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Abstract: An important facet of globalization is the international fragmentation of production. This phenomenon has been studied for goods and many services but has so far been neglected in tourism studies. In this paper, we attempt to rectify that by providing theoretical and empirical evidence of various aspects of the international division of tourism production (IDTP). In the theoretical section, we use the traditional Ricardian paradigm to show that the IDTP is a conceivable possibility for tourism and may even be highly likely in a context of rapidly decreasing costs of transport, trade and communications. The three theoretical cases shown here can be interpreted, in a historical perspective, as describing the gradual opening of tourism to international trade in Europe. The empirical section is based on the revealed comparative advantage index of Balassa to study the pattern of specialization of 36 countries (18 OECD countries and 18 developing countries) in two segments of the tourism product system. Our results confirm that tourism production has been globally fragmented over the period 1980-2006, but that the pattern of specialization of the two groups of countries evolved differently over time.

Keywords: Tourism specialization, international fragmentation of production, comparative advantage, tourism production process, transaction costs

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1. Introduction

It is widely acknowledged that the ongoing wave of globalization has had an impact on tourism for a long time already, on both the supply and demand sides. According to Smeral (1998, 2001) for example, tourism supply factors are mainly affected through the emergence of worldwide acting suppliers with computerized information and reservation systems, decreasing transportation and communication costs, and the development of new destinations. On the demand side, due to tourism's character as a luxury good (with high income elasticity), increasing income and wealth induced by globalization have expanded the number of more experienced and knowledgeable international tourists. All these factors have resulted in a massive expansion and diversification of tourism source and host markets: a growing pool of international tourists from an increasing number of originating countries are able to visit a larger number of destinations, which in turn are increasingly competing with each other. The impressive growth rate of international tourism during the second half of the last century and the dramatic dispersion of international market shares across a broader variety of receiving countries¹ can be interpreted as the results of this phenomenon.

Except for these quantitative aspects, however, tourism is generally not particularly concerned with the process of globalization and rather spared by its mechanisms. Hjalager (2007) for example pointed out how little the literature

has studied the manifestations of globalization in tourism, on the assumption shared by many practitioners that this industry is immune from its effects, being thus an “exception” (p.439)². The UNCTAD (2007) asserts that tourism is “one of the least globalized” industries (p.13) and a “relatively unglobalized activity” (p.19). This conclusion has been drawn on the consideration of foreign direct investment (FDI) only. And indeed FDI in tourism, in the traditional form of equity ownership, - appears to be very low compared to other activities, including services (e.g. telecommunications or finance): according to UNCTAD (2007), tourism-related FDI accounts for no more than one or two per cent of total outward FDI stocks from the largest source countries, and even less of total inward FDI stocks for the largest host countries.

However, these results are likely to underestimate the true extent of FDI as, in a broader sense, new forms of foreign investment (leasing agreement, management contract, franchise agreement) also have to be taken into consideration. And in tourism, these non-equity forms seem even more common than the traditional equity forms (major or minor equity and joint venture) (Endo, 2006). Second, and more importantly, the process of globalization cannot be reduced to foreign investment. For some decades already, one of the most prominent forms of globalization has been the splitting up of firms' production process into various components which are then produced in different countries. Thanks to revolutionary advances in transportation and communications

technology, goods and services are produced in multiple stages across multiple countries with each country specializing in particular steps of the production sequence. Goods in process are thus exported and imported, giving rise to trade in intermediate goods (parts and components, semi-finished goods). This phenomenon has been extensively studied in the literature (Arndt, 1997; Jones and Kierzkowski, 2001; Hummels, Ishii and Yi, 2001, among many others) and equally labelled as “slicing up the value chain”, “vertical specialization”, “offshore outsourcing”, “disintegration of production”, “international fragmentation” or “international division of production processes”. According to Jones et al. (2005), it has even become a symbol of globalization, and Baldwin (2006) argues that globalization can be thought of as the ‘unbundling of things’. Following an early paper by Krugman (1996), Blinder (2006) talks of a third Industrial Revolution while Grossman and Rossi-Hansberg (2008) assert that this stage of globalization is so different that it requires a “new paradigm” in international trade theory (sometimes called the “Princeton paradigm”; see Baldwin, 2006).

While this phenomenon has first been observed for manufactured goods, empirical evidence is strongly suggestive of increasing offshore outsourcing in services (Amiti and Wei, 2005; WTO, 2005), for both low-skilled labour tasks (call centre support, data entry and handling, coding... usually designated as “Business Processing Outsourcing” services) and high-skilled labour tasks

(consulting, software design, architecture, R&D... grouped together into the category of “Knowledge Process Outsourcing” services). Tourism has not been included so far, either by international organizations or by trade economists, in the list of services potentially concerned by international fragmentation. “Tourism cannot be outsourced”, as stated in an emblematic way by the two practitioners reported in Hjalager (2007, p.439). This is certainly due to the prevailing view of tourism as a single-stage activity necessarily performed by the host country, whose geographic and spatial dimension prevents from any possibility of delocalization (e.g. vacation in Egypt cannot be delocalized in another country). So, has tourism truly stood apart from the “great unbundling”, according to Baldwin’s now famous expression (2006)?

If tourism is more relevantly seen as a composite product involving multiple sequential stages, as it has been recognized at least since Burkart and Medlik (1974), there is no reason to think that the same dramatic reductions of costs in transaction, transport and telecommunications as those which have occurred in manufacturing and other services could not cause the same result of an internationally fragmentation of production. Hjalager (2007) suggested that the fragmentation of the value chain could be the third of four stages in a model of globalization in tourism. Usually defined as an “amalgam” (Dunning and McQueen, 1981; Gilbert, 1990), tourism is namely made up of technologically separate and independent components which are sequentially linked into a value

added chain whose final product is the tourism product itself. The tourism satellite account framework (Eurostat/OECD/WTO/UN, 2001) for example distinguishes twelve categories of services³ as making up the tourism product. These services have to be assembled in order to create the final product and the assembler can be a tour operator, a travel agency, the accommodation sector or the individual tourists themselves. It is therefore quite appropriate to describe tourism as a composite product (see also Sinclair and Stabler, 1997) or a "product-system" which can be broken down into many segments of production. Since all these segments are quite different from each other - requiring different technologies and/or factors of production - it is highly unlikely, *in a situation where costs of transaction and communication are sufficiently low*, that a country can be competitive for all segments and can specialize in the whole "product-system". It seems more reasonable to assume that tourism's value added chain will be internationally split up by private firms across different countries according to varying factors (technological levels; factor endowments; level of transport, transaction and communication costs...). A country may have a comparative advantage in one segment of the tourism production process and a disadvantage in another segment. If segments do indeed take place in production units located in different countries, we would then be in the presence of an international division of tourism production (IDTP).

The aim of this paper is twofold. Firstly, it demonstrates, using a simple analytical framework, that from a theoretical point of view, the international division of production is a conceivable possibility for tourism and may even be highly likely in a context of rapidly decreasing costs of transport, trade and communications. The theoretical possibility thus exists that tourism may be party to the “great unbundling” as well. Secondly, using a methodology based on Lemoine and Ünal-Kesenci (2002), this paper investigates the empirical reality of such possibility for two selected groups of countries by considering their comparative advantages in different segments of the tourism product-system. The international splitting up of the tourism's value added chain is thus studied by assessing trade specialization in different segments of this chain.

The remaining part of this paper is organized as follows. Section two provides the theoretical framework around which the issue of international fragmentation of tourism production is discussed. Section three describes the revealed comparative advantage (RCA) index used to measure countries' specialization for some segments of the tourism product system, and presents the main findings of our empirical investigation of the IDTP phenomenon. The paper ends with concluding remarks.

2. The theoretical framework.

The phenomenon of the international division of production processes has been studied now for nearly three decades and a large variety of models have been developed, mainly based on two different approaches: the presence of trade in intermediate inputs (for example, in Jones and Kierzkowski, 1990, 2001; Arndt, 1997; Deardorff, 2001, 2005; Markusen, 2005) or a final good production structure involving a continuum of strict complementary intermediate stages (as introduced first by Dixit and Grossman, 1982, and subsequently used by, among others, Feenstra and Hanson, 1996; Yi, 2003; Kohler, 2004; Grossman and Rossi-Hansberg, 2008). All available frameworks in international trade theory have been utilized: Ricardian or Heckscher-Ohlin type models, “new trade theory” and “new economic geography”.

