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Regionalism and
the Regionalisation of International Trade

Guillaume Gaulier, Sébastien Jean & Deniz Ünal-Kesenci

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TABLE OF CONTENTS

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SUMMARY

Regionalisation is a widespread feature of international trade. Among the eighty (group of) countries considered in this working paper, all but ten have more than half their foreign trade concentrated within a single Triad region (America, Asia-Oceania or Eurafrica). This regional polarisation is especially strong in Eurafrica, where the region accounts for more than 75% of foreign trade for most countries therein. The regional polarisation of foreign trade is more limited in America, but still significant, particularly for the US neighbours, Mexico and Canada. Asia-Oceania appears as the region exhibiting the weakest polarisation. However, except for the largest three economies in the region (Japan, China, South Korea), intra-regional trade accounts for around 55 to 60% of total trade.

In order to qualify further these observations, the study uses relative trade intensities (RTIs). The RTI index characterises the intensity of trade relationships between a pair of partners by comparison to the extent of total trade of each of these partners. As such, it refers to the geographical orientation of trade flows, controlling for total trade flows of both partners. This analysis points out to the especially intense trade links of former communist countries between each other and with Western Europe. It also emphasises the relatively intense trade links within Latin America, and between many Southeast Asian countries.

Since distance is an obstacle to trade, it does not come as a surprise that countries use to trade more intensively with their neighbours. As a consequence, the regionalisation of foreign trade is to some extent a natural pattern, in the sense that countries tend to trade in large part with other countries belonging to the same "region". But there is more to regionalisation than natural neighbouring relationships. Regional trade arrangements (RTAs) might also have contributed to strengthening trade relationships within regions.

The number of RTAs surged dramatically in the nineties. In May 2004, up to 208 agreements had been notified to the WTO. While the increase during the last decade has been spectacular, RTAs are not a new phenomenon. It has become usual to distinguish three waves of regionalism: the first one beginning with economic integration of Western Europe, and the second one by economic integration in North America. The surge observed since the mid-nineties, resulting mainly from agreements signed by former communist countries, corresponds to the third wave. Important agreements are briefly reviewed, emphasising *inter alia* the importance of agreements signed in Latin America.

These evolutions raise the issue of the link between rising regionalism (i.e., the increasing number of institutional agreements across neighbouring countries) and the intensity of regionalisation in international trade (i.e., regional polarisation of trade flows)? In order to address this issue, this working paper proposes an empirical analysis for a large number of (group of) countries covering the whole world over the period 1967-2001, based on the CHELEM-CEPII database. This analysis updates and extends the one carried out in Freudenberg et al. (1998).

The most salient particularity of the analysis is probably to control for country-pair fixed effects when assessing the impact of RTAs on trade flows. In other words, the estimates only focus on the intensity of the trade relationship between any country pair, compared to its mean level across the period. Working exclusively, for any country-pair, in comparison to the mean level of trade intensity, makes it possible to control for any pairwise-specific, time-independent country links, such as distance, language, former cultural ties (colonial for example), etc. This is a significant improvement in methodological terms, which has never been carried out before on a world-wide basis for such a long time span, to the best of our knowledge, except by Freudenberg et al. (1998), Fontagné et al. (1999) and Cheng and Wall (2003). Introducing these country-pair fixed effects is found to have a very strong influence on the results.

The results allow differences across agreements to be characterised. The only important feature common to all agreements studied is to strengthen trade relationships between members, but this is almost a tautological result. The EU, EFTA and MERCOSUR, strongly boosted trade between members as far as final goods are concerned; with regard to third countries, they induced trade creation (except the EU regarding primary products). NAFTA also spurred significantly trade between its members, but it is difficult to conclude in terms of global effects on third countries. Nevertheless, this seems to be most of all related to the poor export performance (in particular of the US), compared to what is predicted by the model, during the nineties. In terms of imports, trade creation is found unambiguously. ASEAN induced a strong trade creation with third countries, and this creation consisted of imports of primary goods and exports of transformed goods, pointing to the increased division of labour across member countries.

In contrast to many previous studies, no clear evidence is found of trade-diverting impact of RTAs. Australia-New Zealand CER is found to be associated with lower trade with third countries, but this is mainly associated to lesser exports, and it is not clear whether this should be interpreted as trade diversion. The Andean Community induced trade diversion for transformed goods, but this seems to be more than compensated by trade creation for other production stages. COMECON is found to have substantially diverted imports in final products, and this effect is apparently only partially balanced by import creation in primary and intermediate goods.

Given the contrasted results across agreements, it is not possible to infer from the above-described results any projection about the possible impact of future agreements. It is necessary to proceed by analogy with existing agreements in order to gain further understanding of their probable impact. Broadly speaking, the results show that large RTAs generally create new opportunities for foreign producers, given the possibilities they offer to access a large market from a single country. This is mainly the case when the RTA is also a custom union: in this case, market access to member countries is harmonised, and re-exports within the custom union are not restricted, thus creating a single market from the point of view of the exporter. When a FTA is not a custom union, each member country maintains its own protection pattern, and therefore imposes local content requirement on its import from other member countries. This limits the extent of advantages third countries' exporters can draw in terms of easier market access. These conclusions should however be

considered as tentative: strictly speaking, the estimates do not give insights about the impact of future agreements, they only assess the impact of past agreements.

The dynamics of regionalisation are also studied. In this respect, *prima facie* evidence points to the outstanding increase in the share of intra-regional flows in Southeast Asia foreign trade. This raises the question of whether this is due to any trend specific to this region. The estimates proposed allow this evidence to be put into a perspective. Actually, the increase in intra-regional trade in Southeast Asia is inferior to what would have been predicted, based on the changes witnessed in economic size, wealth level, and similarity in trade specialisation, as well as the enforcement of the ASEAN FTA. A region-specific, unexplained trend of regionalisation is indeed identified for Southeast Asia, but it is negatively sloped. In North America as well as in Western Europe, no significant region-specific trend is found, once controlled for other known determinants. These results emphasise the leading role played by the institutional process of regionalisation in North America since the late eighties, and in Western Europe and in its periphery, throughout the whole period 1967-2001.

ABSTRACT

Gravity models of trade controlling for country-pairs heterogeneity via bilateral fixed effects are estimated on a world-wide basis from 1967 to 2001. The contribution of rising regionalism to the de facto regionalisation of trade is assessed. In most cases, preferential trade agreements spurred trade within member countries without diverting trade from non members. The impact of PTA was the largest for consumption goods and the lowest for primary goods, with more evidence of trade-diversion in the latter case.

7

LE RÉGIONALISME ET LA RÉGIONALISATION DU COMMERCE INTERNATIONAL

RÉSUMÉ

La régionalisation est un trait saillant du commerce international. La plupart des pays concentrent ainsi plus de la moitié de leurs échanges avec l'une des régions de la Triade (Amérique, Asie-Océanie ou Eurafrique). Parmi les quatre-vingt pays (ou zones) considérés dans cette étude, seule une dizaine (généralement les plus grands) ne présentent pas cette caractéristique. La polarisation est particulièrement forte en Eurafrique, où le commerce intra-régional comptabilise plus de 75% des flux pour la plupart des pays. De moindre ampleur, elle est néanmoins très importante en Amérique, en particulier pour le Mexique et le Canada, voisins immédiats des Etats-Unis. L'Asie-Océanie apparaît comme la région affichant le moins de polarisation. Toutefois, à l'exception des trois plus grandes économies d'Asie (Japon, Chine, Corée du Sud), les flux intra-régionaux comptent pour environ 55 à 60% du commerce extérieurs total des pays de cette région.

Ces observations sont approfondies par l'utilisation des intensités relatives commerciales (IRC). L'indicateur d'IRC mesure l'intensité des échanges commerciaux bilatéraux au sein d'un couple de pays par comparaison au commerce total de chacun des deux partenaires. En éliminant ainsi l'effet de taille, il indique l'orientation géographique des flux commerciaux. Dans la région Eurafricaine, les résultats révèlent des intensités encore particulièrement élevées au sein des pays ex-communistes, mais les flux commerciaux des mêmes pays avec l'Europe de l'Ouest sont désormais aussi intenses. Ailleurs, ils montrent que les échanges mutuels des pays latino-américains sont très intenses, de même que ceux au sein de l'Asie de sud-est.

Compte tenu de l'"obstacle" que constitue la distance, il n'est pas surprenant de constater que les pays commercent plus intensivement avec leurs voisins. La régionalisation du commerce international est de ce point de vue un fait naturel, les pays ayant tendance à commercer de préférence avec les partenaires de la même "région. Mais il existe d'autres explications possibles à la polarisation régionale, au premier rang desquelles figurent les Accords commerciaux régionaux (ACR), dont la prolifération a été spectaculaire depuis le début des années 1990.

En mai 2004, le nombre d'accord régionaux notifiés à l'OMC s'élevait à 208 alors qu'il était à peine de 30 en 1990. Le régionalisme est cependant loin d'être un fait nouveau. Trois étapes majeures peuvent être distinguées : la première vague de régionalisme débute dès la fin des années cinquante par le processus d'intégration économique en Europe de l'Ouest ; la seconde vague est lancée par les accords noués entre pays d'Amérique du Nord dans la seconde moitié des années quatre-vingt. La déferlante des années quatre-vingt-dix a principalement pour origine les accords signés par les pays ex-communistes. L'étude considère brièvement les accords les plus importants, soulignant *inter alia* l'importance des accords signés en Amérique Latine.

Ces constats posent la question du lien entre le régionalisme (c'est-à-dire cette profusion d'accord commerciaux régionaux) et la régionalisation du commerce international (c'est-à-dire la polarisation régionale observée dans les flux d'échanges). Afin d'y répondre, une approche empirique basée sur les données CHELEM-CEPII pour 80 pays ou zones recouvrant le monde durant la période 1967-2001 est mise en oeuvre. Cette analyse réactualise et approfondit les travaux menés par Freudenberg *et alii* (1998).

