreign products. The number of variants actually produced, n_H and n_M, are assumed to be large, although smaller than N_H and N_M. Maximisation of (1) yields that consumers spend equal shares of their income on imports and home products. The indirect demand function, for example, for an import variant j^* is given by $p_{M,j^*} = \frac{\theta c_{M,j^*}^{\theta-1}}{\sum c_{M,i^*}^{\theta} + \lambda}$.

On the supply side, it is assumed that there exists only one factor of production, labour. Firms can produce their specific variant for the home market, the foreign market or both. Following Venables (1987 and 1994) we introduce both fixed and variable trade costs. When supplying the foreign market, the firm faces an additional variable cost t (e.g. costs of hiring people to transport goods or to manage border formalities etc). The fixed market access costs are $\frac{f_h}{2} < \frac{f_z}{2}$ for the home and foreign market respectively, whereby after rewriting $\frac{f_z}{2} = \frac{f_h}{2} + g$ the subscripts h and z can be dropped. Thus, g measures, for example, the cost of dealing with foreign red tape, additional costs (risks) of enforcing legal contracts abroad, or extra costs associated with setting up a distribution network abroad. When supplying both markets, each firm produces with the same cost function given by:

$$l_i = f + g + \beta x_{H,i} + (\beta + t) x_{Z,i} \tag{2}$$

where l_i is labour used in the production and distribution of the ith variant of the home industry, $x_{H,i}$ is output of that variant for the home market and $x_{Z,i}$ are the exports of that variant. This specification includes β as a constant marginal cost of production and hence average costs decline at a diminishing rate. Each variant is produced by only one firm, and each firm produces only one variant. Labour requirements (2) are converted into nominal costs by multiplying them by the wage rate, w.

The market clearing condition demands that the output of each variant should be equal to the total world consumption of that variant; more precisely that the markets for imports and home goods have to clear. Assuming full equality between the number of workers, L, and the number of consumers, this gives $x_{H,i} = Lc_{H,i}$ and $x_{Z,i} = L^* c^*_{M,i}$. Due to symmetry $L = L^*$ and $c^*_{M,i} = c_{M,i^*}$. Also, labour market clearing demands $L = l_i n$ and $L^* = l^*_{i^*} n^*$. Since each variant behaves identically, subscripts i and i^* are omitted in the remainder of the paper.

Direct exports only (no intermediary)

Given constant fixed and marginal costs the problem is split into two independent maximisations for the home and foreign market. Denoting with $\check{}$ the

variables in a situation with no intermediary and bearing in mind that $p_M^* = p_M = p_Z = p_Z^*$, i.e. consumer import (and firm export) prices are identical in the two countries, we have the following profit functions for the home and foreign market respectively:

$$\check{\pi}_H = \check{p}_H \check{x}_H - \left(\frac{f}{2} + \beta \check{x}_H\right) w \tag{3}$$

$$\check{\pi}_Z = \check{p}_Z \check{x}_Z - \left(\frac{f}{2} + g + (\beta + t)\check{x}_H\right) w \tag{4}$$

The prices and quantities in each market and the resulting number of firms can now be derived using the standard procedures; free entry and exit of firms, the zero-profit condition and labour and goods market clearing are assumed (see e.g. Krugman 1980). The important characteristic of the trade costs is that labour is actually used in the process. Firms employ workers to carry out the transportation of goods, to deal with border formalities, to set up a foreign distribution network, etc. Hence firms will supply their output at a higher price to the foreign market. The workers engaged in the jobs associated with the trade costs still get wage w, and will demand both home and imported products – hence, total spending power, wL and w^*L^*, are unchanged. However, some labour input is missing for the production of goods. Solving the model gives

$$\begin{aligned}
\check{p}_H &= \frac{\beta w}{\theta}\,, & \check{p}_Z &= \frac{(\beta + t)w}{\theta} \\
\check{x}_H &= \frac{f\theta}{2(1-\theta)\beta}\,, & \check{x}_Z &= \frac{(f + 2g)\theta}{2(1-\theta)(\beta + t)} \\
\check{n}_H &= \frac{(1-\theta)L}{f}\,, & \check{n}_Z &= \frac{(1-\theta)L}{f + 2g}
\end{aligned} \tag{5}$$