The aim of this section is not to build a new theoretical model of international fragmentation. It is rather to provide a simple and rigorous illustration of the theoretical possibility and relevance of this aspect of globalization for tourism, which can also be used as a guide for an empirical investigation. For this reason, although the complexity of the tourism phenomenon could well necessitate a combination of many of these theories, we choose the simplest - namely the Ricardian model - to describe a general formulation of the concept of IDTP⁴. More precisely, we consider the first of the two approaches mentioned above: the presence of trade in intermediate inputs,

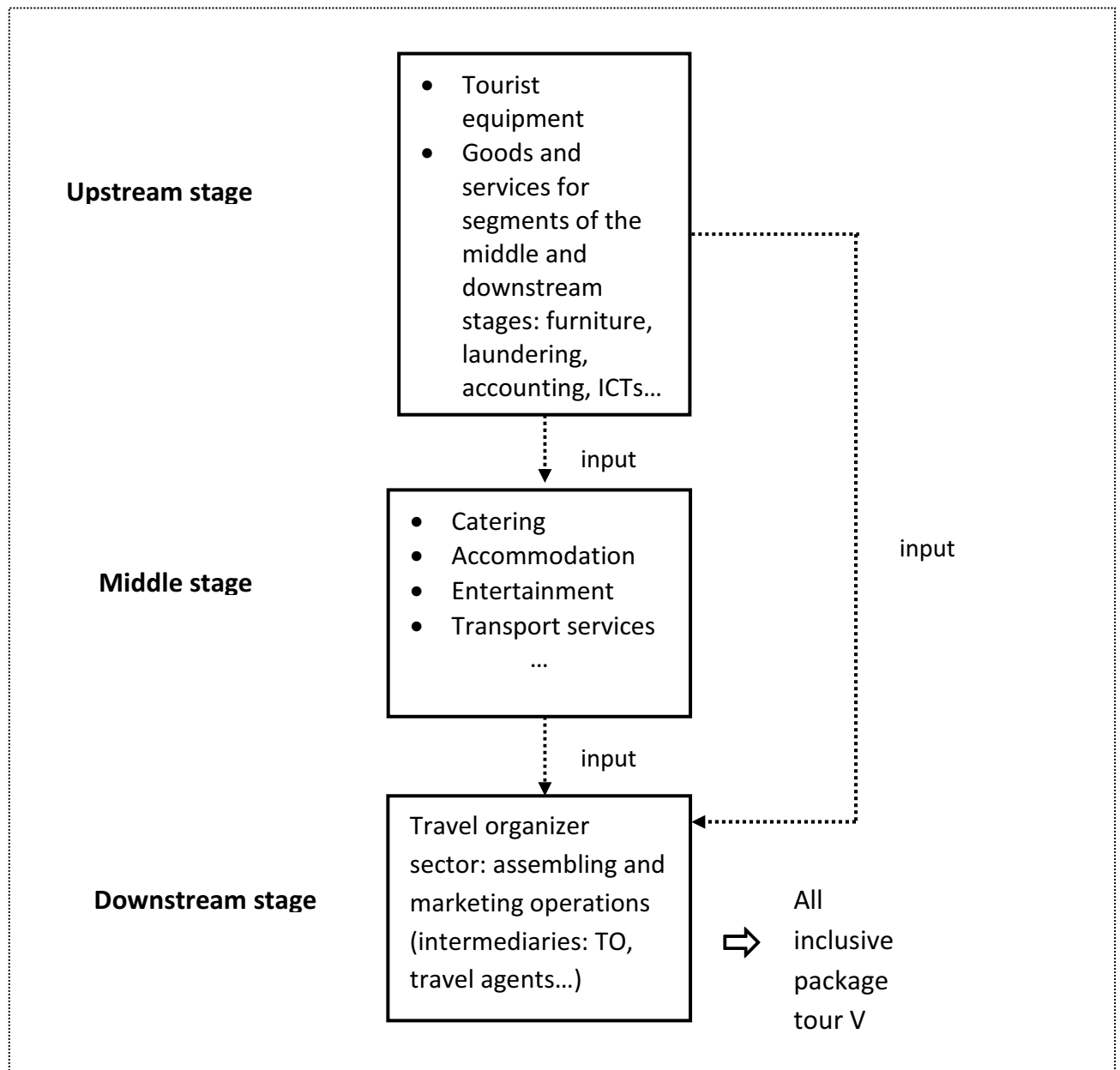
in a Ricardian framework in a similar way as Deardorff (2001, 2005). However, in accordance with Grossman and Rossi-Hansberg (2008) and unlike Nowak, Petit and Sahli (2010) and Sahli (1999), we explicitly take into account the existence of transaction and communication costs for each intermediate input and the final goods as well. This allows for the existence of non-traded goods and leads to an enriched model with a wider range of possibilities.

As stated in the introduction, tourism can be relevantly described as a composite product, or a “product-system”, that is made up of technologically separate components which are sequentially linked into a value added chain whose final product is sold to the tourist. The Eurostat/OECD/WTO/UN classification (2001) distinguishes five main segments: 1) the attraction/entertainment sector: museums, wildlife parks, theme parks, all kinds of man-made and natural attractions, as well as other attractions 2) the accommodation sector: including hotels, bed and breakfast, campsites, etc. 3) the transport sector: airlines, railways, car rental operators, etc. 4) the destination organization sector: national/local tourist offices, tourism associations; 5) the travel organizer sector: tour operators, travel agents, etc. This official classification is however incomplete as it does not take into account all goods and services used as inputs by these five segments: food, beverages, furniture, laundry, accounting, management, outdoor clothing, sunglasses, tents, etc. Entering into the production function of these five segments as intermediate

inputs, they actually form an additional sequential segment of production. Let us call it the U segment.

The services produced by some of these segments have to be assembled in order to create the final product, and we have already seen that the assembler can be a tour operator, a travel agency, the accommodation sector or the individual tourists themselves. For the purpose of this illustration, let us consider the case where the assembler is a tour operator. The final tourism product is thus an all-inclusive pre-paid package tour (called V) whose sequential production process involves all six segments distributed among three separate stages of production: upstream, middle and downstream stages (see Figure 1).

Figure 1. The tourism production process of a package tour



The upstream stage consists of the goods and services produced by the U segment that are used by all other segments as intermediate inputs. The middle stage is made up of accommodation, catering, entertainment and passenger transportation services. These services are in turn intermediate inputs for the downstream stage, i.e. the assembling and marketing operations completed by

intermediaries in the distribution channels (by the tour operator in the present case). Their role is to package the middle stage segments' services into a single aggregated tourism product (V) that will be sold to the tourists.

Let us now describe the theoretical model. We consider a two-country world, Home and Foreign (with the latter's variables being asterisked), satisfying the usual assumptions of a Ricardian framework. There are three final goods: an aggregated tourism product (V), a manufactured good (M) and an agricultural good (N). Goods M and N do not require any intermediate input while the tourism good V is produced in the manner just described above. However, to keep the theoretical framework simple and without any loss of generality, let us leave the upstream stage (segment U) aside and consider just three segments, distributed among the middle and downstream stages: accommodation (segment A, belonging to the middle stage), transport of passengers (segment T, belonging to the middle stage) and the tour operators (segment I, belonging to the downstream stage). Intermediate segments A and T are therefore combined with segment I by the tour operators to produce the aggregated tourism product V^5 . More precisely, in each country the production of one unit of V needs one unit of tour operators' services I, plus one unit of accommodation services A, plus one unit of transport services T if the all-inclusive package tour V concerns holidays in another country, but less than one unit of transport services (say α unit, with $\alpha < 1$) if it concerns holidays in the

tourist's country of residence⁶. This difference in the amount of T required to produce one unit of V according to the place of holiday has been introduced to reflect the fact that foreign destinations are usually more distant than domestic destinations and that travelling abroad thus normally requires more transport than travelling at home.

It is also highly important to introduce transport, transaction and communication (TC) costs for each intermediate input and final good as it is now widely recognized that dramatic reductions in these costs have been the main engine of the different waves of globalization (Baldwin, 2006; Grossman and Rossi-Hansberg, 2008). While these costs concern both national and international operations, only costs related or due to the crossing of international borders are considered here: tariffs and quantitative restrictions; legal and regulatory barriers; legislation and administrative restrictions on entry visas, foreign currency, transfer of funds and repatriation of profits; restrictions on foreign ownership and investment; obstacles to hiring foreign personnel; differences in national administrative regulations; long-distance telecommunications, etc. (see for example Fletcher, Lee and Fayed, 2002). These TC costs are modeled as being of the iceberg type (Samuelson, 1954) and are parametrized by $d_j > 1$ for Home and $d_j^* > 1$ for Foreign, with $j=M, N, A, T, I$. For example, when d_j units of good j are exported by Home to Foreign, only 1 unit reaches its destination, $d_j - 1$ units being lost when travelling to Foreign.

