Competition Intensity, Potential Competition and Transaction Cost Economics

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Abstract

As the process of globalisation of the world economy progresses, the degree of international competition among enterprises increases as well. Yet not all industries or branches are affected to the same extent by this development. One of the most important factors which determine the degree of globalisation of an industry is the level of transaction costs. Whereas low transaction costs tend to result in globalised markets, high transaction costs induce segmented markets. Because they may also indicate the degree of potential competition, transaction costs can be of great importance for competition authorities in the case of corporate mergers and acquisitions. Heterogeneous consumer preferences and product differentiation, as two additional determinants of the degree of globalisation, however, limit the meaningfulness of this approach. In some cases, the precision of the measurement of transaction is also inaccurate. This methodology hence cannot be generalised, but does make more sense in particular cases.

Zusammenfassung

Mit der fortschreitenden Globalisierung der Weltwirtschaft nimmt auch der Grad des internationalen Wettbewerbs zwischen den Unternehmen zu. Von dieser Entwicklung sind aber nicht alle Firmen im gleichen Ausmaß betroffen. Einer der wichtigsten Determinanten des Globalisierungsgrades einer Branche ist die Höhe der Transaktionskosten. Niedrige Transaktionskosten führen tendenziell zu globalisierten Märkten, hohe Transaktionskosten entsprechend zu segmentierten Märkten. Hinzu kommt, dass Transaktionskosten auch Auskunft über den Grad des potentiellen Wettbewerbs geben können. Damit erhalten Wettbewerbsbehörden einen wichtigen Indikator für die Beurteilung der räumlichen Marktabgrenzung, das heißt ob Unternehmen aus verschiedenen Ländern miteinander im Wettbewerb stehen. Hierbei sind jedoch mit heterogenen Präferenzen und Produktdifferenzierungen zwei weitere potentielle Einflussfaktoren auf den Grad der Globalisierung zu berücksichtigen. Zudem können Transaktionskosten nicht immer genau gemessen werden. Deshalb ist dieser Ansatz vielmehr in Einzelfällen sinnvoll anzuwenden und kann nicht verallgemeinert werden.

1 Introduction

By facilitating higher levels of mutual beneficial interaction between consumers and producers, factor owners and producers, and between producers, competition is one of the driving forces of higher living standards. Opportunities for these benefits can be derived from advantages due to economies of scale, the gains of division of labour and increased specialisation, and comparative advantage, both natural advantages and acquired and endogenous competitive advantages. Moreover, increased competition provides the incentives and rewards for producers to boost consumer satisfaction and welfare.

There is extensive literature in economics consisting of articles, theorems and propositions on the efficiency properties of competition as a mechanism for achieving welfare-increasing exchanges of goods, services, and factors. These include, for instance, equilibrium models in which prices have the key information role, such as the formal models of Arrow and Debreu (1954) or Arrow and Hahn (1980). Among other restrictive assumptions, these approaches usually take zero transaction costs for granted. Under this assumption, competition guarantees that mutual beneficial exchanges among consumers, producers, and factor owners occur.

In reality, transaction costs are obviously far from zero, and introduce a wedge between the value of goods and services exchanged between buyers and sellers. They are broadly defined as the costs of collecting and evaluating information about alternative exchange options, of bargaining the conditions of exchange transactions and of enforcing exchange contracts (Freebairn, 1995). Transaction costs can be of great importance for an economy. According to North (1990), up to 40 per cent of the entire United States GDP is made up by the transactions sector.

Lower transaction costs, other things being equal, will imply a rise in welfare-increasing exchanges. More specific, reduced transaction costs extend the prospects for increased specialisation and economies of scale, as well as the related gains from exchange. This, in turn, will effectively enhance the size of the market and the availability of close substitutes, thereby augmenting the extent and intensity of competition and putting up competitive pressures on single firms.

Also, relatively low transaction costs could signal a high potential competition for single firms on the domestic market, because international competitors' threatening potential can have a disciplinary effect on national firms – regardless of domestic market shares. Thus the level of transaction costs is potentially of high importance for competition authorities. For instance, in the case of a merger or acquisition, competition authorities have to assess whether the involved firm(s) can dominate a particular market.