The number of firms is derived via the condition stemming from the maximisation of utility function (1) that consumers will use equal shares of their income on imported goods and on home goods, i.e. $\check{p}_j \check{n}_j \check{x}_j = \frac{wL}{2}, j = H, Z$. Comparing the resulting equilibrium (5) with the free trade case ($g = t = 0$) shows that the supply of home goods to the home market is unchanged. Yet, for exports, prices have risen and quantities have fallen and not all variants will be exported. Only some (large) firms choose to supply both markets. Thus we have the result of small home-market-only firms and larger export-and-home-market firms. Also, notice that when g rises, fewer firms will export, but each exporting firm will be trading a larger quantity. In addition, when the variable trade costs t rise, prices will rise and quantities will fall,

but the number of exporting firms will remain unaffected. These findings are parallel to the results of Venables (1994).[4]

Indirect exports only (with trade intermediation)

Consider now the possibility of trade intermediation. Assume that the export costs g are industry specific, and that these industry specific fixed costs g – but not the firm specific market access costs f_z or the transport costs t – can be pooled among exporting firms. Thus, a trade intermediary operating on the foreign market encounters the industry specific market access costs g once but can spread them out among all firms that use his service.[5] The situation on the home market remains unaffected by the introduction of the intermediary. However, the profit function on the export market changes, denoting variables in a situation with a trade intermediary by $\hat{}$ we have:

$$\hat{\pi}_Z = \hat{p}_Z \hat{x}_Z - \left(\frac{f}{2} + \frac{g}{\hat{n}_Z} + (\beta + t)\hat{x}_Z \right) w \tag{6}$$

where $\hat{n}_z$ is still determined endogenously in the model. Again evoking free entry and exit and market clearing, the equilibrium can be derived, whereby the equilibrium on the home market turns out as before. For the export market however, by setting the profit maximising prices, $\hat{p}_Z = \frac{(\beta+t)w}{\theta}$, equal to the zero profit price, $\hat{p}_Z^0 = \frac{w}{\hat{x}_Z}\left(\frac{f}{2} + \frac{g}{\hat{n}_Z} + (\beta + t)\hat{x}_Z\right)$, the per firm export quantity is calculated to be $\hat{x}'_Z = \frac{(f+\frac{2g}{\hat{n}_Z})\theta}{2(1-\theta)(\beta+t)}$. The number of firms can now be determined by the export market clearing condition $\hat{p}_Z \hat{n}^*_M \hat{x}_Z = \frac{w^* L^*}{2}$, whereby $\hat{n}^*_M = \hat{n}_Z$, and subsequently the actual value for $\hat{x}_Z$ can be calculated by setting the $\hat{n}_Z$ just derived back into $\hat{x}'_Z$. The resulting equilibrium is depicted by:

$$\begin{aligned}
\hat{p}_H &= \frac{\beta w}{\theta}\,, & \hat{p}_Z &= \frac{(\beta + t)w}{\theta} \\
\hat{x}_H &= \frac{f\theta}{2(1-\theta)\beta}\,, & \hat{x}_Z &= \frac{f\theta}{2(1-\theta)(\beta+t)} \frac{(1-\theta)L}{(1-\theta)L - 2g} \\
\hat{n}_H &= \frac{(1-\theta)L}{f}\,, & \hat{n}_Z &= \frac{(1-\theta)L - 2g}{f}
\end{aligned} \tag{7}$$

Comparing the trade intermediation equilibrium in (7) with the equilibrium without a trade intermediary (5) it is found that since the maximisation

[4]Notice also that there is a clear welfare loss associated with both forms of trade costs.