However, to simplify the exposition, we assume that these costs are identical for each final good and intermediate segment, and across countries: $d_j = d_j^* = d$ with $j=M, N, A, T, I$ ⁷.

The two non-tourism final goods (M and N) and the tourism intermediate segments (A, T, I) are produced using labour only, which is the sole direct factor of production in the economy. Let a_{Lj} (a_{Lj}^*) be the constant amount of labour needed in Domestic (Foreign) to produce one unit of good or service j ($j=M, N, A, T, I$). This labour coefficient depends on the country's level of technological development in sector j only and its inverse ($1/a_{Lj}$) represents the marginal (or average) product of labour in j .

Taking the manufactured good M as an example, let us now examine how the presence of TC costs (d) may prevent a good from being exported or imported, making it a non-traded one. Under perfect competition, good M's domestic price is $P_M = a_{Lj} \cdot w$ in Home and $P_M^* = a_{Lj}^* \cdot w^* \cdot e$ in Foreign (in Home's currency). w (w^*) denotes the wage rate in Home (Foreign) and e the exchange rate (1 unit of Foreign's currency = e units of Home's currency). Home will be competitive on Foreign's domestic market only if its export price (including the TC costs) is lower than Foreign's domestic price: $P_M \cdot d < P_M^*$, that is $(a_{LM} \cdot w) \cdot d < a_{LM}^* \cdot w^* \cdot e$, or

$$(1) \quad \left(\frac{w}{w^* \cdot e} \right) \cdot d < \frac{a_{LM}^*}{a_{LM}}$$

a_{LM}^*/a_{LM} is the international differential of marginal products of labour in sector M, reflecting the technology gap between the two countries in this sector, while $w/(w^* \cdot e)$ denotes the international ratio of wage rates⁸. If condition (1) is not fulfilled ($\frac{a_{LM}^*}{a_{LM}} < \frac{w \cdot d}{w^* \cdot e}$: Home's good M is too expensive on Foreign's market),

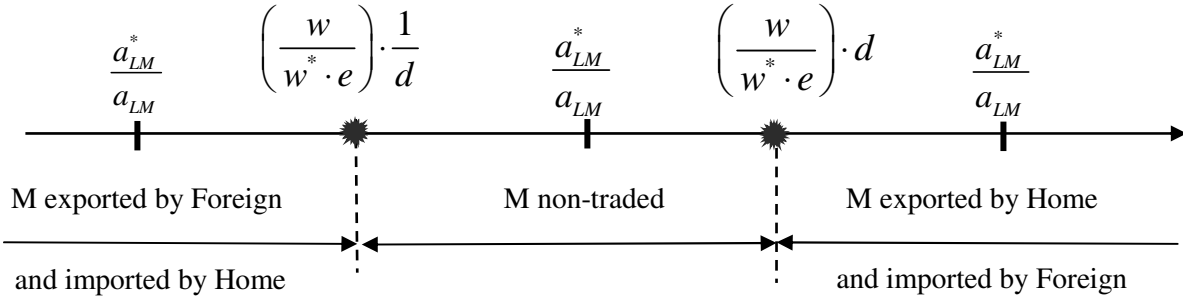
Foreign will not import M from Home and will only consume domestically produced good M. But will it be able to export good M on Home's domestic market? It will if its export price (including the TC costs) is lower than Home's domestic price: $P_M^* \cdot d < P_M$, that is $(a_{LM}^* \cdot w^* \cdot e) \cdot d < a_{LM} \cdot w$, or

$$(2) \quad \frac{a_{LM}^*}{a_{LM}} < \left(\frac{w}{w^* \cdot e} \right) \cdot \frac{1}{d}$$

If this condition is not fulfilled ($\frac{w}{w^* \cdot e \cdot d} < \frac{a_{LM}^*}{a_{LM}}$: Foreign's good M is too expensive on Home's market), Home will not import M from Foreign and will only consume domestically produced good M.

Therefore, if neither condition (1) nor condition (2) is fulfilled, no country will export or import good M. This good will be only produced and consumed locally, thus being an internationally non-traded good. Figure 2 sums up these results.

Figure 2. Conditions for good M to be traded and non-traded.



These results apply to any good or intermediate segment as well. The international ratio of wage rates (denoted from now on by W , with $W \equiv \frac{w}{w^* \cdot e}$), adjusted for TC costs ($W \cdot \frac{1}{d}$ and $W \cdot d$), defines an interval of values for the international technology gap of good j (a_{Lj}^*/a_{Lj}) within which j is internationally non-traded. (TC costs are too high to make any country competitive for this good.)

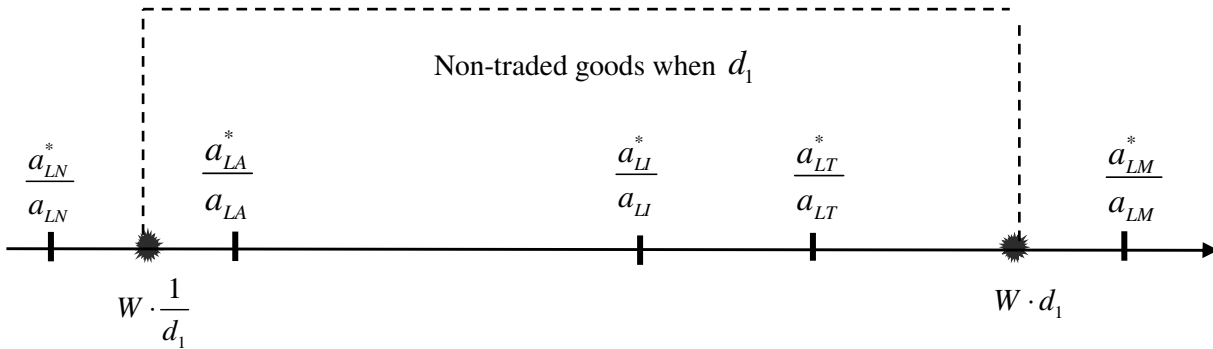
We are now in position to expound the principle of an international division of tourism production process (IDTP). First, all sectors' technology gaps, a_{Lj}^*/a_{Lj} ($j=M, N, A, T, I$), have to be ranked in order to determine the chain of comparative advantages between the two countries (Dornbusch, Fisher and Samuelson, 1977). Three tourism segments and two final non tourism goods give $5! = 120$ possibilities of ranking. However, considering three cases is sufficient to draw interesting conclusions. These three cases correspond to

decreasing values for d , the TC costs parameter, and could well be interpreted, in a historical perspective, as describing the gradual opening of tourism to international trade in Europe since the end of World War II.

For the purpose of illustration, we assume that the manufactured good M and the agricultural good N are always internationally traded, Home having a comparative advantage for good M ($W \cdot d < a_{LM}^*/a_{LM}$) and Foreign for good N ($a_{LN}^*/a_{LN} < W \cdot \frac{1}{d}$).

Case A. In this first case, described by the chain of comparative advantages on Figure 3, the TC costs (d_1) are so high that the three tourism intermediate segments are internationally non-traded. Therefore, this will also be true of the tourism product-system V: in both Home and Foreign, tourists spend their holiday in their own country only, buying all-inclusive package tours from local tour operators and using local transport companies to travel. This case may roughly depict the situation of tourism in Europe until the fifties. International trade here is exclusively based on the exchange of final non tourism goods: Home exports good M towards Foreign and imports good N from it.

Figure 3. Case A: the three tourism intermediate segments are non-traded.