Le contrôle des effets fixes par couple de pays lors de l'estimation de l'impact des ACR est probablement la particularité la plus notable de la méthodologie utilisée. En d'autres termes, les estimations se focalisent sur l'intensité du lien commercial au sein de chaque couple de pays, par rapport à son niveau moyen durant la période. Travaillant exclusivement, pour tout couple de pays, par comparaison à l'intensité commerciale moyenne, permet de contrôler tout lien spécifique à un couple de pays qui n'évoluerait pas au cours de la période étudiée. C'est le cas par exemple de la distance géographique, de la langue, des liens culturels (y compris ceux d'un passé colonial commun), etc. Il s'agit d'une amélioration méthodologique significative qui n'a pas été encore expérimentée sur une base mondiale et une série temporelle aussi longue, sauf dans les travaux de Freudenberg et al. (1998), Fontagné et al. (1999) ainsi que Cheng et Wall (2003). L'introduction de ces effets fixes par couple de pays influe très fortement sur les résultats.

Les estimations réalisées montrent que le principal point commun des accords considérés est de renforcer les échanges entre les pays membres, mais ce résultat est presque tautologique. L'UE, l'AELE et le MERCOSUR, ont fortement augmenté le commerce mutuel entre leurs pays membres respectifs, mais ont aussi créé du commerce vis-à-vis des pays tiers. C'est particulièrement le cas pour les biens finals. L'effet stimulant de l'ALENA sur les échanges entre les trois pays membres est aussi incontestable, mais il est plus difficile de conclure quant aux effets vis-à-vis des pays tiers. Cette ambiguïté s'explique en grande partie par une faible performance à l'exportation (des Etats-Unis en particulier) dans les années quatre-vingt-dix, par rapport aux prédictions du modèle. Du côté des importations, la création du commerce est un fait établi. L'appartenance à l'ANSEA introduit une forte création de commerce avec les pays tiers et cette création se traduit à la fois par des importations de produits primaires et des exportations de produits transformés, illustrant l'approfondissement de la division du travail entre les pays membres de cet accord.

Contrastant avec de nombreuses études précédentes, notre travail ne met pas clairement en évidence un détournement de trafic lié aux ACR (à l'exception notable du cas des biens primaires pour l'UE à l'égard des pays tiers). L'accord CER entre l'Australie et la Nouvelle-Zélande semble associé à un volume de commerce moindre avec les pays tiers, sans toutefois qu'on puisse conclure sans ambiguïté à un effet de détournement de flux commerciaux. La Communauté Andine a suscité un détournement de commerce de produits transformés qui a été plus que compensé par une création de commerce dans les autres stade de production. Le CAEM semble avoir considérablement détourné les importations de biens finals, mais cet effet est partiellement contrebalancé par la création d'importations dans les biens primaires et intermédiaires.

La diversité des résultats pour les accords existants rend impossible d'en inférer des projections sur l'impact des accords futurs. On observe néanmoins que les accords régionaux de grande taille créent de nouvelles opportunités pour les producteurs des pays tiers puisqu'ils offrent, à partir d'un seul pays membre, des possibilités d'accès à un vaste marché. C'est surtout le cas lorsque l'ACR est aussi une union douanière : dans ce cas de figure, l'accès au marché des pays membres est harmonisé et les réexportations au sein de l'union douanière ne sont pas restreintes, créant ainsi un marché unique du point de vue de l'exportateur. Lorsqu'un ACR n'est pas une union douanière, chaque pays membre conserve son schéma de protection, en exigeant notamment un contenu local aux importations en provenance d'autres pays membres. Ceci limite l'étendu de l'accès au marché pour les exportateurs des pays tiers. Ces déductions doivent être cependant considérées avec prudence : les estimations ne fournissent pas un aperçu de l'impact des accords futurs à proprement parler, elles évaluent seulement l'impact des accords existants ou passés.

Ce document de travail analyse par ailleurs la dynamique de la régionalisation. A première vue, l'accroissement exceptionnel des échanges à l'intérieur de l'Asie du sud-est apparaît à cet égard le fait le plus marquant dans le commerce international de cette zone. La question est de discerner dans quelle mesure cette évolution est liée à l'évolution des déterminants connus de l'intensité des flux de commerce, et dans quelle mesure elle procèderait d'une éventuelle tendance spécifique à cette région. Les estimations proposées permettent d'apprécier les évolutions observées à leur juste mesure, étant donné leur contexte. Ainsi, l'augmentation du commerce intra-régional en Asie du sud-est fut moindre que celle que l'on pouvait prévoir en tenant compte des évolutions de la taille du marché, du niveau de richesse, des structures de spécialisation ainsi que du renforcement de l'accord ANSEA. Une tendance inexpliquée spécifique à cette région est bien identifiée pour l'Asie du sud-est, mais elle marque une évolution négative. En Amérique du Nord comme en Europe de l'Ouest, aucune tendance spécifique à la région n'apparaît significative, une fois contrôlés les facteurs évolution connus. Ces résultats mettent en avant le rôle des processus institutionnels dans la régionalisation en Amérique du Nord à la fin des années quatre-vingt et en Europe de l'Ouest et dans sa périphérie tout au long de la période 1967-2001.

RÉSUMÉ COURT

Des équations de gravité incluant des effets fixes bilatéraux sont estimés sur une base mondiale pour les années 1967 à 2001. La contribution du développement spectaculaire du régionalisme (accord préférentiels régionaux) à la régionalisation de fait des flux de commerce est analysée. La majorité des accords ont augmenté le commerce entre leurs membres sans réduire les échanges avec les pays tiers. L'impact des accords a été le plus marqué pour le commerce de biens de consommation, au contraire des biens primaires pour lesquels les cas de détournement de trafic sont par ailleurs plus fréquents.

Classification *JEL* : F14, F15
Mots-clefs :   Commerce international, intégration régionale, modèle gravitationnel

REGIONALISM AND THE REGIONALISATION OF INTERNATIONAL TRADE

Guillaume Gaulier, Sébastien Jean & Deniz Ünal-Kesenci[1]

1.   INTRODUCTION

Up to October 2003, more than 250 regional trade agreements (RTAs) had been notified to the WTO, of which up to 189 agreements where in force. And the WTO estimates that, by the end of 2005, if RTAs reportedly planned or already under negotiation are concluded, the total number of RTAs in force might well approach 300. In parallel to this quantitative surge, the nature of trade arrangements is also evolving. This numbering includes very different agreements in terms of domain covered, as well as of depth and reciprocity of concessions.

This activism in regional and bilateral negotiations, in a context of apparent (although probably temporary) stalemate of multilateral negotiations, raises many questions, both in terms of consequences for international trade patterns and of interactions with the ongoing Round. This study will focus on the former aspect, by intending to provide a detailed picture of the extent and evolution of the regionalisation process. Are international trade and foreign direct investment (FDI) indeed significantly polarised by region, and how has this polarisation been evolving over time? Is there a link with the above-mentioned institutional activism? What are the effects of these trade arrangements for third countries? Are there some region-specific trends toward regionalisation, in addition to what is explained by institutional arrangements and by the economic changes experienced by individual countries? What is the link between this rising regionalism (i.e., institutional agreements across neighbouring countries) and the intensity of regionalisation in international trade (i.e., regional polarisation of trade flows)?

Many of these questions have already been treated at length in the literature. Recent reviews can be found in particular in Panagaryia (2000), Schiff and Winters (2003) or Adams et al. (2003). The consequences of regionalism for multilateralism have in particular been subject to much scrutiny, as has been the impact of arrangements for third countries. This study primarily intends to update and extend the work of Freudenberg et al. (1998), mainly based upon the CHELEM-CEPII database, covering international trade world-wide, on a consistent and harmonised basis, for each year from 1967 to 2001. As such, the most salient particularity of the analysis is probably to control for country-pair fixed effects when assessing the impact of RTAs on trade flows. In other words, the estimates only focus on the intensity of the trade relationship between any country pair, compared to its mean level across the period. Working exclusively in comparison to the mean level of trade intensity, for any country-pair, makes it possible to control for any pairwise-specific country links

constant across the period considered, such as geographical devices (distance, natural obstacles to transportation, contiguity...), language, former cultural and historical ties (colonial for example), etc. This is a significant improvement in methodological terms, as recently pointed out by Cheng and Wall (2003), even compared to one-way fixed effects, which control for country-specific variables. However, it has never been carried out before on a world-wide basis for such a long time span, to the best of our knowledge, except by Freudenberg et al. (1998) and Fontagné et al. (1999). Above this specific contribution, this study also endeavours to describe with some detail the background, nature and extent of regionalisation of international trade. To the limited extent made possible by data availability, the analysis also covers FDIs.

These questions will be tackled in three stages. A first goal is to size up the issues (Section 2). Different indexes are considered to overview international trade regionalisation. The regionalisation of FDI is also considered, although data limitations prevent from bringing the analysis further than a preliminary, descriptive analysis. The institutional context is overviewed, and used to further qualify empirically the regionalisation of international trade. In a second stage (Section 3), these observed patterns of regionalisation are studied using a gravity model. Trade flows and relative intensities are explained through proximity or gravity factors like physical distance, regional agreements, differences in specialisation and income. Special attention is devoted to the consequences of main RTAs, both for trade within members and for trade with third countries. The dynamics of regionalisation over the last three decades and its determinants are then studied (Section 4). The analysis intends to identify whether any additional, unexplained trend toward regionalisation did take place in main regions, over and above gravity factors and institutional changes. Section 5 concludes.

2. AN OVERVIEW OF REGIONALISATION OF INTERNATIONAL TRADE AND INVESTMENT

The fact that international trade flows are more intense between neighbours naturally leads to a general pattern where a large part of trade flows takes place within geographical regions. In this Section, the pattern of regionalisation of international trade flows is first glanced empirically with regard to the Triad regions, defined here as America, Asia-Oceania and Eurafrica (see 0 for the detailed list of countries within each region). This general pattern is then confronted to an overview of the institutional context, namely the rapid development of RTAs, and of their importance in foreign trade flows.

2.1. Regionalisation at first glance

2.1.1. Trade Flows

Since distance is an obstacle to trade, it does not come as a surprise that countries use to trade more intensively with their neighbours. As a consequence, the regionalisation of foreign trade is a natural pattern, in the sense that countries tend to trade in large part with other countries belonging to the same "region". Of course, there is no straightforward, unique definition of the notion of region. However, following Freudenberg et al. (1998),

this regional polarisation of trade is nicely illustrated in a triangle representing the polarisation of each country's foreign trade across the Triad regions (Figure 1). This diagram summarises within a triangle the share of each country's foreign trade (exports + imports) carried out with a partner belonging to each of the three main geographical regions, namely America, Asia-Oceania and Eurafrica. Only ten out of eighty (group of) countries fall within the equilateral inscribed triangle, meaning that seventy out of eighty (group of) countries have more than half their foreign trade concentrated within a single Triad region. The ten remaining countries are mainly large countries, such as the US, Japan, China, India, Brazil and the EU-15 (excluding intra-EU trade). Noteworthily, world trade appears very evenly balanced across the Triad regions, when intra-EU trade is not accounted for.