[5]We are exploring other forms of modelling trade intermediaries, the competitive environment they are operating under, and the resulting welfare effects in a separate paper.

problem on the home market is unaffected by the intermediary, the supply of home goods to the home market, the home price and the number of home firms is unchanged, i.e. $\check{p}_H = \hat{p}_H$, $\check{x}_H = \hat{x}_H$ and $\check{n}_H = \hat{n}_H$. Also on the export markets prices are unaffected $\check{p}_Z = \hat{p}_Z$. However, export quantities per firm and the number of firms exporting have changed, namely $\check{x}_Z > \hat{x}_Z$ and $\check{n}_Z < \hat{n}_Z$. Thus with trade intermediation more home firms export a smaller quantity each. Still not all firms will export and one still has the result that there are larger firms supplying the home and foreign market and smaller firms only supplying the home market. [6]

Direct, indirect and total exports

Real world trade patters have the feature that some of the exports from or to a certain country go through trade intermediaries (indirect exports) while others are direct firm exports (direct exports). In order to develop an empirically testable specification, this feature must be incorporated into the model. Let us assume that a fraction γ of all exporting firms, n_e, go through an intermediary, while $(1-\gamma)n_e$ firms engage in direct exports.[7] Then we know from (5) and (7) that prices for both the direct and indirect exported goods will be identical, $\check{p}_Z = \hat{p}_Z = p_Z$. However, the per firm trade volume will differ for direct and indirect exporters. In particular:

$$\check{x}_Z = \frac{(f+2g)\theta}{2(1-\theta)(\beta+t)} \ , \quad \hat{x}_Z = \frac{(f+\frac{2g}{\gamma n_e})\theta}{2(1-\theta)(\beta+t)} \tag{8}$$

Since on the home market nothing changes, the following ranking is implied by (8): the equilibrium features large direct-exporting firms, medium size indirect-exporting firms, and small home-market-only firms. Using the export market clearing condition, $p_Z\left(\check{x}_Z(1-\gamma)n_e + \hat{x}_Z\gamma n_e\right) = \frac{w^*L^*}{2}$, and (8) we can rewrite for γ:

$$\gamma = \frac{2g + (2g+f)n_e - L(1-\theta)}{2gn_e} \tag{9}$$

In order to further examine how the intermediary share in the model is determined one has to keep another variable constant. In the following we

[6] Notice also that since $\hat{n}_Z > \check{n}_Z$ and the total export volume, $n_Z x_Z$, stays constant, the introduction of the trade intermediary must be a welfare improvement (love of variety).

[7] From a total utility point of view, once the intermediary exists, then all firms should use this service. However, if both direct and indirect exporters do exist at the same time, then, since profits for both groups are zero in equilibrium, any individual firm would be indifferent towards changing its status.

will assume that the number of non-exporting firms, n_n (i.e. products that are only sold on the the home market), is fixed at the level:

$$n_n = \lambda n_H = \frac{\lambda L(1-\theta)}{f}$$

whereby $\{\lambda \in R \mid]\frac{2g}{L(1-\theta)}; \frac{2g}{2g+f}[\}$.[8] This assumption may only be applicable in the short run or – leaving the context of intra-industry trade – could be motivated by some products being non-tradable. In any case, realising that $n_n + n_e = n_H$ this assumption ties down the problem. Plugging the resulting value of $n_e = \frac{(1-\lambda)L(1-\theta)}{f}$ into (9) gives:

$$\gamma' = \frac{2g(f + L(1-\theta)(1-\lambda)) - fL(1-\theta)\lambda}{2gL(1-\theta)(1-\lambda)}$$

With this value the actual per firm indirect export volume $\hat{x}_Z$ in (8) becomes:

$$\hat{x}'_Z = \frac{\left(f + \frac{4fg^2}{2g(f+L(1-\theta)(1-\lambda)) - fL(1-\theta)\lambda}\right)\theta}{2(1-\theta)(\beta+t)}$$

Finally, the total indirect export sales, $\hat{X}_Z = \hat{x}'_Z\gamma'(1-\lambda)n_H$, the total direct export sales, $\check{X}_Z = \check{x}_Z(1-\gamma')(1-\lambda)n_H$, and the indirect export sales share, $S = \frac{\hat{X}_Z}{\check{X}_Z + \hat{X}_Z}$, i.e. the intermediary share, can be derived. In particular,

$$S = \frac{L(1-\theta)\left((1-\lambda)2g - f\lambda\right) + 2gf + 4g^2}{L(1-\theta)2g} \; . \tag{10}$$

Notice that S measures the proportion of total exports that go through a trade intermediary, while γ measures the share of exporting firms that use a trade intermediary.