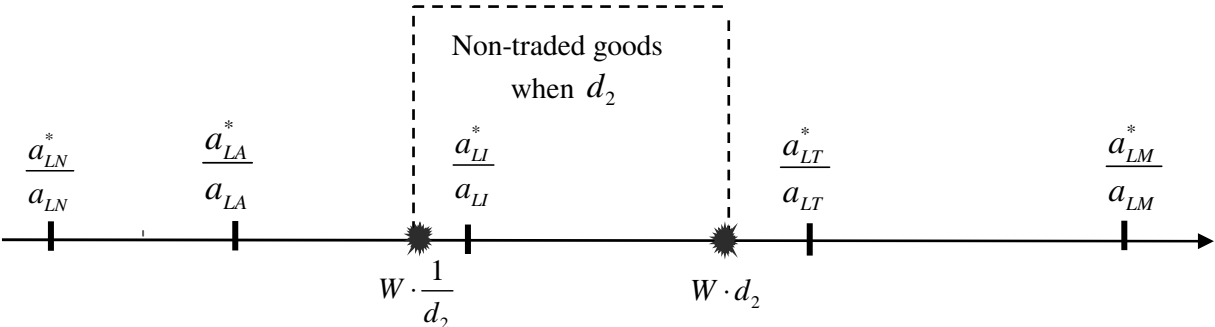


Case B. In this second case, the TC costs are supposed to have decreased sufficiently ($d_2 < d_1$) to let segments A and T become internationally tradable. This may have arisen because of a trade liberalization process, the removal of many of the above-mentioned impediments (restrictions on entry visas, on foreign currency, on foreign ownership and investment, etc.) and technological progress in transport and telecommunications⁹. However, the travel organizer segment, I, still remains non-traded and national tour operators are allowed to sell their products to local tourists only. This evolution between case A and case B roughly fits the historical observation of the difference of the speed of liberalization between tourism segments: in the sixties and seventies, many countries opened up to inbound tourism while the air transport sector benefited from substantial technological improvements (diffusion of jet engines) and fundamental changes in the regulation set-up (US Airline Deregulation Act of 1978, Open Skies Agreements, etc.). On the contrary, the sector of

intermediaries, I, continued to be highly regulated, thus enjoying a strong protection against external competition (Sinclair and Stabler, 1997).

Let us consider the situation depicted by Figure 4¹⁰.

Figure 4. Case B: comparative advantage of Foreign for segment A and of Home for segment T (with segment I non-traded).



Foreign displays a comparative advantage for segment A and Home for segment T. Foreign will now export accommodation services, in addition to good N, and import transport services, while Home will export transport services, in addition of good M, and import accommodation services¹¹. In other words, Foreign has become a host country, accommodating Home’s tourists coming with Home’s carriers in its own hotels. Home is a tourism origin country that transports its residents to Foreign to spend their holiday. These residents buy the all-inclusive pre-paid package tours exclusively from Home’s TOs since, in both countries, TOs are allowed to operate only in their domestic market. Despite the tradability of accommodation and transport, the final

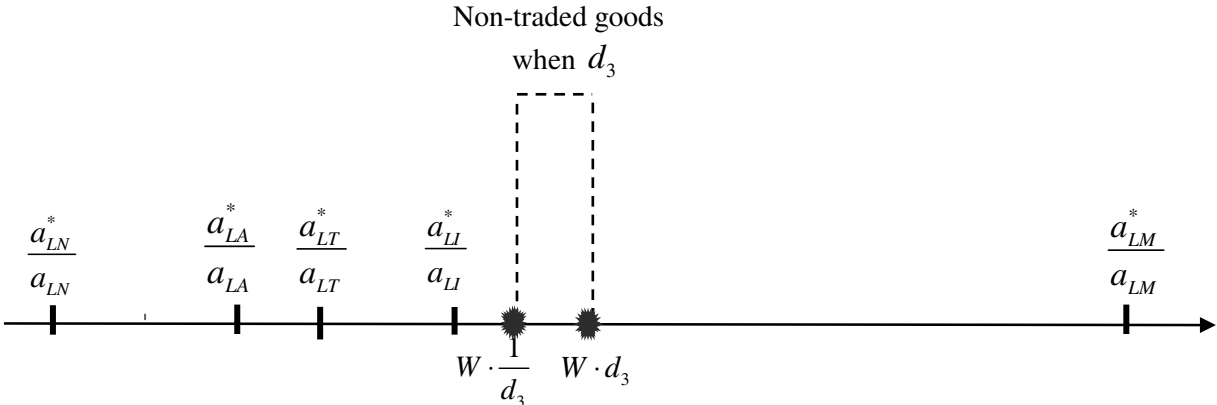
product-system V therefore remains non-traded because of the non-tradability of segment I.

More precisely, Home's TOs assemble accommodation services, food services and entertainment services bought (imported) from Foreign's firms with passenger transport services provided by national carriers to make up all-inclusive package tours V (to be sold to Home's residents only). Foreign's TOs buy (import) transport services from Home's carriers and join them with accommodation services, etc. provided by Foreign's firms to make up the final tourism product system V for Foreign's residents only. These residents spend their holiday in their own country, still travelling with Home's carriers¹².

To sum up, each country needs the other to produce the final aggregated tourism product for its own residents. Unlike in case A, no one is able to produce the whole package tour by themselves. The value-added chain in tourism has thus been split up. **The tourism activity has been internationally fragmented and the delocalization by Foreign of segment T to Home, and by Home of segment A to Foreign, has given rise to an IDTP.** This IDTP can be detected by the existence of international trade (and therefore specialization) in different tourism intermediate segments.

Case C. Let us assume that the TC costs have decreased further ($d_3 < d_2 < d_1$), so that the travel organizer segment, I, has now become traded. This could be the result of a deepened liberalization process and the development of information communication technologies (ICTs), such as the World Wide Web and e-tourism. Because of the initial technology gap in favour of Foreign, this country wins that segment. However, let us also assume that, thanks to a technological progress in the transport segment T ($\Delta a_{LT}^* < 0$), Foreign now displays a comparative advantage in T, a sector previously owned by Home. This new situation is illustrated by Figure 5.

Figure 5. Case C: comparative advantage of Foreign for the three tourism intermediate segments.



Foreign displays a comparative advantage for all tourism segments, A, T and I, while Home displays a comparative disadvantage for all of them. Foreign is therefore able to produce the whole final tourism product system (V) by itself. Its TOs buy accommodation services, food services and entertainment services

from local firms, assemble them to make up all-inclusive package tours V , and finally sell these products V to residents of both countries. The role of Home is exclusively limited to being a source country for Foreign, with all its residents going on holiday overseas.

Home will export the manufactured good M and import both the aggregated tourism product V and the agricultural good. In this highly liberalized world and with this configuration of comparative advantages, **there is no trade in tourism segments here and no international division of the tourism production process.** International trade is made up of exchanges of final products only (V and N for M)¹³.

Finally, cases B and C reveal two different types of tourism specialization. If a country displays comparative advantages in *all* stages of production of the tourism product, from upstream to downstream production (like Foreign in case C), this country is said to have a (positive) "integrated" tourism specialization: it produces and exports the *aggregated* tourism product. If this country has comparative disadvantages in all stages of the tourism production process (like Home in case C), it has to import the whole tourism product-system, and we are in a situation of a negative "integrated" tourism specialization.

If comparative advantages can be found in some stages of production only (case B), we observe "partial" tourism specialization. Countries are specialized

in *different segments* of the tourism product system. An international trade in tourism segments arises from this IDTP.

3. The empirical measurement of the international division of tourism production.

In the international trade literature several indexes have been used to examine the overall pattern of comparative advantages and disadvantages of a national economy. In this paper, we use the "revealed comparative advantage" (RCA) index developed by Balassa (1965) to investigate long-term patterns of IDTP. Although pros and cons of the Balassa index are still debated in the literature, it stands as one of the most widely used indexes of international trade specialization¹⁴. The RCA index shows the share of sector *i*'s exports in total exports of a country *j* relative to the share of *i*'s exports in total exports of a reference group of countries. It is measured by this formula:

$$RCA_{ij}^t = \frac{X_{ij}^t / X_{\cdot j}^t}{X_i^t / X_{\cdot}^t} \times 100$$

with X_{ij}^t and x_i^t the exports of products belonging to sector *i* respectively by the country *j* and the reference group of countries in year *t*; $X_{\cdot j}^t$ and x_{\cdot}^t are the total exports of goods and services respectively of the country *j* and the reference group in year *t*.

A value of RCA_{ij}^t above 100 indicates a comparative advantage of country j for sector i in year t whereas a value below 100 indicates a comparative disadvantage. Consequently, the greater the value of RCA_{ij}^t , the better country j 's export performance in sector i .