In general, antitrust authorities measure the degree of globalisation of an industry with respect to outcome, that is, the extent of international trade and foreign direct investments (Kinne, 1997). In contrast to this traditional approach, a cause-related analysis according to the level of transaction costs could potentially lead to a different outcome. Exactly this latter approach is the main focus of this paper. It tries to answer the question of whether and to what extent transaction cost economics can provide new information and, maybe, lead to a valuable approach for competition policy.[1]

Against this background, this paper will deal with possibilities and limitations in the measurement of transaction costs. It is well known that transaction costs economics is anything but easy. Williamson (2001), for example, noted that both theory and application of transaction costs are still in an early stage. Nevertheless, this paper attempts to apply transaction cost analysis to competition policy. In relation to the insights gained, it will seek to answer the question of whether transaction costs as a cause-oriented indicator are superior to foreign trade and direct investments as output-oriented indicators in assessing potential competition and competition intensities of industries.

Accordingly, the paper is structured as follows: In order to provide an overview of the whole spectrum of transaction costs, the following chapter will elaborate on various types of transaction costs. Moreover, to quantify relevant transaction costs and to monitor the effects of technological developments in recent decades, trends of important types of transaction costs, as well as the underlying reasons for this development, will

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[1] The importance of transaction costs for numerous branches in economics has been emphasised in recent studies, see, for example, studies in international economics by Trefler (1995), Helpman (1999), Anderson and Marcouiller (1999), as well as Obstfeld and Rogoff (2000). However, their relevance for competition policy has not been addressed.

be described. For example, advances in information and communication technologies have had and still have significant influence on the level of transaction costs.

Chapter 3 looks at the factors which determine the degree of globalisation of an industry, that is, it discusses further determinants besides transaction costs, which may influence the degree of globalisation. Moreover, the chapter assesses whether these other influencing factors will be of importance for competition policy. In Chapter 4, concrete approaches to the calculation of transaction costs will be presented and evaluated critically. Finally, the paper finishes with a brief summary of the most important results and some concluding remarks in Chapter 5.

2 Background and Scope of Transaction Costs

While transaction cost analysis goes all the way back to Adam Smith, Coase (1937) first came up with an explanation for the fact that firms and markets are alternative governance structures that differ with respect to transaction costs. In his original proposition, the cost of organising an exchange in a market surpasses the cost of co-ordinating the exchange in a firm under certain conditions. Williamson (1975, 1991) added considerable precision to Coase's argument by identifying the types of exchanges better conducted within the boundaries of a firm than within a market. Moreover, he suggested that transaction costs include not only the direct expenses of the transaction, but also the possible opportunity costs of inferior decisions.

Regarding international trade, transaction costs can be divided broadly into four areas: (1) costs of entering and keeping markets, (2) transport and product adaptation costs, (3) monetary costs, and (4) statutory costs. Transaction costs of entering and keeping markets basically arise out of marketing purposes. They predominantly arise before the actual foreign trade has taken place, that is, when sales are in the offing during business negotiations and on settlement of a contract, and consists mainly of information and communications costs (Rindfleisch and Heide, 1997). Whereas the former are costs firms have to pay for an optimal supply of information to decision-makers (collection, transfer and interpretation of information costs), communications costs arise from the transfer of product information or of firms to potential buyers.

The second category, transport and product adaptation costs, include, for example, freight and packaging (terminal) costs as well as transport insurance (Amelung, 1991).

Also, due to potentially required customisations of products, including a change of feature, make or quality for international sales, product adaptation costs might evolve. Examples of such adaptation requirements are locomotives, in the case of different track widths, or electrical appliances, which may differ with respect to both voltage and power plugs in various countries.

Monetary transaction costs occur out of financial transactions, from, say, payments for received goods or services. They are usually due after the actual goods or services have been delivered. They consist of bank fees for international money transactions and of costs for the protection against possible exchange rate fluctuations. In the case of invoicing in foreign currency, these can cause significant financial risks. Protection against these risks is offered by, say, currency swaps, whereby interest rate differentials and maturity determine the cost for these instruments.

Finally, the last category relates to statutory transaction costs, which arise partly due to political decisions to restrict international trade. They consist, among others, of customs tariffs, non-tariff barriers, such as import quotas or product and health standards, special (export) taxes or costs related to restrictions of the movement of capital flows (Amelung, 1991). Moreover, legal transaction costs arise out of the protection of contracts, perhaps with respect to international law, out of issuing and out of possible adjustments of contracts (lawyers and, if necessary, courts). Depending on the export destination, there are also country risks involved, which are related to payment failure of private or public debtors. These country risks could be hedged by, say, letters of credit or export guarantees by banks and governments.