2.2 Predictions for the Intermediary Share in Exports

Given the share of intermediated trade in total exports, S, defined in (10), a number of testable predictions as to the nature of intermediary trade in a country's exports are derived. Hereby the comparative static results of the exercise can be interpreted as the expected signs for different export markets.

Differentiating (10) with respect to trade/export costs, it turns out that $\frac{\partial S}{\partial g} = \frac{4g^2 + L(1-\theta)f\lambda}{L(1-\theta)2g^2} > 0$ while $\frac{\partial S}{\partial t} = 0$. This intuitively compelling result means

[8] These minimum and maximum values of λ constrain the problem to the number of non-exporting firms implied by (7) and (5) respectively.

that an increase in the industry and country specific market access costs leads to more trade being conducted through intermediaries, while an increase (or decrease) in the variable costs of trade (e.g. transport costs) has no effect on the share of intermediary exports. Examples of industry and country specific market access costs could be costs of setting up a distribution network, costs caused by instabilities in the legal environment, or other costs of enforcing contracts abroad, etc. Parallel to this, one finds $\frac{\partial S}{\partial f} = \frac{(1-\theta)L\lambda+2g}{L(\theta-1)2g} < 0$ indicating that an increase in the firm specific market access costs (e.g. costs of undergoing product certification or marketing costs) lets more firms choose to supply the market in question with direct exports. Furthermore, within the model $\frac{\partial S}{\partial L} = \frac{2g+f}{L^2(\theta-1)} < 0$, which indicates that smaller markets, lower L, are more likely to be serviced via intermediaries. Hereby L must be interpreted as market potential and thus might be reasonably approximated by the total (or rather average) exports from a certain country of origin to a certain destination market. Finally, differentiating (10) with respect to the degree of monopolistic competition or rather the degree of product differentiation, θ, gives $\frac{\partial S}{\partial \theta} = \frac{2g+f}{L(\theta-1)^2} > 0$, implying that if products are less differentiated (larger θ), then more trade is conducted through intermediaries. This result is intuitively compelling and supported by empirical insights (e.g. Rauch, 1999; Trabold, 2002) into the particularly important role of intermediaries in the trade of less differentiated products.

In our view these theoretical findings lend support to three empirically testable hypotheses on trade intermediation. Although other authors may use slightly different terminology, they frequently identify the market access costs, size of export markets, and distance-dependent transaction costs as reasons why indirect exchange offers advantages over direct exchange. We consider each of these factors in turn.

Market access costs

One result from our theoretical model is that $\frac{\partial S}{\partial g} > 0$, i.e. an increase in the industry specific market access costs allows more trade to be conducted through intermediaries. This leads to our first hypothesis.

Hypothesis 1 *Other things being equal, the TI share in the exports of the home country to a certain country of destination is higher the more difficult or costly it is to operate in the country of destination.*

Market access costs for entering foreign markets come in many disguises: red tape, costs of setting up a distribution network, risks related to contract enforcement, etc. Especially inter-temporal or long-distance transactions carry the latter risk as they involve a promise to pay at one point in

time (or space) for goods received at some other point in time (or space) and are therefore not self-enforcing. Both parties therefore run a substantial risk, because local and international courts may be unwilling or unable to enforce a contract signed between two parties from different countries (Rodrik 2000). As North (1990: 33) has pointed out, non-enforcement "...is (and always has been) the critical obstacle to increasing specialization and the division of labor." It is exactly this type of cost to trading that is captured by the fixed costs to exporting, g, in our model. We will, therefore, use a variable representing the legal environment of the destination country in our econometric estimations. Notice also that empirical estimates of Anderson and Marcouiller (2002) suggest that imperfect contract enforcement dramatically reduces international trade *per se*.