In this empirical section the identification of any IDTP involves the measurement of RCAs for different segments of the tourism product-system. In compliance with our theoretical framework described above, the Balassa index should ideally be computed for all segments of the three-stage sequential production process of the tourism product system (described in section one). According to our theoretical framework, if RCA_{ij}^t is always above 100 (below 100) in country j , then we conclude that this country has a positive (negative) "integrated" specialization in tourism: country j exports (imports) the *aggregated* tourism product and is not affected by any IDTP. But if one RCA_{ij}^t is above 100 and at least one of the other ones is below 100, then we conclude that country j has a "partial" specialization. It simultaneously displays comparative advantages and comparative disadvantages for different tourism segments and is thus involved in IDTP.

Unfortunately the lack of statistical data at the international level for some segments of the tourism product system prevents an assessment of the global value added chain in tourism. The only reliable tourism services data available

are provided by "Travel" and "Transport of passengers" items of each country's balance of payments¹⁵. Such data clearly bring out the limitations of the estimation of travel services in international trade. Nevertheless as the "Travel" item "covers primarily the goods and services acquired from an economy by travellers during visits of less than one year in that economy" (IMF, 1993, Chapter XII, Travel: Paragraph 242), it can reasonably be regarded as a good proxy for accommodation, catering and entertainment services. Let us thus redefine segment *A* as to include accommodation, catering and entertainment segments (instead of the accommodation sector alone as in our theoretical conceptualization of international tourism trade). On the other hand, the "Transport of passengers" item covers international carriage of travellers, which corresponds to segment *T* as in the previous section¹⁶.

RCA_{ij}^t for segments *A* and *T* were calculated by considering country *j*'s trade in "Travel" and "Transport passenger" services with the rest of the world (i.e. *with all its partners altogether*) over a 27 year period spanning 1980-2006. The analysis has been carried out on data for a large sample of 36 countries of which 18 are OECD (and/or EU) member countries (sub-sample 1) and 18 developing countries (sub-sample 2). All data belong to the CHELEM databases (CEPII, 2006 and 2011).

3.1. The dynamics of the international division of tourism production.

RCA indexes for segments A and T of each country belonging to the above two sub-samples are shown in Tables 1 and 2 respectively. These indexes have been calculated over intervals of three years to provide a clearer picture of the nature and trend of international fragmentation of tourism production over the long term and to eliminate short-term fluctuations¹⁷.

The first point to be drawn from these tables is that only 12 of the 36 selected developed and developing countries studied are exclusively involved in “*integrated*” tourism specialization (either negative or positive) for the whole period 1980-2006¹⁸. Seven of these are from sub-sample 1 (developed economies) and five from sub-sample 2 (developing countries). Some of these countries have comparative disadvantages in both segments of tourism production and, as a result, import their entire tourism product system (Canada, Japan, and Brazil). Others display a comparative advantage in the entire tourism product system (United States, Spain, Cyprus, Malta, Australia, Costa Rica, Jamaica, Tunisia and Jordan). These countries account for one third of the large sample, meaning that two thirds (or 24 out of 36 selected countries) have been involved at least once in a form of IDTP¹⁹.

Two of these 24 countries are permanently involved in IDTP (Greece which specialises only in segment A, and Finland which specialises only in segment T). Seven countries displayed some form of temporary partial specialization on an

occasional basis during 1980-2006: the United Kingdom, Sweden, Malaysia and Sri Lanka displayed specialization in segment *T* while Italy, Peru and Tanzania displayed comparative advantages in segment *A*. The second point that deserves mention is that IDTP is a dynamic rather than static phenomenon. In seeking a possible explanation for this dynamic of tourism specialization patterns, one can rely on at least two main potential reasons : (a) the decline of TC costs, particularly in the transport and communications sectors, which suggests that tourism segments that were previously considered as non-traded became traded when TC costs fall; and (b) the changes of countries' comparative advantages arising from differences in technology, as in Ricardo (or/and) from differences in relative factor endowments, as in Heckscher-Ohlin.

Of the 36 countries, ten (or 28% of the entire sample of countries), saw a definitive change in the nature of tourism specialization. Five countries moved from a form of integrated specialization to some kind of partial specialization. The United Kingdom and Switzerland recorded a comparative advantage in both segments of tourism production but moved to a form of IDTP while specialising only in passenger transport services. Italy has been through a similar process, but as a result has emerged with comparative advantage in the accommodation segment. Tanzania has moved from a situation of comparative disadvantage in both segments to a comparative advantage in segment *A*. Botswana has seen a

similar evolution, showing, at the end of the study period a specialization in segment A.

Four countries went from partial specialization to positive (or negative) integrated specialization. Uruguay and Thailand were involved in IDTP while specialising uniquely in segment A. These countries are now specialized in both tourism segments. Two further countries had specialised in a single segment (Sweden and South Korea in segment *T*) and by the end of the period under consideration displayed comparative disadvantages in both tourism segments.

Finally, we can see that nine countries are involved in IDTP on an occasional basis: Germany showed a partial tourism specialization in segment *T* and subsequently experienced a comparative disadvantage in both segments (however, between 1998 and 2002 Germany again recorded partial specialization); Portugal has specialised in both segments of tourism production, except between 1986 et 1991, when it specialised only in segment A; Israel displayed positive integrated tourism specialization but between 2001 and 2003 recorded a negative integrated tourism specialization, before going on, in the last three years studied, to specialise uniquely in the transport segment; Poland has a rather complex profile, beginning the period with a negative integrated tourism specialization, then displaying three years of partial specialization in segment *T*, before alternating between periods of positive integrated specialization and partial specialization in the accommodation

segment; South Africa exhibits positive integrated tourism specialization for most of the period under investigation, with the exception of two separate three year periods (1986-1988 ; 1992-1994) when negative integrated specialization held sway, and, a further period, between 1989-1991, when the country displayed a unique specialization in Segment A; Argentina displays some positive integrated tourism specialization with the exception of the years 1998-2003 which saw a comparative disadvantage in segment T; Morocco has a similar profile with a three year period (1989-1991) of partial tourism specialization in segment A; Columbia overall shows positive integrated specialization but with one period (1989-1991) of comparative disadvantage in the accommodation sector; finally Myanmar also shows a complex profile with negative integrated tourism specialization for most of the study, but with, between 1992 to 1994, a specialization in Segment A only, and in the following six years specialization in the entire tourism production process.

It is important to note that this evolution can sometimes seem complex (see, for example, the case of Poland, South Africa, Myanmar and Peru). These shifts between integrated and partial specialization confirm the dynamic nature of IDTP, which seems to have been facilitated in recent years by advances in the transport and communications technologies, such as computer reservation system (CRS) global distribution system (GDS) and the internet, all of which have greatly reduced the search costs of potential travellers as well as the cost of

coordinating tourism production tasks around the globe. This dynamic of a country's comparative advantage patterns shows that globalization in tourism has increased the interdependence between destinations and has led to the creation of this globalised tourism production where countries, which are expected to compete, nowadays function interactively thanks to the fall in TC costs and the changes arising from technology differences and factor cost differences.

Table 1. Dynamics of revealed comparative advantages in segment A (1980-2006).