Apart from the composition of transaction costs, the level of important types of these costs has changed over the last decades. Since the establishment of the General Agreement on Tariffs and Trade (GATT) in 1947, for example, successful multilateral trade negotiations have led in particular to a substantial reduction in tariff barriers. As can be seen in Figure 1, average tariff rates went down from 40 per cent in 1947 to 3.8 per cent in 1999. Thus an important factor, which influences the total level of transaction costs in international trade, has gone down noticeably in the last 50 years.

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Figure 1:
Tariff Reduction within GATT/WTO, 1947-1993
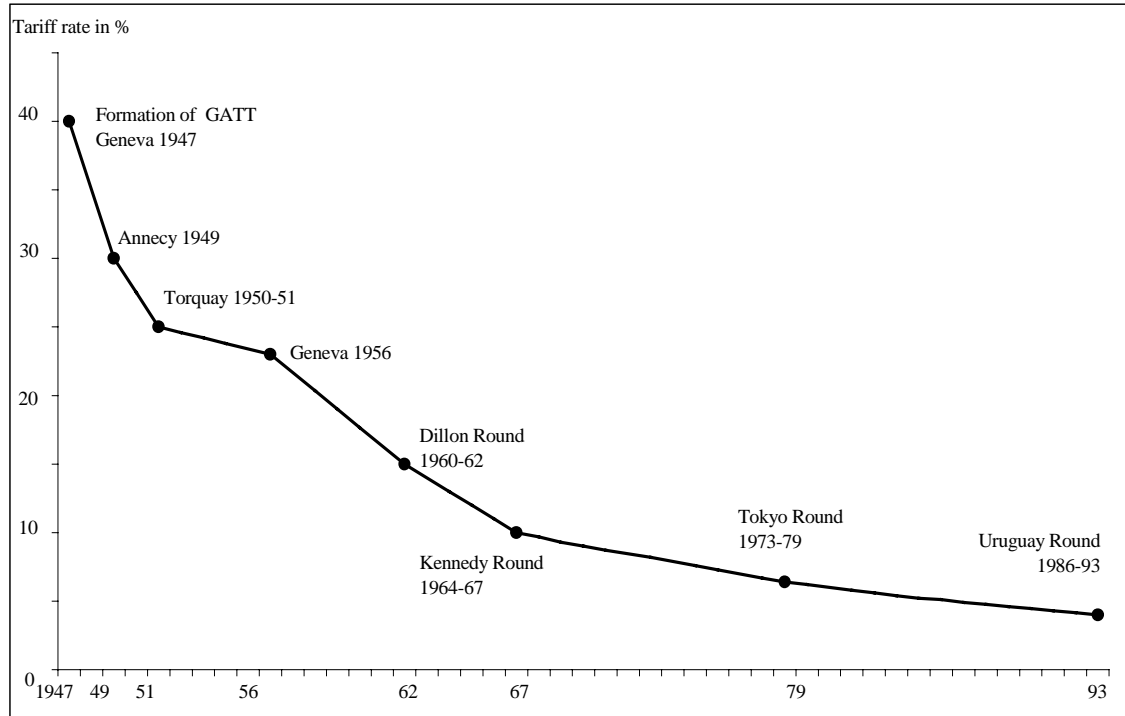
Source: Senti (2000). Note: Average tariff rates apply to the time of complete reduction. For example, the reduction in tariff rates due to the Uruguay Round, completed after 7 years of negotiations in 1993, from 6.4 per cent to 3.8 per cent was achieved in 1999.

A parallel development to the reduction of customs tariffs was a significant increase in non-tariff barriers. In the 1970s and 1980s, the USA and the European Union (that is, its predecessor, the European Community) tried to protect domestic enterprises more and more by, for instance, imposing import quotas or anti-dumping and anti-subsidy measures on allegedly unfair foreign competitors (Laird and Yeats, 1990).