Market size

A second result from our theoretical model is that smaller markets are more likely to be serviced through intermediaries ($\frac{\partial S}{\partial L} < 0$). Our second hypothesis to be tested reads as follows:

Hypothesis 2 *Other things being equal, the lower the average sales volume of firms of the home country to a certain export market, the higher the TI share in the exports to this country.*

This hypothesis is consistent with the literature on small business exporting (e.g. OECD (1997)). Fixed costs of exporting prevent small and medium sized enterprises either from exporting at all or from serving additional markets in which only a low level of sales can be expected.[9] As a firm needs an agent in each country, small volumes of transactions lead to agents being underutilized. Hence, the costs a firm would incur by putting one of its own agents into a country with small sales volumes can be prohibitive. One means of overcoming this restriction is a trade intermediary. Instead of each firm paying its own agent, the trade intermediary can exploit economies of scale from trading and act as an agent for many small and medium-sized manufacturers in export markets with a low level of sales. In the context of the following econometrics, hypothesis 2 implies that destination countries where French producers have a smaller market are more likely to be serviced through intermediaries.

[9]See Trabold (1998) for empirical evidence on this point.

Distance-dependent transaction costs

A third result from our theoretical model is that variable export costs have no influence on the TI share ($\frac{\partial S}{\partial t} = 0$). Our third hypothesis can therefore be stated as follows:

Hypothesis 3 *Other things being equal, the distance between the home country and the export market has no influence on the TI share in the total exports to this market.*

In contrast to the first two hypotheses the third does not find broadly support in the literature. Peng and Ilinitch (1998: 614) for instance argue that manufacturers are more likely to use export intermediaries to enter distant markets to save on export-related transaction costs. Therefore, the share of trade intermediaries in total exports should grow with distance. Peng and Ilinitch's hypothesis is not supported by our model. We found that a distance dependent increase in the fixed costs of exporting (e.g. marketing research and negotiating) would increase the TI share but that a distance dependent increase in variable transaction costs (e.g. transport costs) has no influence on the TI share. It seems reasonable to assume that the variable cost portion is the main component in the common distance variables, and that fixed costs to exporting react only weakly to distance.

3 Empirical Evidence

Solid empirical evidence on the activities of trade intermediaries is scarce. The main reason for this is lack of data which would allow for a time-series or cross-section analysis. Most empirical work on trade intermediaries is either based on questionnaires (e.g. Perry (1992)) or case studies (e.g. Becker (1998); Munro (1998); Hsing (1999)). Such studies provide valuable insights on certain aspects of export intermediation, but do not provide a basis for drawing general conclusions. Our empirical analysis uses a new data set which has not previously been available for studying such questions. The use of customs data allows the involvement of trade intermediaries in a countrys' foreign trade to be analyzed.[10]

[10]Trabold (2002) uses this data set for an empirical study on the involvement of trading firms in foreign trade. The present study is broader, covering additional types of trade intermediaries such as wholesale firms.

3.1 The Data

Our empirical evidence is based on firm-related data collected by French customs authorities. Until completion of the European Single Market (at the end of 1992), customs records of foreign trade transactions were the primary source for the official trade statistics of France. They were compiled from the export and import declaration forms, which firms had to provide when merchandise crossed the border. Among other items, these administrative documents contain the names and addresses of the firms owning the merchandise (i.e. exporters or importers), the names and addresses of the carriers, and a unique number identifying the firms. This latter information has been included in the data together with the two-digit code indicating the industry or service sector to which each exporter and importer belongs, according to the French classification scheme "Nomenclature des Activités et Produits". The inclusion of this piece of information allows us to separate firms into manufacturers and trade intermediaries.

The data cover approximately 94% of French exports for each of the years 1985, 1988 and 1990 and encompass approximately 20,000 exporters (in every year). Each firm in the data set had annual exports of at least FF 600,000 (approximately US$ 100,000). Between 80,000 (1985) and 95,000 (1990) micro-exporters, accounting for approximately 6% of French exports in each year, are not included in the data.

Table 1: Export Shares of Intermediary Firms (percent)

	1985	1988	1990
Trading firms	2.6	1.4	1.5
Retail firms	2.1	1.7	2.4
Wholesale firms	12.6	14.4	13.3
All trade intermediaries	17.3	17.5	17.2

Notes: In percent of total sample exports, trade weighted averages.
Source: Authors' calculations based on French Customs Data.

Table 1 shows that French trade intermediaries account for approximately 17% of total French exports in the three years under consideration. Wholesale firms handled between 73% (1985) and 82% (1988) of the intermediaries' exports. Trading firms and retail firms share almost equally the remaining part of the intermediaries' exports.