	Country	80-82	83-85	86-88	89-91	92-94	95-97	98-00	01-03	04-06
Sub-sample 1	Australia	112.2	109.5	128.3	139.1	149.8	186.0	186.1	205.8	229.9
	Canada	81.2	73.6	71.4	70.7	59.1	57.6	56.8	57.5	61.4
	Cyprus	529.3	632.9	661.3	669.7	673.5	593.8	615.9	606.8	545.6
	Finland	92.7	69.6	63.5	66.0	64.3	54.8	48.5	48.3	49.3
	Germany	58.2	55.3	51.4	50.1	48.1	47.4	47.7	46.1	48.5
	Greece	485.4	394.4	405.7	312.4	373.0	408.1	527.1	524.8	487.8
	Israel	263.3	244.7	169.7	140.9	154.8	168.4	160.8	94.2	87.2
	Italy	198.6	192.2	145.3	127.5	152.7	153.9	153.5	144.8	145.5
	Japan	10.3	11.9	13.9	15.6	13.1	13.0	12.0	18.1	29.7
	Malta	681.3	473.7	499.8	431.8	369.4	358.0	315.5	303.0	297.7
	Poland	22.3	16.0	21.1	22.1	59.3	110.3	164.9	125.7	106.1
	Portugal	379.0	297.8	297.0	276.9	250.2	234.9	253.7	266.3	269.2
	South Korea	44.8	49.5	75.6	70.0	46.3	50.8	62.7	50.6	33.0
	Spain	497.0	457.6	466.9	372.0	320.8	292.0	294.8	292.9	305.8
	Sweden	63.9	68.9	67.8	67.2	62.5	57.8	62.9	71.8	79.8
	Switzerland	155.6	160.8	139.6	128.9	120.3	115.0	95.3	93.7	95.2
	United-Kingdom	103.8	109.7	111.4	105.5	94.0	97.8	93.6	82.8	96.0
United-States	112.0	137.5	147.8	155.0	154.9	150.7	148.3	145.6	147.6	
Sub-sample 2	Argentina	107.1	104.2	119.1	101.8	150.9	144.4	157.8	110.6	110.5
	Botswana	104.0	88.5	56.7	82.1	89.8	80.5	122.8	184.5	210.9
	Brazil	14.2	4.4	6.2	56.0	34.3	26.0	43.1	47.6	53.8
	Columbia	232.1	108.2	110.4	80.0	107.8	113.0	108.1	116.1	100.0
	Costa Rica	209.8	223.8	186.9	231.2	283.9	234.1	234.9	278.6	312.7
	Jamaica	513.1	715.3	663.2	561.0	557.8	521.0	589.6	639.1	721.9
	Jordan	696.9	569.8	489.1	315.6	286.1	325.3	357.6	360.4	410.8
	Malaysia	69.5	75.1	65.9	75.4	69.5	72.7	59.9	103.2	106.2
	Morocco	318.6	360.9	380.5	312.4	267.8	250.3	298.9	381.9	477.0
	Myanmar	53.8	63.2	88.0	73.6	194.7	186.2	150.8	55.5	32.5
	Peru	147.2	115.1	113.8	90.3	73.6	135.6	175.3	148.3	122.5
	Philippines	120.4	137.8	110.6	71.6	93.6	78.3	86.1	77.5	103.7
	South Africa	137.3	137.8	95.8	112.6	99.4	113.9	128.0	153.4	203.2
	Sri Lanka	202.9	134.0	79.4	88.1	92.8	64.6	69.0	92.6	108.0
	Tanzania	66.9	76.7	118.3	145.0	247.5	544.9	561.9	555.3	535.1
	Thailand	268.0	274.9	247.0	236.4	176.1	185.2	152.8	154.9	153.1
	Tunisia	463.9	433.3	443.8	304.3	308.2	307.0	322.6	275.8	276.3
Uruguay	336.2	289.8	250.7	207.1	252.8	288.4	294.9	242.9	210.8	

Source: CHELEM database (CEPII, 2006 and 2011), authors' calculations.

Table 2. Dynamics of revealed comparative advantages in segment T (1980-2006).

	Country	80-82	83-85	86-88	89-91	92-94	95-97	98-00	01-03	04-06
Sub-sample 1	Australia	209.2	187.4	226.9	194.6	259.5	454.0	429.4	469.8	503.2
	Canada	89.4	60.1	64.0	56.1	45.7	52.3	60.2	64.7	64.1
	Cyprus	767.4	718.5	688.3	530.2	522.7	393.9	375.3	413.5	482.9
	Finland	163.8	150.3	151.6	152.5	149.8	133.8	125.3	130.4	140.9
	Germany	110.4	105.4	83.2	87.8	89.9	91.6	101.6	98.7	94.6
	Greece	3.4	7.9	21.3	18.7	37.9	19.5	16.5	25.8	23.9
	Israel	294.0	249.2	218.1	172.4	165.0	136.0	113.2	79.3	108.1
	Italy	125.6	109.6	80.6	66.6	59.3	49.2	40.0	40.8	77.0
	Japan	41.0	32.8	29.9	28.5	27.1	31.1	43.6	56.9	55.2
	Malta	612.6	563.6	425.3	413.5	446.2	459.6	451.5	436.8	462.3
	Poland	65.0	62.7	62.8	130.2	95.4	76.8	88.1	106.7	85.3
	Portugal	150.8	116.6	91.9	49.2	142.0	212.7	223.2	240.6	305.3
	South Korea	188.5	144.9	103.8	94.4	93.5	84.6	77.7	86.6	88.6
	Spain	174.5	297.1	247.2	166.7	107.1	139.9	146.7	200.4	225.7
	Sweden	149.5	121.8	119.0	114.8	103.1	63.6	68.4	99.5	91.8
	Switzerland	245.3	222.6	168.1	141.3	128.7	138.3	172.0	163.4	118.3
	United-Kingdom	232.9	227.1	206.8	183.7	185.7	185.8	188.8	189.8	181.8
United-States	209.2	187.4	226.9	194.6	259.5	454.0	429.4	469.8	503.2	
Sub-sample 2	Argentina	158.0	162.3	223.5	221.9	176.0	108.1	90.3	67.9	126.9
	Botswana	71.7	49.7	36.2	37.7	40.0	35.2	15.6	14.1	3.3
	Brazil	27.8	20.5	31.3	9.4	40.6	9.9	17.1	21.8	22.3
	Columbia	306.4	223.8	223.7	165.1	209.1	161.4	185.4	198.4	188.2
	Costa Rica	217.4	274.1	182.1	180.0	196.8	168.3	183.5	207.1	176.0
	Jamaica	494.8	578.3	590.3	422.0	334.3	352.5	556.8	847.9	738.8
	Jordan	1 514.6	1 508.5	1 063.9	740.4	728.9	711.4	567.2	483.2	588.0
	Malaysia	147.7	145.0	146.7	120.2	106.4	112.4	80.1	85.3	110.0
	Morocco	296.1	164.0	100.3	64.9	132.5	170.2	194.8	418.4	499.9
	Myanmar	30.9	38.2	53.2	42.5	61.4	161.8	147.9	64.8	44.7
	Peru	90.6	79.3	117.2	87.7	91.1	113.2	55.8	51.8	83.7
	Philippines	24.1	15.3	42.1	27.4	25.4	1.4	21.4	77.5	119.8
	South Africa	120.6	104.2	74.6	90.3	94.8	131.0	159.7	216.4	200.8
	Sri Lanka	32.9	97.5	180.1	290.5	269.2	229.8	218.3	366.7	474.5
	Tanzania	20.6	36.0	43.8	40.0	32.5	23.8	30.3	40.0	87.7
	Thailand	68.9	36.5	110.0	143.3	182.8	156.4	276.9	314.6	273.1
	Tunisia	533.6	543.1	334.3	276.9	345.2	329.2	321.4	345.3	513.2
Uruguay	23.7	225.3	143.3	196.1	257.4	291.8	269.6	259.9	255.4	

Source: CHELEM database (CEPII, 2006 and 2011), authors' calculations.

3.2. The impact of the IDTP in international tourism trade.

In order to examine the impact of IDTP in international tourism trade, a more detailed analysis of the frequency and weighting of each form of tourism specialization in total international tourism trade is presented below.

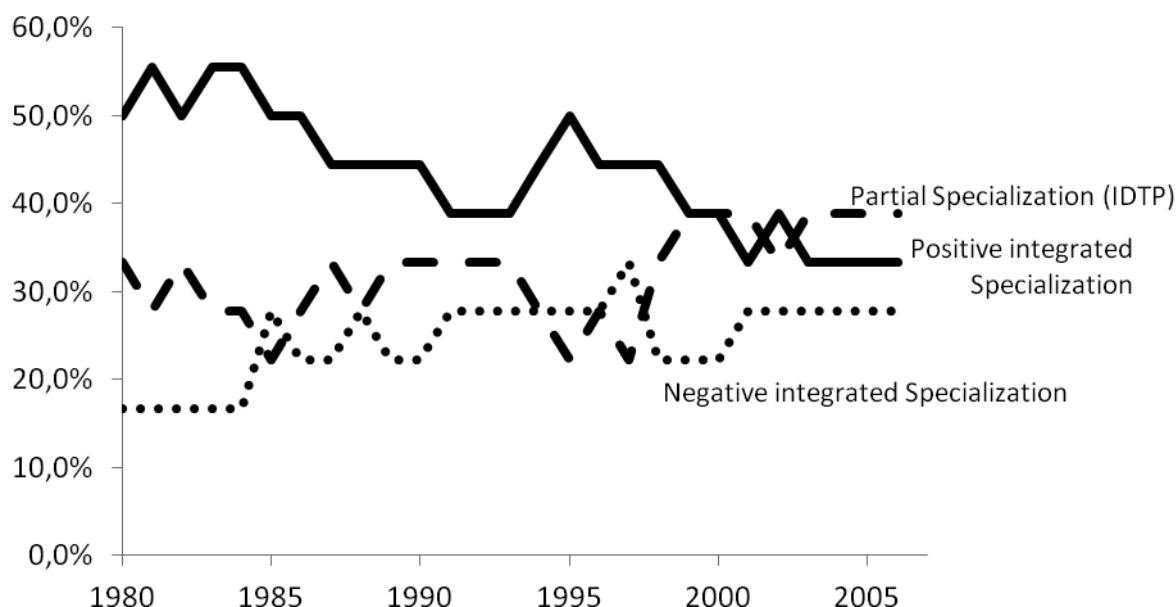
As shown in Tables 3 and 4, the proportion of cases of partial specialization represent on average 32.1% of possible cases (country-year) of specialization for the entire period 1980-2006 for selected industrialised economies and 30.2% for developing countries. In other words, almost a third of the selected countries, regardless of which sub-sample they belonged to, did not import or export the entire system of tourism production during the 1980-2006 period. These countries must import some segments of tourism production in exchange for others which they produce and export. This high frequency of IDTP cases observed highlights once again the importance of this globalized fragmentation of tourism production processes. Interestingly, there is a substantial difference in terms of overall pattern of tourism specialization between both groups of countries as shown in the following tables and figures.