Figure 1: The polarisation of foreign trade with regard to the Triad, by country, 2001
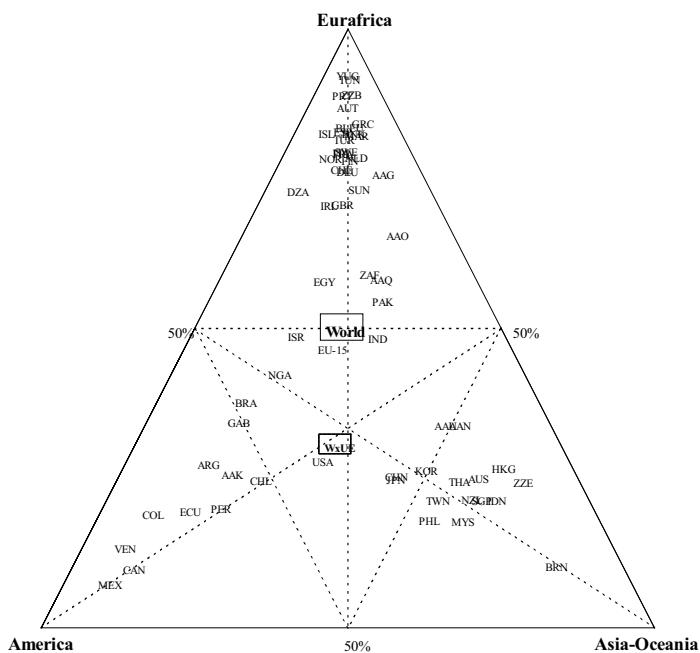
Source: Authors' calculations, based on CHELEM-CEPII database.

Note: Countries are labelled by their ISO code, see 0. In this diagram, for each country, the distance from each of the three triangle summits is inversely proportionate to the share of the corresponding Triad region in the country's foreign trade (exports + imports). In other words, the point representing a given country is the barycentre of the system formed by the points representing each of three Triad regions, weighted by the share of this region in the country's foreign trade. See 0 for the exact definition of regions. "WxUE" refers to world trade, excluding intra-EU trade. "EU-15" refers, to the foreign trade of the EU-15, excluding intra-EU trade.

Regional polarisation is especially strong in Eurafrica. The region accounts for more than 75% of foreign trade in the majority of Western Europe countries, as well as in CIS countries; in Central and Eastern European countries (CEECs) and Baltic states; trade outside the region generally does not exceed 10% of the total (figures by country are reported in 0). In comparison, the regional orientation of foreign trade appears rather limited in America. This is notably due to the rather intense trade relationships maintained with European countries (and with Asia as far Chile and Peru are concerned). Still, except for Brazil, Latin American countries trade in majority within the American region, with an particularly strong polarisation for the US neighbours, Mexico and Canada.

Asia-Oceania appears as the region exhibiting the weakest polarisation. However, except for the three largest economies in the region (Japan, China, South Korea), intra-regional trade accounts for around 55 to 60% of total trade.

Considering separately the polarisation of exports and imports provides with a broadly similar picture, reinforcing in particular the general pattern of regional polarisation across the Triad (Figure 2 and Figure 3). These figures also show that the regional polarisation is stronger for exports in America. This illustrates the importance of the US as an export market for their neighbourhood. In both cases, the importance of intra-regional flows is less overwhelming as far as imports are concerned.

In contrast, countries in the Asia-Oceania region are less focused on the region in terms of exports than of imports. This is very clear for China and Japan, which exports are much oriented toward America than toward Asia-Oceania. Beyond these specific cases, however, several countries also (South Korea, Hongkong, Taiwan, Thailand, the Philippines) send more than half of their exports outside the region. And no country appears to be overwhelmingly dependent on the region for its exports, as it is the case with Mexico or Canada in America, or with several countries in Eurafrica. The only exception is Brunei, but this has to do almost exclusively with oil exports. In contrast, only Japan and South Korea have more than half their imports sourced outside the region. Clearly, no market plays in Asia-Oceania a role similar to the one played by the US and the EU in the other two Triad regions.

Several countries (China, Chile, the US, Hongkong and Indonesia) appear as well diversified across Triad regions in terms of exports, since each of the three regions receive more than one fourth of their total exports. This is less true as far as imports are concerned, with at least one Triad region accounting for less than one fourth of imports for each country, except the US.

Figure 2: The polarisation of exports with regard to the Triad, by country, 2001
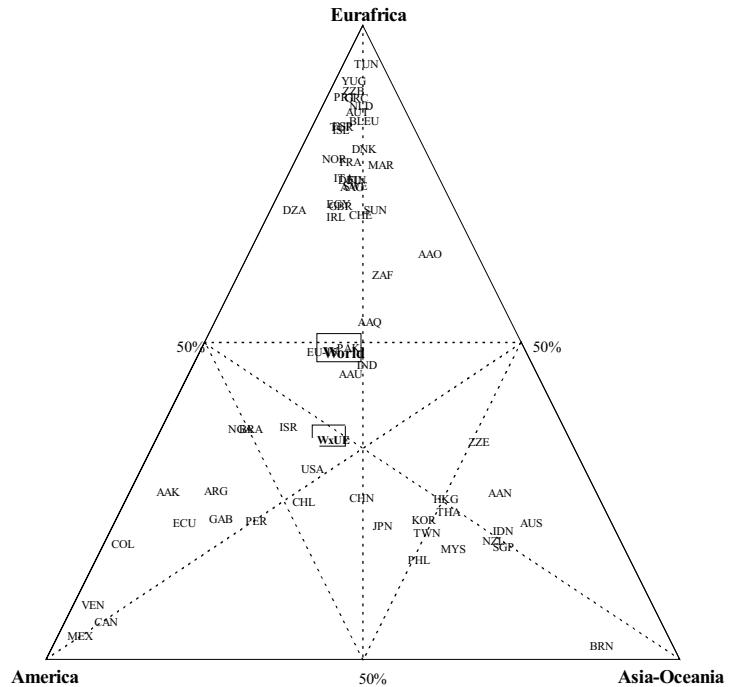
Source: Authors' calculations, based on CHELEM-CEPII database.

Note: In this diagram, for each country, the distance from each of the three triangle summits is inversely proportionate to the share of the corresponding Triad region in the country's exports. In other words, the point representing a given country is the barycentre of the system formed by the points representing each of three Triad regions, weighted by the share of this region in the country's exports. The geographical classification is described in 0. "WxUE" refers to world trade, excluding intra-EU trade.

Figure 3: The polarisation of imports with regard to the Triad, by country, 2001
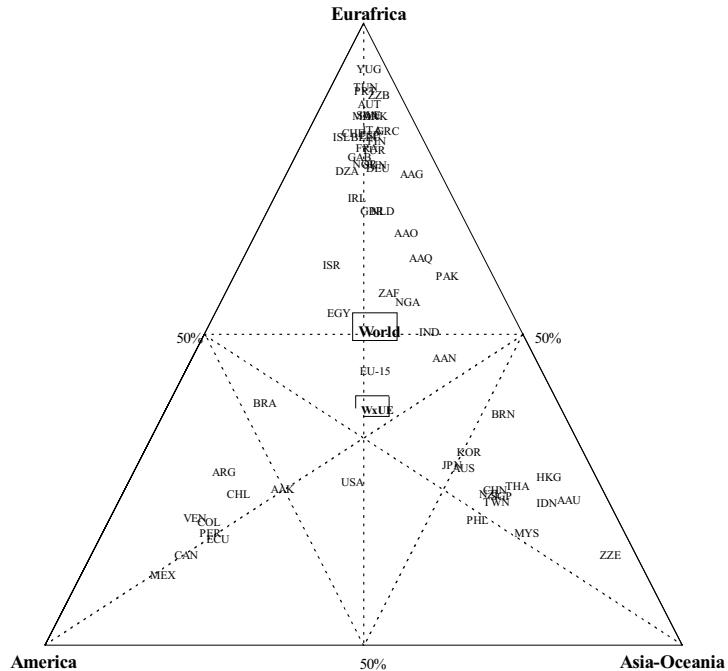
Source: Authors' calculations, based on CHELEM-CEPII database.

Note: In this diagram, for each country, the distance from each of the three triangle summits is inversely proportionate to the share of the corresponding Triad region in the country's imports. In other words, the point representing a given country is the barycentre of the system formed by the points representing each of three Triad regions, weighted by the share of this region in the country's imports. The geographical classification is described in 0. "WxUE" refers to world trade, excluding intra-EU trade.

2.1.2. *Foreign Direct Investment*

FDI is the second main mean through which regionalisation is likely to take place. Compared to trade, however, its study is rendered difficult by the volatility of flows, and by the scarcity of bilateral data. This section draws on the OECD dataset of FDI stock (OECD, *Statistical Directory of Foreign Direct Investment*). This database covers 55 countries for the period 1980-2001.[2] To the best of our knowledge, this is the only bilateral database describing FDI stock for such a large set of countries. Still, its main limitation is to rely exclusively on OECD member countries declarations. This implies that only FDIs

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[2] Since the data for 2001 suffers from a narrower coverage, 2000 is the most recent year suitable for wide-ranging analysis.

originating from or with destination to an OECD member country are considered. FDIs from a non-OECD country to another non-OECD country are not covered. The data used here take advantage of the treatment and harmonisation carried out by Benassy-Quéré et al. (2004). This harmonisation relies in priority on outward FDI declaration, since these are known to be in general of better quality than inward FDI declarations. When two declarations are available for the same relationship, the declaration of the receiving country is thus ignored.