Due to a lasting resistance from developing countries to the spread and level of non-tariff barriers, GATT member countries agreed in the Uruguay Round – although slowly and hesitantly – on a reduction of non-tariff barriers (Daly and Kuwahara, 1998). In large industrial countries, import coverage ratios and frequency ratios, as important measures for non-tariff barriers have been decreasing since 1988 (see Table 1). Import coverage ratios indicate the percentage of a country's own imports that are subject to non-tariff barriers. Frequency ratios, on the other hand, denote the percentage of

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national tariff lines that are affected by a particular non-tariff barrier or a group of non-tariff barriers.[1]

Table 1:
Import Coverage Ratios and Frequency Ratios for Non-Tariff Barriers, 1988-1996

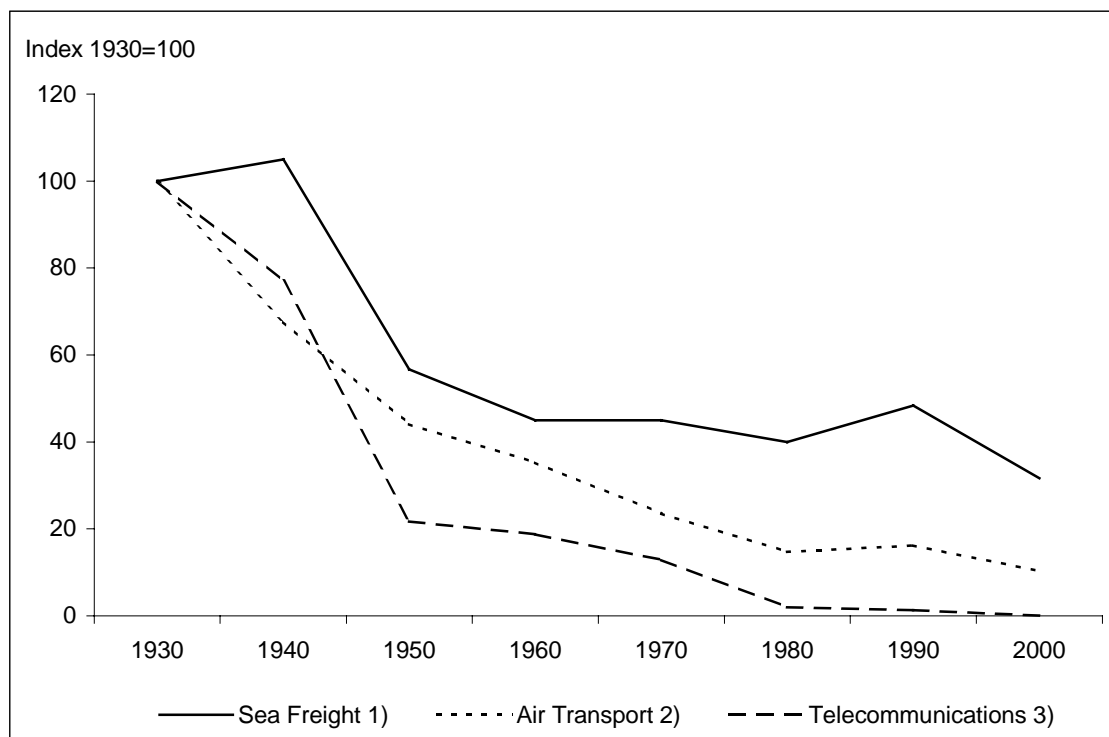|	Import coverage ratios			Frequency ratios		
Country/Region	1988	1993	1996	1988	1993	1996
USA	25.5	22.9	16.8	16.7	17.0	7.7
EU	26.6	23.7	19.1	13.2	11.1	6.7
Japan	13.1	12.2	10.7	8.6	8.1	7.4
Canada	11.1	11.0	10.4	5.7	4.5	4.0

Source: OECD (1997).

At the Uruguay Round of negotiations, progress was also made in the textile and agricultural industries in the regulations of the World Trade Organisation (WTO) and the admittance, for the first time, of the services sector. Moreover, acceptance and the efficiency of the world trading system received support in the form of the agreement on international rules for the settlement of disputes. As a consequence, importers and exporters in all WTO member states enjoy even greater market access due to lower transaction costs.

Transport and communications costs, as further relevant types of transaction costs, have decreased noticeably, like tariffs, since World War II. Rapid technological progress in both transportation and microelectronics resulted in an enormous reduction in these types of transaction costs. In particular technological developments such as the introduction of containers for maritime transport have led to lower transaction costs and facilitate an increasing integration of international markets. For example, as can be seen in Figure 2, average real port charges and ocean freight per short ton of import and export cargo (in 1990 $US) declined considerably in the period between 1930 and 2000. Real costs for air transport, measured as average air transport revenue per passenger mile, fell significantly too.

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1 In effect, import coverage ratios are basically import-weighted frequency ratios.