Table 3. Significance of IDTP cases observed, 1980-2006 (%).

	Average share of each form of specialization in sub-sample 1	80-89	90-99	2000-2006	1980-2006
Integrated specialization	2 segments	50.0%	42.8%	34.9%	43,4%
	0 segment	20.6%	26.7%	27.0%	24,5%
Partial specialization (IDTP)	1 segment	29.4%	30.6%	38.1%	32,1%

Note: Average share represents the percentage of observed cases of each kind of specialization in total aggregated flows.
Source: CHELEM database (CEPII, 2006 and 2011), authors' calculations.

Figure 6: Evolution of integrated and partial specialization, 1980-2006 (%)
(Sub-sample 1)



Note: Share represents the percentage of observed cases of each kind of specialization in total aggregated flows.
Source: CHELEM database (CEPII, 2006 and 2011), authors' calculation.

A more detailed examination of the evolution of integrated and partial specialization in each group of countries shows that IDTP is not a recent phenomenon, as the frequency of cases observed was already high at the

beginning of the 1980s. In fact, the proportion of cases of partial specialization in selected developed countries was around 29% during 1980-1989 (see table 3 and figure 6). After several periods of fluctuation, that proportion seems to have strongly increased since the end of the 1990s, with IDTP becoming the most frequently observed form of tourism specialization from early-2000s onwards (an average of 38.8% of cases in sub-sample 1 during the period 2000-2006). However, an analysis of the dynamics of tourism specialization in developing countries revealed different patterns from those found in developed countries. While the relative importance of partial specialization in sub-sample 2 was around 35% during the 1980s, its frequency fell in the following two decades to represent less than 20% of all cases observed by the end of the period under investigation (see table 4 and figure 7). For this sub-sample 2, the corresponding decline in IDTP over the period 1980-2006 has been accompanied by an increase in the proportion of cases of positive integrated specialization (comparative advantages in both segments) and a decline in the frequency of negative integrated specialization (comparative disadvantages in both segments). This rise in positive integrated specialization seems to be related to these countries that were relatively successful in building new comparative advantages within the tourism industry (especially in segment *T*). This is partly due to the development of ICT and land and air transport infrastructure in developing countries that have followed a variety of restructuring strategies to

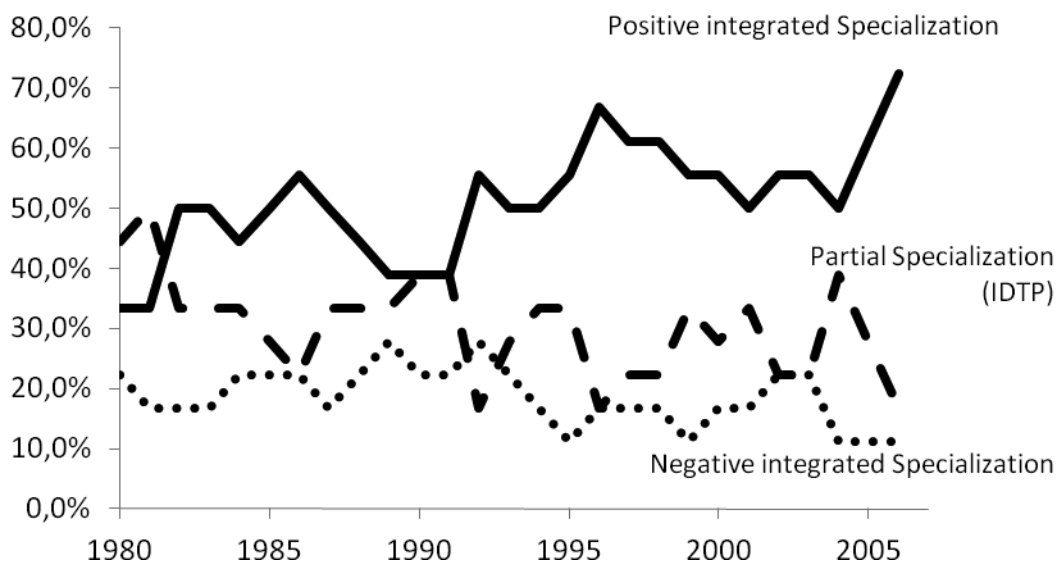
improve their competitiveness (including the introduction of competition, privatization, deregulation, and liberalization of the transport and ICT sectors). Such increased specialization in passenger transport is most pronounced for developing countries, such as South Africa and Thailand. On the contrary, several advanced countries from sub-sample 1 seem to have abandoned their specialization in segment *T* (Germany, Italy, Sweden, South Korea), thereby contrasting strongly with the situation of developing countries that have accelerated their degree of specialization in transportation (Jamaica, Malaysia, Morocco, Uruguay, Sri Lanka, South Africa and Thailand). In short, several developing countries with significant competencies and rapidly developing ICT and transportation infrastructure appear nowadays to be serious players in the whole tourism production process.

Table 4. Significance of IDTP cases observed, 1980-2006 (%).

	<i>Average share of each form of specialization in sub-sample 2</i>	80-89	90-99	2000-2006	1980-2006
Integrated specialization	<i>2 segments</i>	45.0%	53.3%	57.1%	51,2%
	<i>0 segment</i>	20.6%	18.3%	15.9%	18,5%
Partial specialization (IDTP)	<i>1 segment</i>	34.4%	28.3%	27.0%	30,2%

Note: Average share represents the percentage of observed cases of each kind of specialization in total aggregated flows.
Source: CHELEM database (CEPII, 2006 and 2011), authors' calculations.

*Figure 7. Evolution of integrated and partial specialization, 1980-2006 (%)
(Sub-sample 2)*



Note: Share represents the percentage of observed cases of each kind of specialization in total aggregated flows.
Source: CHELEM database (CEPII, 2006 and 2011), authors' calculations.

However, examining the frequency of countries displaying a partial tourism specialization is an insufficient basis for assessing the importance of IDTP since their trade flows in segments *A* and *T* might be small. The latter remark leads us to examine further the phenomenon of IDTP in international tourism trade.

Results in tables 5 and 6 show the weighting of each form of tourism specialization in total international tourism trade²⁰. Between 1980 and 2006, countries involved in IDTP represented on average, 26.5% of total tourism exports in sub-sample 1 and 21.1% in the second sub-sample. These results seem also to confirm the upward trend in industrialised economies and the downward trend in developing countries. In the first group, the weighting of

tourism exports from countries with a partial specialization went from 19.1% during the 1980s to 30.3% over the period 2000-2006. In contrast with developed economies, the weighting of IDTP in developing countries fell almost continuously from 34.9% at the start of the period (80-89) to less than 18% during 2000-2006. This period was also characterised by an increase (decrease) of the weighting of positive integrated tourism specialization in developing countries (developed countries). The above results confirm our previous findings which show that, unlike developed countries, developing countries seem to become more specialized in performing different segments in the production of tourism products. In these countries, travel services seem to be provided more efficiently by local tourism and travel providers that take care of both segments *A* and *T* of the tourism product. Much of this has been facilitated in recent years by the advent of the internet and its impact on the intermediation role of TOs in the tourism product system as well as the development of hotel chains and low cost carriers in developing countries (Thailand, Malaysia, Morocco, etc).