The limited coverage of the database, together with the well-known problems encountered in measuring FDI (see OECD, 2004), call for much caution when interpreting these data. This is spectacularly illustrated in Table 1, where worldwide FDI according to the OECD database is found to be inferior by almost one third to the figure obtained from UNCTAD database, for year 2000. The exclusion of FDIs between countries such as Taiwan, Hongkong, Singapore and China probably explains part of this discrepancy. This is confirmed by the figure obtained for China inward FDI stock in the OECD database, as low as 11% of the figure given in UNCTAD database. Even for the US, though, the OECD database estimates are approximately 20% lower than UNCTAD figures.

Acknowledging this limited coverage and reliability of the data, the techniques used to investigate further trade regionalisation will not be applied to investment, lest it provides misleading insights. Still, the relatively large country coverage of this bilateral data can be used to characterise the broad pattern of geographical distribution of FDIs.

Table 1: FDI Stocks in 2000
According Two Different Data Bases (million US$)

	OECD data	UNCTAD data
World		
Inward	4 202 480	6 146 656
Outward	4 202 480	5 991 756
USA		
Inward	1 016 113	1 214 254
Outward	1 089 884	1 293 431
China		
Inward	38 510	348 346
Outward	750	25 804

Sources: OECD, Statistical Directory of Foreign Direct Investment and UNCTAD, World Investment Report 2003.

Figure 4 shows the geographical polarisation of inward FDI stocks between the three Triad regions considered previously, for 55 countries covered by the OECD database in 2000. Eurafrican countries are the majority (34), while only 12 countries belong to Asia-Oceania, and 9 to America. For each country, the distance to each of the three vertices is inversely proportional to the share of the country's inward FDI stock originating from the

corresponding Triad region. This figure shows the overwhelming predominance of America and Eurafrica as originating regions of FDIs. On the whole, 60% of FDI stocks considered here originates from Eurafrica (55% from the EU-15 alone), 31% from America (26% from the US alone), and 10% from Asia-Oceania (6% from Japan) (see Table in 0). Given this disproportionate global distribution, it is not surprising that countries belonging to Europe or to its periphery have the bulk of their inward FDI stock (most often more than two thirds) originating in the region, but Eurafrica also originates two thirds of the US inward FDI stocks. Year 2000 FDI stocks include the huge investments in ICT sector's mergers and acquisitions, in a context of speculative bubble, and this probably blur the analysis, notably by inflating the share of the EU-originating investments. Still, this result reflects the fairly strong regionalisation of FDIs in Eurafrica. A handful of countries stand as exception, with a large share of FDIs originating from America: Israel (71% of inward FDI stock originating from America), the UK (49%), Switzerland (43%), and Egypt (41%).

Figure 4: The polarisation of Inward FDI Stock with regard to the Triad, by country, 2000
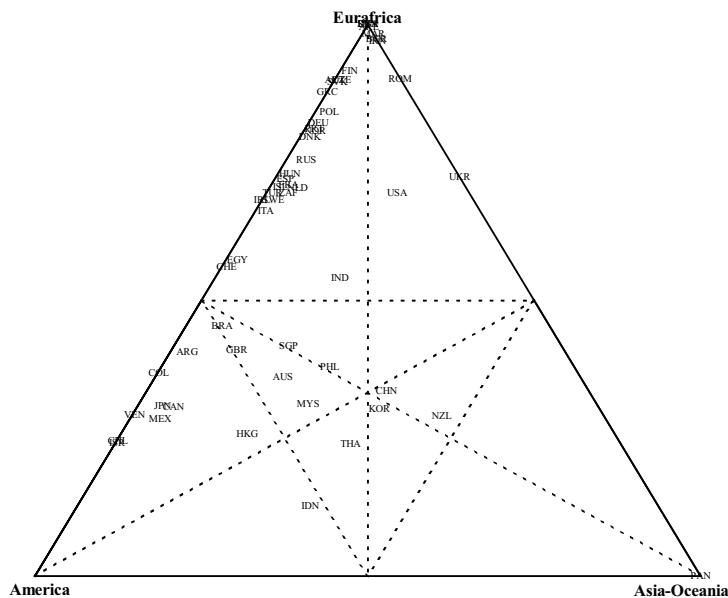
Source: OECD, Statistical Directory of Foreign Direct Investment. Authors' calculations based on Benassy-Quéré et al. (2004).

Notes: Calculations are based on OECD countries' declarations. The scope is thus limited to foreign investment originating from or with destination to an OECD member country. Thus, for non-OECD member countries, investments toward other non-OECD member countries are not covered.

Several other countries are characterised by the large share of FDIs originating in America. This is particularly the case of Latin American countries, and this illustrates the key role of the US as an investing country in the region. For Asia-Oceania, the origin of FDIs is generally evenly distributed across Triad regions, although America originates more than half FDI stocks in Japan, Hongkong and Indonesia. The limited coverage of the database certainly involves an understatement of the extent of intra-Asian FDIs, but the magnitude of this bias is difficult to gauge. As a consequence, it is difficult of interpret the results obtained for this region.

The distribution across the Triad regions of outward FDI stock by country also points to the dominant role of Eurafrica and America, but the broad picture is less unbalanced than for inward investments (Figure 5). European firms mainly invest in their own region (60%), and in particular in the EU (53%). Still, America receives about on third of European outward FDI (28% for the US alone), and substantially more for some countries such as France (43%, but this share is partly inflated by the 1998-2000 large investments in the ITC sector) or Portugal (51%, almost exclusively towards Brazil).

Figure 5: The polarisation of Outward FDI Stock with regard to the Triad, by country, 2000
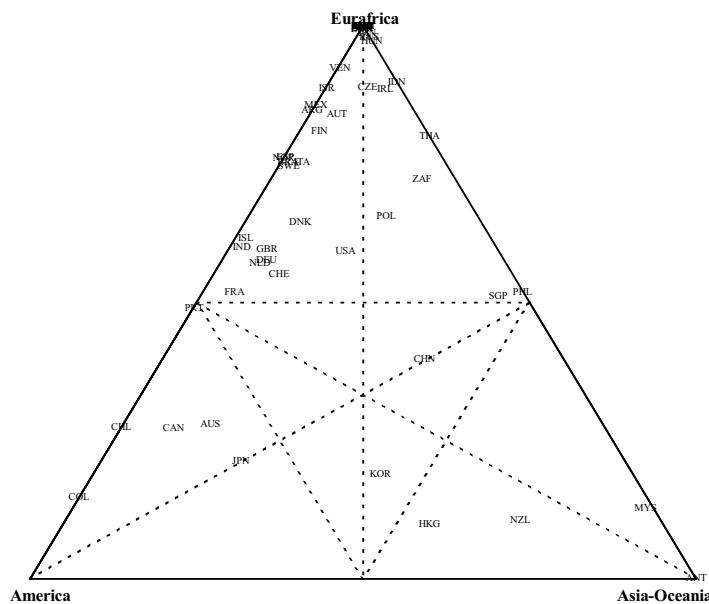
Source: OECD, Statistical Directory of Foreign Direct Investment. Authors' calculations based on Benassy-Quéré et al. (2004).

Notes: Calculations are based on OECD countries' declarations. The scope is thus limited to foreign investment originating from or with destination to an OECD member country. Thus, for non-OECD member countries, investments toward other non-OECD member countries are not covered.

Outward FDI in Latin American countries does not appear to be significantly regionalised. For several countries, Europe is the main recipient of their outward FDI. The lack of data about investment across non-OECD member countries certainly biases substantially the analysis, and prevents the extent of investment across Latin American countries to be properly assessed. Still, this result shows the relatively limited role played by the US as a recipient of this region's FDIs. As to the US themselves, the EU-15 is the main recipient of their FDIs (52%).

In Asia-Oceania, Japanese and Australian firms mainly invested in the US (almost 60% of their outward FDI stock), while other countries outward FDI is more oriented towards their own region (Hongkong, New-Zealand, Malaysia), or shared toward their own region and Eurafrica (Singapore, Philippines, China).

The evolution across the period 1980-2000 clearly shows the growing importance of Eurafrica, both in terms of inward and outward FDI stock (see 0). This reflects the strong impact of European integration on investment across European countries, especially during the eighties and the early nineties. European FDIs to the US also surged during the second half of the nineties, due both the relative attractiveness of the US compared to the EU during this period, and (for the last three years) to a few very large mergers and acquisitions, especially in the ITC sector. In contrast, the share of America in world FDI have substantially declined during the last twenty years. This largely results from the trend just described for Europe.

The share of Asia-Oceania remains fairly limited at the world level across the whole period, between 10% and 20% of world total. Its role as an investor region sharply declined during the second half of the nineties, as a result of the Asian crisis, but also of the gloomy performances of the Japanese economy during this period. On the whole, the lack of coverage of FDI across most Asian countries makes it impossible to provide an assessment of the flows linked to the increasing division of labour across East Asian countries. Including such flows in the analysis might well influence substantially the whole picture.

In sum, much caution is needed while interpreting the data available for the geographical distribution of FDI, and the underlying possible regionalisation phenomenon. This is especially the case, here, for Asian countries, due to the limited country coverage in this region. Still, this brief analysis shows the strength of FDI regionalisation in Europe, especially since the mid-eighties. This is in contrast with the situation observed in America, where the important role of the US as a foreign investor is the only hint of regionalisation in this respect, pointing to a very asymmetrical pattern.

2.2. The CEPII's index of relative trade intensity

Due to widespread differences in size and openness, the extent of trade flows' regionalisation cannot be achieved by simply comparing trade shares. Instead, this Section makes use of the CEPII's index of bilateral, relative intensity of trade flows. This index is intended to measure "trade proximity" of partner countries, by comparing observed bilateral flows (as % of world trade) with theoretical flows (the product of total relative

weights in world trade) that reflect the overall capacity of the partners to trade. The index thus eliminates size effects, in order to reveal what is specifically linked to the bilateral relationship.

Practically, relative trade intensities (*RTI*) are the ratios of the observed trade flows to "natural" flows (Deutsch and Savage, 1960; Drysdale and Garnaut, 1982). The latter are determined by the geographical distribution of world trade according to the relative importance of exporters and importers respectively:

(1)
$$RTI = \frac{\dfrac{V_{i,j}}{V_w}}{\dfrac{V_i \cdot V_j}{V_w{}^2}} = \frac{V_{i,j} \cdot V_w}{V_i \cdot V_j}$$

where $V_{i,j}$ stands for trade between country i and country j, V_i for total trade of country i, V_w for total world trade.