Figure 2:
Transport and Communications Costs, 1930-2000 (in 1990 $US)

Yet the most remarkable drop in transaction costs has taken place in the field of telecommunications. In the period between 1930 and 2000, real costs (in 1990 $US) for a three-minute phone call from New York to London went down by 99.99 per cent. Above all, the decline in telecommunications costs has been caused by technological progress since the 1970s, such as the successive introduction of microelectronics, the comprehensive liberalisation of markets from restrictive state regulations in the 1980s and 1990s, and, partly related to that, increased domestic and international competition. Currently, this process is still going on at a similar speed due to further innovations, such as the rapid worldwide spread and use of the Internet.

3 Determinants of the Degree of Globalisation

By disregarding competition policy for the time being, and by focusing on international trade instead, one question in particular turns out to be pivotal: Why do some countries

have higher trade intensities than others at similar levels of transaction costs? In answering this question, researchers have come up with, among other things, heterogeneous consumer preferences and product differentiation as two further potential determinants of trade flows (Trefler, 1995; Roy and Viaene, 1998). Heterogeneous preferences comprise the four following categories:

1) *Social consciousness*: Consumers partly turn down commodities which have been produced by using child labour or cause environmental damage. For example, imported carpets from countries where child labour is widespread, are rejected in the same way as is tuna from countries where fishermen use trawlers to catch tuna, at the same time capturing and killing dolphins (e.g. Mexico).

2) *Political motives*: Consumers stay away from commodities produced in countries with certain political regimes like, for instance, the apartheid regime in South Africa before 1991, which was isolated internationally.

3) *Nationalism*: Due to nationalistic motives, some consumers prefer domestically produced commodities to foreign-produced versions of the same good, as in the case of the "Swadeshi" movement in India, where consumers voluntarily boycotted foreign commodities in order to support domestic products. Other examples are French wine in France or American cars in the United States (instead of Japanese cars).

4) *Reputation*: Consumers choose certain commodities on the basis of a brand name or a product's reputation. Sometimes commercials or media coverage may generate myths which associate country of production with snob effects or good quality. This may hold true for Belgian chocolate or Italian leather goods, for example. Frequently, heterogeneous preferences arise simply due to differences as a result of the country of origin, in contrast to particular brand names. In all these cases, the perception of product differences is subjective, objective distinctions may not exist.

These four categories illustrate that heterogeneous preferences constitute a potentially relevant determinant of trade flows. Depending on products and countries, they may differ significantly, thereby making generalised conclusions more complicated. Partly due to difficulties in measuring preferences, empirical evidence in the literature – apart

from some illustrative examples – is also hard to find. Moreover, the few existing studies on heterogeneous preferences show contrasting results.

Cordell (1992), for instance, examined the influence of a product's reputation on purchase intentions of American consumers. His results indicate that Americans showed significant preferences for image, product reputation, and origin in the purchase of watches and shoes, the two products included in the study. Preferences were found to be more product specific for industrialised than developing countries. In contrast, Helpman (1999) came to the conclusion that significant heterogeneous preferences in foreign trade cannot be measured if differences in countries' income levels are eliminated.

The second potential determinant influencing trade flows is product differentiation. In contrast to heterogeneous preferences, product differentiation is based on the consumers' objective perception of differences. In other words: The products, but not consumers' preferences, are heterogeneous. One example of a (marginal) product differentiation is a fold-down rear seat in cars. Families who travel with a pram would prefer a car with this product feature, even if another car were relatively similar. Apart from product features, commodities are also differentiated by quality.[1]

A further reason for product differentiation is so-called switching costs. These occur when consumers change the products consumed. For example, a user of Microsoft Word would only reluctantly switch to another word processing system, because this may imply a loss of time due to a required training period, and perhaps additional costs for computer courses, even if all other product features are comparable. Like heterogeneous preferences, product differentiation could thus have an effect on trade flows. Their importance will vary from country to country and from industry to industry and may not be measured accurately.

4 Measurement of Transaction Costs

There are several approaches to measure transaction costs in international trade. One approach simply consists of the calculation of individual components, that is, of all individual positions of transaction costs that are relevant for a particular product, and

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[1] Much of the research on product differentiation in international economics was originally motivated by the observation that large volumes of trade flow between countries with similar factor proportions and that considerable trade overlaps exist within industries (Krugman, 1995).

adding them up. For those types of transaction costs, of which no or no reliable data exists, corresponding substitutes are used. For example, as a proxy for transportation costs, the geographical distance between the most important trading ports or capitals of two countries is used if trading routes of distribution and means of transportation cannot be clearly determined.[1]

Alternatively, foreign trade statistics could provide information for the measurement of components like transportation costs and transport insurance. In foreign trade statistics, exports are generally reported as *fob* (free on board) and imports as *cif* (cost, insurance, freight). The difference between reported ex- and imports thus potentially provides information about important components of transaction costs in international trade like general trading costs, transport insurance and freight.