Table 5. Weighting of IDTP in total tourism exports, 1980-2006 (%)

	<i>Average share of each form of specialization in sub-sample 1</i>	80-89	90-99	2000-2006	1980-2006
Integrated specialization	<i>2 segments</i>	68.2%	58.0%	52.5%	57.1%
	<i>0 segment</i>	12.6%	16.3%	17.1%	16.3%
Partial specialization (IDTP)	<i>1 segment</i>	19.1%	25.7%	30.3%	26.5%

Note: Exports of segments *A* and *T* by developed countries involved in IDTP in their total exports of *A* and *T*

Source: CHELEM database (CEPII, 2006 and 2011), authors' calculations

Table 6. Weighting of IDTP in total tourism exports, 1980-2006 (%)

	Average share of each form of specialization in sub-sample 2	80-89	90-99	2000-2006	1980-2006
Integrated specialization	<i>2 segments</i>	57.3%	63.7%	68.7%	66.9%
	<i>0 segment</i>	7.8%	12.8%	13.6%	12.1%
Partial specialization (IDTP)	<i>1 segment</i>	34.9%	23.5%	17.7%	21.1%

Note: Exports of segments *A* and *T* by developed countries involved in IDTP in their total exports of *A* and *T*

Source: CHELEM database (CEPII, 2006 and 2011), authors' calculations

In contrast, the weighting of IDTP in selected industrialised economies increased from 19.1% in the early years (1980-1989) to 30.3% in the final few years (2000-2006). This finding suggests that tourism production in these countries no longer require all the segments that go into its making to be performed locally. Some countries *have* a comparative *advantage* at producing segment *A* while others rely on exporting segment *T*, leading to a more globalized tourism production process.

4. Conclusion

This paper has attempted to examine the IDTP phenomenon by developing a simple two country model of international trade that assumes the existence of transport, transaction and communication costs for both intermediate inputs and final goods. In this respect, the IDTP phenomenon refers to the breaking-up of

tourism production processes into various components, which can be produced in different locations around the globe. As discussed above, this analytical framework illustrates not only the process of international fragmentation of tourism production, but also the impact of technological and transportation improvements on the global tourism industry. From an empirical point of view, our findings demonstrate that the model's empirical predictions of the IDTP phenomenon in two segments of the tourism industry do hold up. This is compatible with the underlying assumptions of the theoretical framework. RCA indexes for segments *A* and *T* have shown that tourism specialization is a dynamic process, and the scale of partial specialization is relatively high for both sub-samples of countries. However, there seem to be differences in the patterns of tourism specialization between these two groups of countries over the period 1980-2006. Finally, this trade approach to tourism research offered a compelling opportunity to highlight the importance of the multi-task global tourism production process, while also contradicting the widespread assumption that tourism is an industry where globalization and "the great unbundling" do not come into play.

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¹ In 1950, the top 15 destinations accounted for 97 per cent of the international arrivals, but only 56 per cent in 2009 (UNWTO, 2011).

² On the links between tourism and globalization, see also Knowles, Diamantis and El-Mourhabi (2001), Wahab and Cooper (2001), Fayed and Fletcher (2002), Cornelissen (2005).

³ 1) Hotels and similar, 2) second home ownership, 3) restaurants and similar, 4) railway passenger transport services, 5) road passenger transport services, 6) water passenger transport services, 7) air passenger transport services, 8) transport supporting services, 9) transport equipment rental, 10) travel agencies and similar, 11) cultural services, 12) sporting and other recreational services.

⁴ Despite its simplicity, the Ricardian model has proved powerful and performed quite well in explaining recent trends in international trade. Yi (2003) for example used a Ricardian (dynamic) model to show that international fragmentation could be the main cause of the world trade growth from the late seventies onwards.

⁵ Note that in this paper, we leave aside any industrial organization consideration, like the “hold-up problem” of underinvestment which may arise in transactions involving intermediate goods. A domestic downstream firm and a foreign upstream firm bargain under symmetric information over the terms of trade of a specialized component. As efficiency in the bargaining process ensures ex post efficiency in production, contract incompleteness can imply inefficient ex ante relationship-specific investments by the upstream firm (see Tirole, 1988, and for example Ornelas and Turner, 2008, for an extension to an international context).

⁶ That is $1V = 1I + 1A + 1T$ for a holiday abroad and $1V = 1I + 1A + \alpha.T$ for a holiday at home.

⁷ See Petit (2010) for the general case where the TC costs differ across goods, segments and countries, and for variable intermediate input coefficients for V (amounts of A or T required to produce one unit of V).

⁸ In a Ricardian model, this relative wage rate depends on the relative sizes of countries and demand for goods. The exact determination of this rate is of no consequence for our analysis.

⁹ For a discussion of the different ways to reach tradability for tourism services, see for example Nowak *et al* (2010).

¹⁰ In a general equilibrium model, any change in the TC costs d should modify W , the international ratio of wage rates, so that the two bounds defining the interval of non-traded goods should vary. However, this does not change the fundamental mechanisms explained in the text. Note also that this model could easily be extended in a framework with a *continuum* of intermediate goods, adapted from Dornbusch, Fisher and Samuelson (1977).

¹¹ Note that the tradability of T does not ensure that Foreign will be able to export its accommodation services. Home’s technological efficiency in T ($1/a_{LT}$) has to be sufficiently high to reduce the total cost of holiday in Foreign of Home’s residents below the cost of holiday at home. The formal conditions are available from the authors on request.

¹² This case is usually referred to as “cabotage”. The European Union provides a good illustration of this concept of cabotage in the airline sector. It is nowadays a single market in air transport, and any airline registered within the Union is able to offer commercial services within any other part of the Union, whether between member countries or within an individual country. Of course, in the sixties and seventies, the situation was not so extreme in Europe.

¹³ Of course, this case is not the only one that can arise in such a highly liberalized world. See Nowak *et al* (2010) for other cases giving rise to many phenomenon, like for example “inward processing imports”, “outward processing exports” or vertical specialization (Hummels, Ishii and Yi, 2001).

¹⁴ Balassa suggested that the comparative advantage is “revealed” by observed commodity pattern of trade which reflects relative costs as well as difference in non-price factors. De Benedictis and Tamberi (2001), after describing the pros and cons of the RCA index, have concluded that it does provide “*very interesting information about the state and dynamics of country advantages in international trade*”, despite its shortcomings (problem of variability and asymmetry).

¹⁵ Note that only three of the four modes of supply for trade in services defined in the General Agreement on Trade in Services are considered in this study. As data on the balance of payments measures transactions between resident and non-

resident entities, only "cross-border supply" (mode 1), "consumption abroad" (mode 2) and "the presence of physical persons" (mode 4) for the considered tourism segments are covered by our empirical analysis. All transactions in services implied by "commercial presence" (or foreign affiliates sales to host-country consumers; mode 3) are excluded from the balance of payments. Since no harmonized data for a large sample of countries could be found, we could not include this category of transactions in tourism services into our analysis.

¹⁶ Concerning the assembling and marketing operations completed by tour operators or travel agencies (component I), the IMF Balance of Payments Manual (fifth edition) states that services of TO/travel agencies *that are residents in the country visited* are included in the "Travel" item, but are indistinguishable (Chapter XII, Travel: Paragraph 242). Transactions of commission agents are recorded in the "Other trade-related services" item of the BOP. The current treatment of statistics does not provide any solution for the case we are interested in, i.e. when the provider of the travel service (segment A, T) and the intermediary (segment I) are not residents of the same economy (for more details, see for example IMF BOPCOM-05/16).

¹⁷ Even by taking intervals of three years, RCA indexes still show a great deal of fluctuation across countries for both segments A and T, especially in the case of developing countries. This fluctuation is partly due to the smaller size and less diversified economic structure of countries belonging to sub-sample 2. They seem to be more strongly affected by, and more vulnerable to, changes in the international economic environment than countries from sub-sample 1.

¹⁸ This situation corresponds to case C of our theoretical framework when segment I is traded.

¹⁹ This means that 66% of the selected countries have been involved at least once in case B of our theoretical framework when segment I is non-traded.

²⁰ The weighting of each form of tourism specialization is defined as the sum of exports of segment A and T by countries involved in positive (negative) integrated specialization or IDTP over the whole group's sum of exports of A and T.