Additional corrections are made to this indicator, in order to make sure that it is neutral with respect to the country size (for a detailed description of these changes, see Freudenberg et al., 1998).

RTI has two important properties. Firstly, it is independent from the size and openness of the two partners. Secondly, it is purely relative, since it focuses on the comparison of trade flows of each country across its different partners, without taking into account the absolute level of flows.

For illustrative purposes, the pairwise combinations exhibiting the highest RTI (and at least a value of 3) are displayed in Table 2 through Table 4. Table 2 confirms that regionalisation of trade has reached a fairly high level in Latin America. This is particularly true within the Andean Pact and within the MERCOSUR. While geographical factors are obviously the main explanation, this might also result from the institutional efforts witnessed during the last two decades (see below). Even though the absolute magnitude of trade is far higher, RTIs are found to be rather limited in North America, slightly below 5 for the relationships of the US with its two neighbours.

These tables confirm the higher level of regional integration of trade in Europe. The relative intensities are especially high for former communist countries, reflecting both a survival of the former COMECON trade dependencies, and the importance of the EU to them as an export market. This also results from the former integration of these new countries in a national entity (USSR, Yugoslavia) which has split up. This reflects the proximity between small economies, which "naturally" leads to high relative intensities of trade. Noteworthily, while steep declines in RTI are experienced for several pair of partners among former communist countries, many of them experienced an increase between 1995 and 2001.

23

Table 2: Top relative trade intensities in America

Partners		Relative trade intensity		Partners		Relative trade intensity	
		2001	Chg. 95-01			2001	Chg. 95-01
Colombia	Ecuador	48.3	15.8	Argentina	America nes	5.6	-0.2
Ecuador	Peru	38.4	28.5	Brazil	Nigeria	5.4	2.6
Colombia	Venezuela	29.2	-3.6	Ecuador	America nes	5.3	1.4
Argentina	Brazil	27.5	2.0	Argentina	Ecuador	5.0	0.3
Argentina	Chile	27.1	10.6	Brazil	Peru	4.8	-0.8
Chile	Peru	22.4	9.2	Mexico	US	4.7	-0.7
Colombia	Peru	19.9	-6.3	Brazil	Venezuela	4.6	-0.4
Chile	Ecuador	12.3	1.1	Canada	US	4.4	-0.5
Venezuela	America nes	11.4	2.8	Chile	Venezuela	4.1	0.6
Ecuador	Venezuela	10.8	2.4	Brazil	America nes	4.0	-2.5
Peru	Venezuela	10.1	-3.4	Peru	America nes	3.8	-0.3
Argentina	Peru	8.3	1.6	Brazil	Algeria	3.7	2.0
America nes	Kazakstan	8.0	7.6	Brazil	Colombia	3.6	1.1
Brazil	Chile	7.6	-0.5	Peru	Nigeria	3.2	3.2
Chile	Colombia	7.0	1.9	Brazil	Latvia	3.1	2.7
Colombia	America nes	5.8	1.7	Ecuador	Serbia Monte.	3.1	-3.8

Source: Authors' calculations, based on CHELEM-CEPII database.

Note: Partner pairs are ranked by decreasing order of relative trade intensity, among pairs including at least one country belonging to America. Column "Chg. 95-01" refers to the absolute change of the RTI between 1995 and 2001 (value in 2001 minus value in 1995).

Several neighbourhood relationships also come up in these relatively most intense trade relationships, in particular between Scandinavian countries, between Spain and Portugal, between UK and Ireland, or between African countries. Although far larger in absolute value, RTI is weaker for relationships like Germany-France (RTI = 1.5 in 2001), Germany-the Netherlands (1.9), France-Spain (3.6) or even Germany-Austria (3.8). In any case, the values obtained for largely-open countries such as European ones vary across a more limited range than those obtained for less open countries, such as Central Asian ones.

Table 3: Top relative trade intensities in Eurafrica

Partners		Relative trade intensity		Partners		Relative trade intensity	
		2001	Chg. 95-01			2001	Chg. 95-01
Macedonia	Serbia Mont.	286.5	-134.1	Norway	Sweden	11.6	1.7
Bosnia-Herzego.	Croatia	247.2	17.1	Belarus	Kazakstan	11.4	-4.6
Bosnia-Herzego.	Serbia Mont.	151.9	-1176.1	Portugal	Spain	11.1	1.8
Latvia	Lithuania	104.5	25.3	Ukraine	Caucasus	11.0	-8.1
Kyrgyzstan	Other CIS	100.6	-69.8	Romania	Other CIS	10.5	-1.0
Albania	Greece	99.7	16.2	Estonia	Sweden	10.5	1.7
Belarus	Lithuania	78.6	16.3	Denmark	Sweden	10.5	2.2
Greece	Macedonia	70.5	65.2	Iceland	Norway	10.0	0.1
Ukraine	Other CIS	68.1	13.1	Gulf	Pakistan	10.0	2.9
Bosnia-Herzego.	Slovenia	67.0	17.5	Greece	Romania	10.0	4.0
Estonia	Latvia	64.5	-9.1	Bulgaria	Turkey	9.9	1.3
Croatia	Slovenia	61.5	-11.0	Romania	Serbia Mont.	9.6	-17.3
Kazakstan	Kyrgyzstan	58.0	-117.3	Albania	Belarus	9.5	9.5
Belarus	Ukraine	57.0	21.0	Lithuania	Ukraine	9.4	-9.2
Belarus	Latvia	56.2	35.4	Albania	Croatia	9.2	1.0
Caucasus	Other CIS	55.9	19.9	Ukraine	Macedonia	9.0	2.4
Romania	Brunei	50.4	-2.0	Finland	Sweden	8.9	0.5
Albania	Macedonia	44.7	-32.1	Russian	Caucasus	8.9	-1.0
Bulgaria	Macedonia	43.3	-41.0	Nigeria	Africa nes	8.7	3.7
Estonia	Lithuania	35.4	-7.7	South Africa	Africa nes	8.6	-1.9
Estonia	Finland	35.4	-1.7	Gabon	Africa nes	8.5	4.3
Kazakstan	Other CIS	34.5	-20.2	Belarus	Caucasus	8.4	4.8
Bulgaria	Greece	32.4	7.2	Austria	Slovenia	8.4	1.4
Czech Republic	Slovakia	31.5	-40.2	Algeria	Turkey	8.2	2.0
Belarus	Other CIS	31.0	11.6	Estonia	Russian	8.1	-2.0
Bulgaria	Serbia Mont.	29.6	-54.5	Hungary	Slovakia	8.0	-1.6
Bosnia-Herzego.	Macedonia	29.5	14.7	Kazakstan	America nes	8.0	7.6
Slovenia	Macedonia	29.3	-8.3	Denmark	Norway	7.9	0.3
Croatia	Serbia Mont.	28.6	26.2	Turkey	Non-OPEC MEast	7.6	-0.2
Russian	Ukraine	28.2	-6.2	Kyrgyzstan	Russian	7.6	-9.2
Kyrgyzstan	Taiwan	27.9	27.9	Hungary	Romania	7.5	-1.1
Kazakstan	Russian	26.6	-18.7	Bulgaria	Russian	7.5	-3.4
Belarus	Estonia	21.7	9.5	Iceland	Poland	7.4	7.0
Turkey	Caucasus	20.8	7.1	Poland	Slovakia	7.3	0.7
Greece	Europe nes	20.7	7.4	Czech Republic	Poland	7.2	-0.3
Belarus	Kyrgyzstan	20.5	12.1	Poland	Ukraine	7.2	0.1
Denmark	Iceland	19.3	1.5	Latvia	Sweden	7.0	-2.0
Russian	Other CIS	19.2	-3.3	Nigeria	India	6.9	3.6
Croatia	Macedonia	19.0	-7.3	Estonia	Ukraine	6.9	-0.5
Bulgaria	Ukraine	19.0	9.8	Albania	Turkey	6.6	-1.4
Greece	Serbia Mont.	18.5	15.7	Austria	Hungary	6.5	-1.9
Bulgaria	Caucasus	16.4	-11.0	Turkey	Other CIS	6.5	-0.2
Slovenia	Serbia Mont.	16.4	6.3	Croatia	Non-OPEC MEast	6.5	4.8
Kazakstan	Caucasus	16.3	7.5	Finland	Russian	6.5	2.0
Kazakstan	Ukraine	15.2	4.4	Bosnia-Herzego.	Belarus	6.5	4.5
Belarus	Poland	14.4	6.1	Latvia	Russian	6.4	-6.2
Bulgaria	Romania	13.7	6.2	Egypt	Non-OPEC MEast	6.4	1.0
Albania	Serbia Mont.	13.1	-21.9	Ireland	United Kingdom	6.3	-0.1
Lithuania	Russian	12.6	-3.2	Austria	Croatia	6.2	1.5
Albania	Italy	12.3	2.6	Austria	Slovakia	6.2	1.6
Albania	Bulgaria	12.0	-5.7	Finland	Latvia	6.1	-1.3
Lithuania	Poland	11.7	3.8	Gulf	Non-OPEC MEast	6.1	-1.1

Source: Authors' calculations, based on CHELEM-CEPII database.

Note: Partner pairs are ranked by decreasing order of relative trade intensity, among pairs including at least one country belonging to Eurafrica. In order to save space, only the country pairs exhibiting a RTI superior to 6 in 2001 are displayed. Column "Chg. 95-01" refers to the absolute change of the RTI between 1995 and 2001 (value in 2001 minus value in 1995).

In Asia-Oceania, outside some distinctive trade relationships concerning mainly oil trade (in particular those involving Brunei), a few pairs are remarkable by the intensity of their reciprocal trade, in particular Australia-New Zealand, Malaysia-Singapore, Indonesia-Singapore, China-Hongkong and Hongkong-Taiwan. Among the main pairs of countries, most exhibit a RTI superior to three, including those between Japan, China, Korea and Indonesia (with the exception of Japan-Korea, 2.4, and China-Indonesia, 1.4). Although it has been emphasised above that Asian countries make a significant part of their trade (and in particular their exports) outside the region, this illustrates the intensity of their trade links.