The sample used for testing the theoretical propositions contains 161 export markets (countries) for which data are available for at least one of the three years. Thus our data set includes 465 observations. Table 2 provides

the descriptive statistics. The variable to be explained by our model is the share of trade intermediaries in exports to market i in year t (STI_{ti}) which is calculated from the French customs data described above.

We argued above that costs of contract enforcement for non-simultaneous transactions constitute the major market access barrier. Hence, we use the civil rights index of the Freedom House as a proxy for **market access costs** in export market i.[11] The Freedom House Index uses a one-to-seven scale with one designating those markets granting and enforcing the civil rights of their citizens to the highest degree. The index includes, among other information, measures of a functioning system of rule of law. To avoid the usage of an ordinal variable we transformed the index into a dummy variable which is zero if the civil rights index is below five (free) and one if it is above or equal to five (unfree).

The **market size** variable is proxied by the log of average exports of all French manufacturing firms to export market i in year t (lnSales_{ti}). Thus in a sense it represents the underlying demand driven by taste or other factors, in other words the market potential for French products in a certain destination.

We include the distance between the economic center of the importing market and Paris as the economic center of France as a proxy for **distance-dependent transaction costs**. Distance is computed as great circle distance and is expressed in logs.

Finally, to capture items such as market structure, competition, history and common cultural roots, we include the number of trade intermediaries exporting to a country (TI number_{ti}) and a colonial dummy (Colony_i) as control variables. In particular, the latter (taking the value of 1 if the export market was a former colony of France and zero otherwise) can capture network effects which exist between TIs in France and their affiliates oversees. This appears to be justified as several studies have shown that the formation of networks also influences the structure of trade (see for example Rauch, 1999 and Rauch and Trindade, 2002). Many intermediaries active in contemporary trade between former colonies and their colonial powers have their roots in the colonial and early post-colonial era. The old links continue to generate cost advantages over potential competitors who have not yet expended the costs associated with building relationships. These network effects should lead to higher shares of indirect trade when exports go to former colonies of France.

Table 2 shows that the (unweighted) mean share of TIs in French exports

[11] We also considered the Fraser Institute Index for Economic Freedom. However, this index is available only for approximately 110 countries and not for the year 1988. In addition, the correlation between the two indices appears to be quite high.

Table 2: Descriptive Statistics

Variable	Definition	Mean	Std. Dev.
STI_{ti}	Share of trade intermediaries in French exports to market i in year t. (S in model)	20.619	15.378
Civil $rights_{ti}$	Dummy which is 0 if market i ensures civil rights in year t, otherwise 1. (g in model)	0.503	
$LnSales_{ti}$	log average exports of French manufacturers to market i in year t. (L in model)	15.124	0.739
$LnDistance_i$	log great circle distance (km) from Paris to economic center of market i. (t in model)	8.457	0.846
TI $number_{ti}$	Number of trade intermediaries in French exports to market i in year t. (control)	129.366	329.098
$Colony_i$	Dummy which is 1 if market i is a former colony of France, otherwise 0. (control)	0.194	0.396

Notes: $t = 1985$, 1988 and 1990; $i = 161$ importing markets; $N = 465$.
Source: Authors' calculations based on French Customs Data.

is 20.6%, which is higher than the trade-weighted average of all markets reported in Table 1. The share of TIs is highest in exports to Somalia (97% in 1988), Papua New Guinea (96% in 1990), and Capverde Islands (81% in 1988). Exports to Zimbabwe (0.35% in 1985), Costa Rica (0.44% in 1988), and Fiji Islands (0.48% in 1988) show the lowest share of TIs. The $lnSales_{ti}$ variable indicates that the average exports of manufacturing firms to the different export markets ranges from 12.94 (FF 0.417 million) to Somalia in 1988 to 18.225 (FF 82.23 million) to Liberia in 1990.

3.2 Estimation Results

To test our hypotheses on trade intermediation developed in Section 2.2 we estimated a pooled OLS Regression with the above mentioned variables over three years (1985, 1988, 1990). The result is presented in Table 3. All variables have the expected sign and are statistically significant on a one percent error level. We excluded from our regression several other variables because of their insignificance. These variables are: year dummies to account for structural differences among the three years and the absolute trade volume. Omitting these variables did not change the results with regard to the effects of the other variables. We also estimated regressions for each of the years and one regression based on a three-year average for the variables. Again, the results remained virtually unaffected.