These few examples already point to fundamental problems in measuring transaction costs in international trade. Criticism of this procedure can be summarised in five points: First, substitutes generally contain statistical errors. The greater the number of substitutes used, the higher the accumulated statistical error, and the lower the meaningfulness of the level of resulting transaction costs. Second, reliable data does not exist for certain types of transaction costs – and sometimes not even useful substitutes. This is especially the case for market entry costs, which are generally difficult to calculate. Even if they can be measured, transaction costs in this area occasionally cannot be assigned to specific products in the case that a firm comprises several branches and introduces a number of products at the same time.

For instance, obtaining general information on traditions and customs and on the economic and political situation in a foreign country is necessary in several branches and for several products. Since it may not be possible to split these expenditures according to individual products accurately, any attempt would be arbitrary. Even if shares of the total turnover of one branch of an industry were used as a basis, the question of the process's stability over time would remain. Depending on market conditions, transaction costs like, for instance, non-tariff barriers sometimes vary drastically.

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1 See, for example, the approach by Amelung (1991).

Third, the computation of individual components of transaction costs based on foreign trade statistics is relatively unreliable. Due to various methods of calculation and statistical reliability, countries report varying import and export figures for the same product or product category (Langer, 1986). For instance, the German Federal Statistical Office reported German exports of sawing machines (SITC 73177) to Mexico amounting to US$ 1.02 million in 1998. Mexico, on the other hand, listed imports from Germany of US$ 0.72 million for the same category and year (United Nations, 2000). In the case that the export value surmounts the import value, the calculation of transport costs becomes futile.

Fourth, specific transaction costs like expenses for product adaptations may cause further problems. Often, product adaptation costs only arise out of exports to certain countries, e.g. exports of German cars (steering-wheel on the left) to the US (no product adaptation costs) or to the United Kingdom (product adaptation costs, steering-wheel on the right). To calculate the appropriate level of transaction costs, it would be necessary to use individual countries' bilateral shares of world trade with respect to particular products.

Finally, transaction costs may vary due to differing distribution systems. An illustrative example of this methodological problem is the sale of, say, a packet of butter at food discounters as opposed to delicatessen shops. Generally, food discounters are relatively efficient and have, depending on their size, bargaining power when negotiating prices with their suppliers. Hence, they can offer simple products like butter at a considerably cheaper price than a single delicatessen shop. The latter faces higher transaction costs for the same product. The level of transaction costs for butter can then only be quantified if diverging delivery systems and their market shares are taken into account.

5   Concluding Remarks

This paper has indicated that the level of transaction costs could be of interest for competition authorities for the assessment of whether a firm can dominate a particular market. Competition authorities base the spatial distinction of markets on the question of whether firms from different regions or countries are competing against each other. The geographically relevant market is influenced above all by the interplay of supply and demand, that is, by both the effective and the potential competition on each considered market. The latter, in turn, is influenced by the level of transaction costs, but

varies according to products and countries. In other words: High transaction costs potentially lead to more segmented markets, low transaction costs to more globalised markets – other things being equal.

Transaction costs as a cause-related analysis could potentially lead to a different outcome in comparison to the traditional approach, which is based on trade flows and foreign direct investment as indicators for the globalisation of an industry. This paper indicates that, on a theoretical level, applying transaction cost economics in order to gain a reliable indicator for potential competition, and consequently to assess the competition intensity of an industry, seems worthwhile.

However, heterogeneous consumer preferences and product differentiation are two additional influencing factors on the degree of globalisation and on competition intensity which have to be considered. Due to these additional determinants, each individual case has to be considered carefully and, thus, this approach does not provide any new universally valid method regarding competition policy. However, in cases where heterogeneous preferences and product differentiation are unlikely and few statistical problems in the measurement of transaction costs occur, valuable information on potential competition and competition intensity of an industry can be gained. In this way, competition authorities would obtain an additional indicator for the differentiation of the relevant spatial market with respect to mergers or acquisitions of firms.

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