Table 4: Top relative trade intensities in Asia-Oceania

Partners		Relative trade intensity		Partners		Relative trade intensity	
		2001	Chg. 95-01			2001	Chg. 95-01
Brunei	Romania	50.4	-2.0	Thailand	Asia-Oceania nes	4.2	1.6
Taiwan	Kyrgyzstan	27.9	27.9	Malaysia	Thailand	4.1	1.1
Australia	New Zealand	21.0	-0.5	Thailand	Non-OPEC MEast	4.1	2.7
Brunei	Camb-Lao-Vietn.	16.3	-10.8	Singapore	Thailand	4.0	-0.3
Malaysia	Singapore	12.3	1.2	Taiwan	Camb-Lao-Vietn.	4.0	0.4
Pakistan	Gulf	10.0	2.9	Australia	Indonesia	3.9	0.7
Brunei	Singapore	7.7	-1.0	Australia	Brunei	3.8	2.7
Brunei	Thailand	7.4	1.6	Korea	Gulf	3.7	1.3
Indonesia	Singapore	7.4	3.2	Indonesia	Korea	3.7	0.8
India	Nigeria	6.9	3.6	Indonesia	Japan	3.5	-0.1
Camb-Lao-Vietn	Thailand	6.7	-0.5	Philippines	Singapore	3.5	1.1
India	Asia-Oceania nes	6.7	0.0	Pakistan	Non-OPEC MEast	3.3	0.2
Brunei	Malaysia	6.2	1.9	India	Gulf	3.3	-1.1
Pakistan	Asia-Oceania nes	5.9	1.3	Camb-Lao-Vietn	Belarus	3.3	2.7
China	Hong Kong	5.8	-0.5	Japan	Philippines	3.2	0.3
Singapore	Camb-Lao-Vietn.	5.3	-0.3	Philippines	Thailand	3.2	1.0
Asia-Oceania ne	Gulf	5.3	-4.4	China	Korea	3.2	0.3
New Zealand	Asia-Oceania nes	5.1	0.1	China	Japan	3.1	0.0
Brunei	Africa nes	5.1	0.6	Malaysia	Philippines	3.1	1.4
Australia	Asia-Oceania nes	4.8	-0.7	Japan	Thailand	3.1	-0.1
Hong Kong	Singapore	4.8	0.7	Singapore	Europe nes	3.1	1.0
Hong Kong	Taiwan	4.6	0.8	Brunei	New Zealand	3.1	2.3
Australia	Camb-Lao-Vietn.	4.4	1.9	Korea	Camb-Lao-Vietn.	3.0	-0.3
Brunei	Japan	4.3	0.6	India	Africa nes	3.0	0.0
Pakistan	Africa nes	4.3	0.1	Brunei	Korea	3.0	0.3
Taiwan	Philippines	4.2	1.9				

Source: Authors' calculations, based on CHELEM-CEPII database.

Note: Partner pairs are ranked by decreasing order of relative trade intensity, among pairs including at least one country belonging to Asia-Oceania. Column "Chg. 95-01" refers to the absolute change of the RTI between 1995 and 2001 (value in 2001 minus value in 1995).

2.3. Institutional context: Regional trade arrangements and their influence on trade flows

As mentioned above, regional polarisation is certainly, at least partly, a natural pattern. But it has also a strong institutional background. It has become usual to distinguish three waves of regionalism (see e.g. Adams et al., 2003): the first wave dates back in the fifties, when the economic integration of Western Europe began, followed by regional agreements in Africa and in Latin America; the second wave began in the mid eighties, with the European's Single Market (1986), the Canada-US FTA, followed by the NAFTA, and a number of subregional arrangements; the third wave followed the creation of the WTO, and was characterised by the proliferation of FTAs.

Graph 1: Breakdown of Regional Trade Agreements by geographical area*
(in force and notified to the GATT/WTO**)
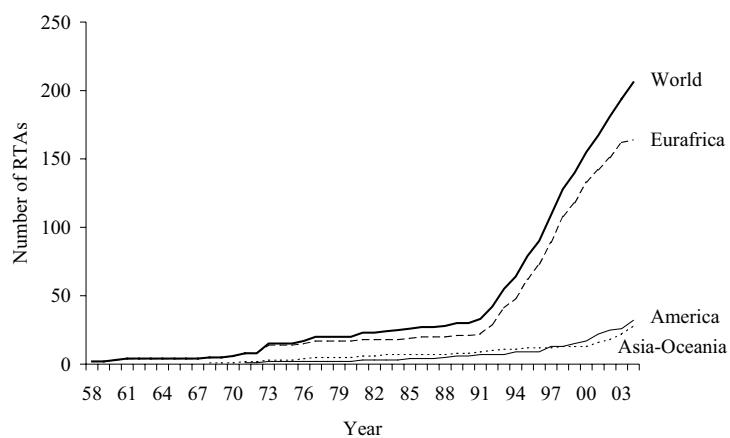
Source: WTO, authors' calculations.

*World figures are inferior to the sum of the RTAs by region: when a trade agreement involves both of two or three region, this agreement is taken account in the curves of the each concerned region.
** As of 1 May 2004.

Graph 1 spectacularly illustrates the recent surge in RTAs, in particular since 1991. Up to May 2004, up to 208 agreements notified to the WTO were in force. This graph also points to the overwhelming importance of the Eurafrica region in this trend. This has in particular been the case since 1991, mainly as a result of the very large number of agreements signed by former communist countries, either CEECs or Former Soviet Union countries, and more recently former Yugoslavia countries. Noteworthily, though, trade agreements signed between members formerly belonging to the same country can hardly be considered as a progress toward economic integration, but rather as an accompanying measure to political disintegration. Outside Europe, a number of bilateral agreements have been signed, but they are mainly linked to the intense activity in this domain of a handful of countries, namely Mexico, Canada and Chile in America, Singapore and Australia in Asia-Oceania.

In parallel, a number of RTAs have been signed, which gather several partners and account for a significant share of world trade. Graph 2 shows for the main RTAs the importance of mutual trade flows between member countries, both compared to their total trade, and for 2001 as a share of world trade. The NAFTA and, most of all, the European Union are clearly outliers here, in terms both of their share in members foreign trade, and of their share in world trade. There is no comparable example world-wide of such wide and deep regional agreement. No clear trend emerges in the case of the EU throughout the period. Intra-EU trade accounts for about 60% of members' total trade, although an increase is experienced in the eighties, followed by a decrease in the nineties. The NAFTA accounts for a lower share of member countries foreign trade (between 40% and 50%), but this share has been steadily growing since the early nineties, when the initiative was being negotiated (and just after the CUSFTA was being enforced). The share of intra-NAFTA trade thus increased from 38% in 1991 to 47% in 2001. This suggests that regional agreements might have significantly impacted trade in North America.

In Latin America, several agreements have been signed during the last two decades (Panel A). The first large agreement was the Latin American Integration Association (LAIA, or ALADI in Spanish), enforced in 1981. Given its rather geographic large coverage, this agreement is the most important as far as the share in world trade is concerned (0.6% in 2001). However, it does not have any visible effect on member countries trade relationships, probably due to the limited extent of the mutual liberalisation involved. Trade between Latin American countries did increase sharply since the late eighties, but this seems to be linked to two narrower but deeper agreements. The first one is the Andean Community, gathering Bolivia, Colombia, Ecuador, Peru and Venezuela, which was enforced in 1988, resulting in a complete free-trade area by 1992 (except for Peru, committed to fully enter the FTA by 2005), and in a custom union set up progressively between 1995 and 2003 (again, except for Peru). Although the geographical classification used here does not make it possible to take into account the full detail of trade flows, the resulting trade integration appears to be spectacular: intra-CAN trade jumped from 4.2% of member countries' total trade in 1988 to 11.2% in 2001. Even though the resulting level is not high,[3] the evolution is striking.

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[3] This is not a surprise given the small size of the member countries, and the limited extent of the agreement.

Graph 2: Main Regional Trade Agreements:
Share of intra-RTA flows in total trade of member countries* (1967-2001, %)

Panel A: America
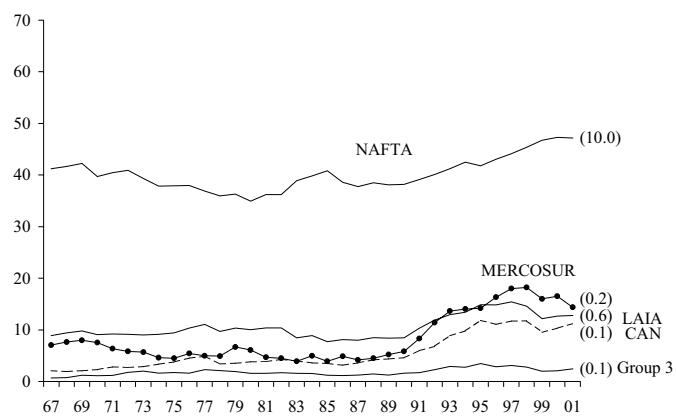
Panel B: Eurafrica
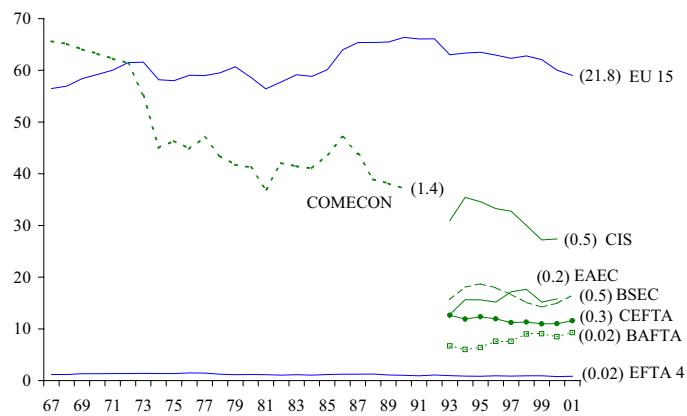
Panel C: Asia-Oceania
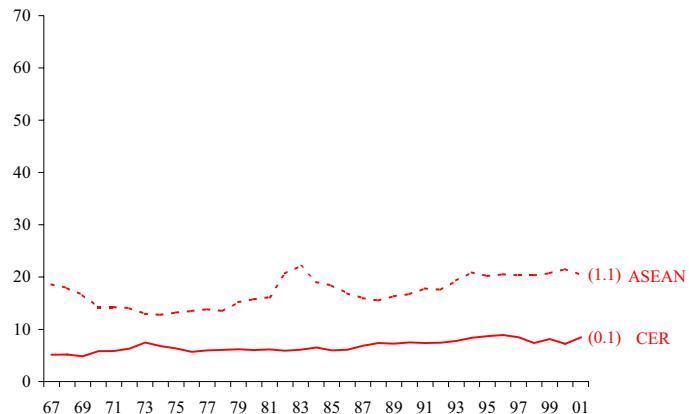
Source: CEPII, CHELEM database, authors' calculations.