Table 3: Estimation results from OLS, dependent variable STI

Variable	Estimated coefficient
Intercept	134.464**
	(6.64)
Civil rights$_{ti}$	8.699**
	(6.38)
LnSales$_{ti}$	-7.764**
	(-5.97)
LnDistance$_{i}$	-0.319
	(-0.41)
TInumber$_{ti}$	0.008**
	(4.38)
Colony$_{i}$	4.354**
	(2.86)
R^2	0.240 (not adj.)
No. obs.	465
F-Test	39.55 [F(5,459)]

Notes: t-values are in parentheses. Standard errors are corrected for heteroskedasticity. ** parameters are significant at the 1 per cent level.
Source: Authors' calculations based on French Customs Data.

Importing markets with a low level of enforcement of civil rights (variable Civil rights$_{ti}$), i.e. high market access costs, show a significantly higher share of trade intermediaries than markets with a high level of enforcement of civil rights. In other words, once the market-specific fixed costs to exporting increase, more firms will choose to go through intermediaries. This finding supports our first hypothesis that trade intermediaries serve as a mechanism to deal with market access costs, e.g. to generate self-enforcing transactions when contract and property rights are poorly enforced.

The influence of the log average exports of French manufacturers is negative and significant (variable lnSales$_{ti}$). This is in line with our second hypothesis that trade intermediaries can exploit market size effects from trading and pool industry-specific fixed costs more easily when average exports of manufacturers are low. Thus, smaller markets will be serviced disproportionately more through intermediaries, while larger markets will see more direct exporters.

The influence of the log of distance (LnDistance$_{i}$) is insignificant, just as predicted by the model. Namely, variable distance-dependent transaction costs (say transport costs) have no influence on the share of intermediaries in

exports of a country to a certain destination. Hence, our third hypothesis – that distance-dependent transaction costs are irrelevant for explaining trade intermediation – is supported.

Also both control variables show intuitively compelling signs. The variable TInumber_{ti} shows that when the number of intermediaries rises, the share of intermediated exports also rises. The estimated coefficient for the colonial dummy variable (Colony_i) is significant and positive. This finding points to the importance of history and network effects as determinants of trade intermediation.

Turning to the economic significance of the effects, we want to highlight only a few of the most interesting effects. We find that civil rights are an important factor in the explanation of trade intermediation. If a country develops from a low to a high level of civil rights, the fraction of exports handled by intermediaries falls by almost 9 percentage points. An increase in market size, or more precisely an increase in the average log sales of the manufacturing firms to a given country by one per cent (from 3.7 to 4.3 million FF taken the antilog) lowers the share of intermediated exports by almost 8 percentage points.

4 Conclusion

One of the striking discrepancies between the theory and the reality of international trade concerns trade intermediaries. The present paper can be a start towards addressing this theoretical and empirical gap. Here, we have explored some of the key factors explaining why trade intermediaries are employed intensively in exports to some countries, but not to others. First, we developed a simple two-country monopolistic competition model of international trade. By distinguishing explicitly between variable and fixed costs to trade, it was possible to introduce a trade intermediary that can pool fixed export costs into the model. From the theoretical framework, we developed a number of hypotheses to be tested. Second, using a unique set of enterprise-related customs data from France, we examined the TI share to different destination markets. This data was applied to test for key factors thought to be decisive for answering the question why the TI share in exports differs for different markets. Based on the model and the estimates, we hope to have shown, at least to a certain degree, that the following three factors matter for the extent of trade intermediation in different markets: First, the more difficult and costly market access to a certain export market is, the more buyers and sellers will rely on trade intermediaries as a means of tackling these costs. Second, the higher the relevant market size of the destination

country is, the lower the share of intermediated exports. Third, the distance to the export market, as long as it influences variable costs (transport costs), has no effect on the share of exports going through intermediaries.