* RTA curves refer to the ratio $\dfrac{\text{intra - RTA trade}}{(\text{exports} + \text{imports})/2}$. Figures in brackets display the share of intra-RTA flows in world trade in 2001 (or 1990 for COMECON, 2000 for CIS and EAEC).

Note: RTA membership is accounted for based on the end of period's situation. For instance, the 15 EU members are included in the calculation throughout the whole period. Member countries of each RTA are presented in Appendix 3.

The second agreement is the Southern Common Market (*Mercado Común del Sur*, MERCOSUR), signed between Argentina, Brazil, Paraguay and Uruguay and enforced in 1991. Although the initial objectives of the Asunción Treaty were not reached, an incomplete free-trade area (with substantial exceptions for "sensitive products") was achieved within the framework of this agreement by the end of 1994, under which 95% of intra-regional trade was liberalised. A partial custom union was subsequently enforced as of January 1st, 1995. According to our geographical classification (in which only Brazil and Argentina can be studied, since Paraguay and Uruguay are not singled out), the share of intra-MERCOSUR trade tripled between 1990 and 1997, from 6% to 18%, although it declined somewhat since then. Although tumultuous, the implementation of MERCOSUR thus resulted in steep trade integration.

In Europe, COMECON offers a spectacular example of regional disintegration, although the share of external trade realised within the agreement was already steadily declining before its removal (Panel B). The subsequent evolution cannot be properly monitored, given the political changes that accompanied the collapse of the communist system, which translated in various changes in the definition of frontiers. Given the state-controlled nature of the member states at the time it was in activity, it is not clear either what lessons can be drawn from this example for market economies. Numerous agreements were signed afterwards between former communist countries. These agreements exhibit a substantial

level of trade between member states, but this intense cross-trade is partly a remainder interdependence of the close trade relationships previously held under the COMECON, and between FSU states. No clear trend emerges throughout the (short) period on which trade can be measured for these agreements, except perhaps a decline of the intensity of trade within the Community of Independent States (CIS), and an increase within the Baltic FTA (BAFTA). These agreements do not appear as a vector of strong trade integration between member states, for which the real stakes lie in their relationships with the EU. In any case, such agreements cannot be considered as building blocks of regionalism, since their creation mainly result from the necessity to accompany political disintegration.

Only three important agreements were in force in Asia in 2001 (Panel C). The Australia and New Zealand Closer Economic Relations Trade Agreement (known as CER), entered into force in 1983, induced an increase in the share of bilateral trade, from 6.1% in 1983 to 8.4% in 2001, but the volume of trade concerned remains limited. Embedded in the South Asian Association for Regional Cooperation (SAARC) and comprising Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan and Sri Lanka, the SAARC PTA (SAPTA) has been enforced since December 1995. While it was intended to be a first step toward a South Asian FTA (SAFTA), and subsequently a custom union, it led *de facto* to a limited liberalisation. As a matter of fact, the trend in trade intensity between member countries, if any, has rather been downward since the enforcement of the agreement. Since only India and Pakistan are singled out in the database, the corresponding curb available here is not representative. It is not reported in the graph.

The most important agreement in Asia is clearly the ASEAN Free Trade Area (also known as AFTA), established in 1993, now comprising Brunei, Burma, Cambodia, Indonesia, Laos, Malaysia, the Philippines, Singapore, Thailand and Vietnam. This agreement is by far the largest, with trade between members accounting for 1.1% of world trade, and for approximately 20% of member countries' total trade. The share of members' trade realised within the ASEAN has been growing moderately since the late eighties.

Broadly speaking, the pattern emerging from this overview of RTAs can be summarised as followed. Although the collapse of the communist system led former communist countries to sign a large number of agreements, regionalisation in Europe is still essentially shaped around the EU, in the continuity of the process of regional integration launched during the fifties. In America, a real impetus of regionalisation has been witnessed since the late eighties, with NAFTA and MERCOSUR as leading agreements, and a clear intensification of intra-regional trade flows. In Asia, finally, trade agreements do not appear to have had a decisive influence on trade relationships.

3.   ANALYSING REGIONALISATION

The fact that countries trade more intensively with their neighbours does not come as a surprise, given the well-known negative impact of distance on trade relationships. Nor should the fact that the US neighbours have strong trade links with the US be counterintuitive, given the relative sizes. Although *prima facie* evidence is useful to characterise the extent and intensity of trade flows, this means that trade flows are bound to

be more intense between neighbours, and within geographical regions. Characterising properly a possible regionalisation phenomenon thus requires going beyond the mere observation of trade intensities. Speaking of regionalisation would only make sense as soon as trade intensities within a region are higher than expected, once accounted for "natural" determinants of trade, such as distance, size, cultural and geographical ties, and income per capita. This requires estimating gravity equations.

This gravity-based, econometric study of regionalisation is carried out in this section. The analysis focuses on characterising the extent of any regionalisation phenomenon, over and above natural determinants, and its evolution over time. The general approach follows Freudenberg et al. (1998). This is also the case for many technical aspects, such as the use of relative trade intensities (although the analysis is also carried out here in level) or the use of an indicator of similarity in trade specialisation. However, the method used differs in several respects. The model used is different, and emphasis is put on studying the dynamics of regionalisation, and on carrying out separate analysis by stage of production.

3.1. A gravity model of trade flows and relative trade intensities

Assuming perfect specialisation[4], strictly positive barriers to trade and Cobb-Douglas utility, as in Deardorff (1998), the f.o.b. trade flow between country *i* and *j* can be written as:

$$(2) \qquad V_{i,j} = \frac{Y_i \cdot Y_j}{t_{i,j} \cdot Y_w}$$

where Y_i is country *i* GDP, Y_w is world GDP and $t_{i,j}$ is a transaction cost factor (one plus transaction cost) of Samuelson's "iceberg" form.

The transaction cost can include different aspects: distance, other transport costs, cultural ties, and market accessibility, both in terms of formal and informal obstacles, of quality of infrastructure cost or of access to information. Naturally, trade agreements ought to be among the determinants of this transaction cost, insofar as reducing it is precisely their cheer purpose.

In this rather general framework, taking the logarithm of equation (2) provides with a theoretical grounding of the standard gravity equation:

$$(3) \qquad \ln V_{i,j} = \ln Y_i + \ln Y_j - \ln t_{i,j} - \ln Y_w$$

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[4] Deardorff (1998) refers to Heckscher-Ohlin Model with impeded trade but he mentions that his results would hold in an H-O model with frictionless trade if factor endowments differ sufficiently to yield perfect specialisation, in a Ricardian model, in an Armington model or in any monopolistic-competition model where differentiation implies specialisation.

For the purpose of our study, it is useful noting that a general form can also be derived, as far as the relative trade intensity defined in equation (1) is concerned. Indeed, under the set-up used by Deardorff (1998),[5] it follows from equation (2) that:

$$(4) \qquad \ln(RTI_{i,j}) = -\ln(t_{i,j}) - \ln(MP_i) - \ln(MP_j)$$

where $MP_i = \sum_c \dfrac{y_c}{t_{ic}}$ denotes the *market potential* of country *i*, and index *c* refers to partners. y_c is country *c* share's in total world GDP $(y_c = \dfrac{Y_c}{\sum_n Y_n})$. This variable is already commonly introduced in gravity equations, and belongs to what Anderson and Van Wincoop (2003) call "multilateral resistance factors".

Gravity equations use to be estimated for trade flows. Equation (4) shows that estimating a gravity equation for RTIs also makes sense. As shown by Gaulier (2004), the advantage of this specification is that, except for market potential terms, only purely bilateral transaction cost enter the equation. It is thus likely to allow for a better control of multilateral transaction costs.

3.2. RTAs as determinants of trade flows

Based on the theoretical foundations laid out above, a gravity model is estimated. The basic model is expressed in logarithms. It has the bilateral trade flow (exports plus imports) between a couple of partners as the dependent variable, and includes the following independent variables:

- relative geographic distance between partners. Based on equation (3) and (4), it is written as $\ln(Relative\ Geo\ Dist) = \ln(d_{i,j}) + \ln(MPGeoDist_i) + \ln(MPGeoDist_j)$, where $d_{i,j}$ is the geographic distance[6] between country *i* and *j* and $MPGeoDist_i = \sum_c \dfrac{y_c}{d_{ic}}$;

- dummy variables indicating adjacency, common language, former colonial tie, former common coloniser;

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[5] As in Deardorff, it is assumed that $V_w = Y_w$.

[6] As measured based on the methodology proposed by Head and Mayer (2002).

- GDP of each partner;

- relative economic distance between partners. $EcoDist_{i,j} = \dfrac{Max\{PCI_i, PCI_j\}}{Min\{PCI_i, PCI_j\}}$ where

  PCI_i is country *i* per capita income. PCI Market potential are computed for i and j so as:

$$\ln(Relative\ EcoDist_{i,j}) = \ln(Ecodist_{i,j}) + \ln(MPEcodist_i) + \ln(MPEcodist_j);$$

- relative similarity of trade specialisation between partners. As for geographical or economic distance, this term include the bilateral similarity between partners, but also the multilateral similarity index of each partner (see 0 for definition of indicators);

- dummy variables indicating RTA membership of one partner, as well as joint membership.

This model is rather standard for most variables, already extensively used in the literature. Note however that, based on equation (4), each partner's market potential is not considered separately, but incorporated in the measurement of the relative distance. This is more consistent with mode laid out above. It means that market potential can be interpreted as a benchmark, against which absolute distances are compared: relative distance thus refer to distance between two partners, in comparison to (weighted) average distance from each partner to the rest of the world, as measured through market potential.