The task for future research on this topic will be, first, to overcome the weak data situation surrounding trade intermediation in general, and second, to analyze the importance of the commodity structure of exports, e.g. the degree of product differentiation. In doing so, further predictions based on our model and on the insights of Rauch (1999) – who finds that geographic and cultural proximity are more important for differentiated products than for homogenous products – could be tested. Finally, future research must address how risks associated with exchange rate fluctuations and financial instability affect the degree of trade intermediation.

References

Anderson, J.E. and D. Marcouiller (2002), Insecurity and the pattern of trade: an empirical investigation, Review of Economics and Statistics, 84(2): 342-352.

Baye, M. R., and T. F. Cosimano (1990), Choosing sides in matching games: Nash equilibria and comparative statistics, Economica, 57: 283-293.

Becker, S. (1998), The German metal traders before 1914, In G. Jones (ed.), The multinational traders, London: Routledge, 66-85.

Chalmin, P. (1987), Traders and merchants. Panorama of international commodity trading, Chur: Harwood academic publishers.

Dixit, A.K. and J.E. Stiglitz (1977), Monopolistic Competition and Optimum Product Diversity, American Economic Review, 67(3): 297-308.

Greif, A. (1993), Contract enforceability and economic institutions in early trade: the Maghribi traders' coalition, American Economic Review, 83(3): 525-548.

Hackett, S. (1992), A comparative analysis of merchant and broker intermediation, Journal of Economic Behaviour and Organization, 18: 299-315.

Hanson, G., and R. Feenstra (2001), Intermediaries in entrepôt trade: Hong Kong re-exports of Chinese Goods, NBER Working Paper 8088, NBER, Cambridge, Mass.

Hsing, Y. (1999), Trading companies in Taiwan's fashion shoe networks, Journal of International Economics, 48(1): 101-120.

Jones, G. (1998), Multinational trading companies in history and theory, In G. Jones (ed.), The multinational traders, London: Routledge, 1-21.

Krugman, P. (1980), Scale Economies, Product Differentiation, and the Pat-

tern of Trade, American Economic Review, 70(5): 950-959.

Krugman, P. (1981), Intraindustry Specialisation and the Gains from Trade, Journal of Political Economy, 89(5): 959-973.

Munro, F. (1998), From regional trade to global shipping: Mackinnon Mackenzie & Co within the Mackinnon Enterprise Network, In G. Jones (ed.), The multinational traders, London: Routledge, 48-65.

North, D. C. (1990), Institutions, institutional change and economic performance, Cambridge (UK): Cambridge University Press.

OECD (1997), Globalization of small and medium enterprises, Vol 1., Paris.

Peng, M. W., and A. Y. Ilinitch (1998), Export intermediary firms: A note on export development research, Journal of International Business Studies, 29(3): 609-620.

Perry, A. C. (1992), The evolution of U.S. trade intermediaries. The changing international environment, Westport, CT: Quorum Books.

Rauch, J. E. (1999), Networks versus markets in international trade, Journal of International Economics, 48(1): 7-35.

Rauch, J.E. and V. Trindade (2002), Ethic Chinese networks in international trade, Review of Economics and Statistics, 84(1): 116-130.

Rodrik, D. (2000), How far will international economic integration go?, Journal of International Perspectives, 14(1): 177-186.

Spence, M. (1976), Product Selection, Fixed Costs and Monopolistic Competition, Review of Economic Studies, 43: 217-235.

Spulber, D. (1998), Market microstructure: intermediaries and the theory of the firm, Cambridge (UK): Cambridge University Press.

Trabold, H. (1998), Integration, trade costs and the export behaviour of firms: empirical evidence on the Venables model. Weltwirtschaftliches Archiv, 134(1): 133-139.

Trabold, H. (2002). Export Intermediation. An empirical test of Peng and Ilinitch. Journal of International Business Studies, 33(2): 327-344.

Venables, A.J. (1987), Trade and Trade Policy with Differentiated Products: A chamberlinian-Ricardian Model, The Economic Journal, 97(3): 700-717.

Venables, A.J. (1994), Integration and the export behavior of firms: trade costs, trade volumes and welfare, Weltwirtschaftliches Archiv, 130(2): 118-132.

Yu, Zhihao (2002), Entrepreneurship and Intra-Industry Trade, Weltwirtschaftliches Archiv, 138(2): 277-290.