The relative similarity of trade specialisation is the only unusual variable here, although it has already been used in Freudenberg et al. (1998). The bilateral index measures how similar two partners' sectoral specialisations are, as measured by revealed comparative advantages, through the index of "contribution to the trade balance" (Lafay, 1990). It is arguably difficult to export a given product to a country that has a comparative advantage in this product, since competition from local producers is tough in this case. As a result, a high similarity of trade specialisations implies that strong export sectors from each partner will be faced with tough local competition from the other partner (since this sector will in average also correspond to a comparative advantage of the partner). Relative similarity is thus expected to have a negative influence on the magnitude trade flows.

Based on equation (4), the model is also estimated with bilateral RTI as the independent variable. As already outlined, this specification allows the estimation to focus on purely bilateral resistance factors, thus getting rid of any disturbance linked to other variables. It is also worth emphasising that such estimates have a different meaning from those based on trade flow levels. RTIs exclusively refer to the geographic orientation of foreign trade, and no information can be drawn as to the volume of trade. This implies in particular that the trade diversion effect of a given RTA cannot be studied using RTIs: the results will only

refer to the difference between the trade creation effect between members of the RTA, and the trade creation effect with third countries. It is likely that this difference is significantly positive in most cases, but this does not imply that trade diversion should have taken place.

Based on the CHELEM-CEPII database, the estimates are carried out on an annual basis across the period 1967-2001. The sample covers the whole world, with some countries grouped together, according to the CHELEM-CEPII geographical classification (see 0). As a result, 58 countries are considered. CHELEM-CEPII has the unique device of putting together exhaustive, harmonised and consistent time-series describing world-wide trade on a rather long period. These devices (and in particular the time-consistency) make it possible to carry out the estimation using two-way fixed effects (actually, the within estimator is reported). In other words, the estimates only focus on the volume of trade between any country pair, compared to its mean level across the period.

The advantage of this approach is that it makes it possible to control for trade determinants specific to any country pair, which are constant across the time span considered. Although distance, contiguity, common language and colonial ties are taken into account in the model, this is undoubtedly far from being enough to control for the specific ties existing between a pair of countries. As pointed out by Haveman and Hummels (1998), this gives raise to an omitted variable bias. This has already been controlled for by introducing countries fixed effects (see e.g. Matyas, 1997, 1998, or Adams et al., 2003), and it was found to improve substantially the adequacy of the model. As argued by Cheng and Wall (2003), this is only a special case, where strong restrictions are imposed to the nature of heterogeneity of trade flows. A more general model should be used when estimating gravity equations, allowing for a more general form of heterogeneity. Since specific, bilateral ties cannot be satisfactorily controlled for, they argue that standard methods for estimating gravity models of trade suffer from estimation bias due to omitted or misspecified variables. The problem can be addressed by using the two-way fixed-effects model in which country-pair and period dummies are used to reflect the bilateral relationship between trading partners. Results by Freudenberg and al. (1998) or Cheng and Wall (2003) suggest that standard gravity estimates of the effects of integration can differ a great deal from what is obtained when heterogeneity is not accounted for.

Introducing country-pair fixed effects is thus a significant improvement. To the best of our knowledge, except Freudenberg et al. (1998), Fontagné et al. (1999) and Cheng and Wall (2003), there is no example of estimating a fixed effects gravity model on a world-wide basis for such a long time span[7]. Given the exhaustive nature of our country sample, a fixed effect model is clearly better suited than a random effect model.

With 58 countries considered and 35 years, the theoretical number of observations would be 58 x 57 x 35 / 2 = 57,855. However, the number of non-zero observations is 55,880. A Heckman two-stage estimation procedure was performed to account for the information provided by these zero flows, but this did not alter significantly the results. The Heckman

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[7] Cheng and Wall (2003) estimate an equation with pair fixed effects on a data set including upper-middle and high-income countries (following World Bank) and 4 years. They end up with 3,188 observations.

procedure proved more influential for estimates by stages of production (because of more zero flows).

An OLS estimate carried out by pooling yearly data and including time dummies gives results in line with the literature (Table 5, column a). As usual in such estimates, the fit is very good, and the adjusted R squared is high. The distance coefficient is relatively close to unity, although significantly lower; common language, common former coloniser, contiguity, and to a lesser extent former colonial tie have a strong positive impact on trade flows. This is also true for time-specific variables, with a coefficient not far (although significantly different) from unity for.

Noteworthily, relative similarity in sectoral trade specialisation has a negative and significant impact on trade flows. This confirms the relevance of taking into account the degree of complementarity between sector specialisations. Countries with similar specialisations seem to be more competitors than customers one to the other.

The variables commented so far are mainly here control variables: the purpose of the estimate is primarily to assess the impact of RTAs on trade flows. Note first that RTA membership is not considered separately for the exporter and the importer. Technically, this is because the left-hand-side variable is export plus import, a symmetric variable. Also note that the current balance constraint, even though it is not strict, would make it meaningless to conclude that an agreement favours all members exports to third countries more than imports: such an effect is not consistent in the long term. However that this is not the case when production stages are considered separately, since no balance constraint holds at the level of one single production stage. This is why exporter and importer membership will then be considered separately.

The results suggest that RTAs strongly spurred trade across members, with an increase by up to 878% for ASEAN (exp(2.28)-1). Strong diversion effects are also found (up to –41% for COMECON), except for the EU, ASEAN and EFTA.

As mentioned above, however, these OLS estimates are bound to be biased. They are mainly displayed for the sake of comparison.

The results obtained using the within specification (Table 5, column b) differ widely from the OLS ones. As far as the control variables are concerned, GDP coefficient decreases to 0.34[8]. The sign of similarity (bilateral and multilateral) and economic distance is not changed.

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[8] The introduction of country pair fixed effects makes difficult for the OLS estimator to identify the impact of unilateral variables. GDP coefficient estimate is affected by quasi-multicollinearity. If (log) per capita income is introduced, GDP turns out to be insignificant, while per capita GDP has a coefficient close to unity. We are not too much concerned with multicollinearity problems here since they only affect control variables.

Table 5: Estimating a gravity model for trade volumes and RTIs, OLS and within estimator, 1967-2001

Dependent variable (ln) Specification	Trade value OLS (a)		Trade value Within (b)		RTI OLS (c)		RTI Within (d)	
Time-independent variables								
contiguity	0.53	(0.04)			0.63	(0.03)		
common language	0.76	(0.02)			0.45	(0.02)		
common former coloniser	0.74	(0.05)			0.24	(0.04)		
former colonial tie	0.29	(0.05)			0.83	(0.04)		
Time-specific variables, other than RTAs								
ln GDP	0.89	(0.01)	0.34	(0.01)				
ln (relative) distance	-0.81	(0.01)	1.81	(0.06)	-0.88	(0.01)	0.37	(0.04)
ln (relative) similarity	-0.94	(0.01)	-0.33	(0.02)	-0.92	(0.01)	-0.38	(0.02)
ln (relative) economic distance	-0.02	(0.01)	-0.11	(0.02)	0.05	(0.01)	-0.28	(0.01)
Dummy for one (and only one) partner belonging to the RTA								
NAFTA_i	0.08	(0.04)	0.00	(0.03)				
EU_i	0.97	(0.02)	0.09	(0.03)				
EFTA_i	0.57	(0.02)	0.20	(0.03)				
COMECON_i	-0.53	(0.03)	-0.09	(0.03)				
MERCOSUR_i	-0.34	(0.05)	*0.04*	(0.03)				
ASEAN_i	0.42	(0.03)	0.72	(0.02)				
CER_i	*0.02*	(0.04)	-0.17	(0.03)				
CAN_i	-0.39	(0.04)	-0.12	(0.03)				
Dummy for both partners belonging to the RTA								
EU-EFTA	1.66	(0.06)	0.13	(0.06)	0.54	(0.04)	*0.04*	(0.05)
Euromed	1.08	(0.05)	0.32	(0.04)	0.28	(0.04)	0.29	(0.03)
Israel-US-Canada FTA	*0.55*	(0.34)	*0.19*	(0.25)	0.60	(0.29)	*0.07*	(0.23)
NAFTA	*0.55*	(0.28)	0.43	(0.20)	*0.10*	(0.24)	*0.05*	(0.18)
EU	1.71	(0.04)	0.45	(0.06)	0.49	(0.03)	0.21	(0.04)
EFTA	2.17	(0.06)	0.59	(0.08)	1.24	(0.05)	0.30	(0.07)
COMECON	1.51	(0.32)	0.89	(0.33)	1.64	(0.27)	*0.57*	(0.30)
MERCOSUR	*0.73*	(0.49)	0.89	(0.34)	1.93	(0.42)	0.98	(0.31)
ASEAN	2.28	(0.12)	0.84	(0.08)	0.63	(0.10)	*0.07*	(0.07)
CER	1.68	(0.37)	*-0.18*	(0.30)	1.67	(0.32)	*0.36*	(0.28)
CAN	1.58	(0.21)	0.50	(0.14)	2.16	(0.18)	0.96	(0.13)
Time fixed effects	Yes		Yes		No		No	
Root MSE	1.55		0.89		1.33		0.83	
N	55 880		55 880		55 880		55 880	
Adj R-Sq	0.74		0.64		0.36		0.03	
F Value	2 507		1 815		1 677		120	

Source: Authors' calculations, based on CHELEM-CEPII database for international trade flows and GDPs.

Note: In column (b) and (c) (within estimator), the dependent variable is the difference of trade value or RTI to the average throughout the period, for the corresponding country pair. Standard errors are reported between parenthesis. All coefficients are statistically significant at the 5% level, except those in italics. Dummy variables denoting RTA's membership are year-specific, starting from the year of enforcement of the RTA. The suffix "_i" is used for dummy variable denoting membership of one and only one partner. A RTA dummy without this suffix is equal to one if both partners belong to the RTA.

Membership of the same RTA is always found to have a positive impact on trade between partners (although the effect is insignificant for the Israeli agreements and for the CER). This shows that one country signing a RTA (or entering an existing agreement) strengthens

its relationships with the other parties of this agreement. The effect is broadly the same for the EU and NAFTA, and corresponds to an increase in trade value by more than 55% (exp(0.44)-1). The effect is even stronger for EFTA (+80%), ASEAN (+131%), MERCOSUR and COMECON [9] (more than +140%),. Noteworthily, the agreements between the EU and EFTA, and between the EU and Mediterranean countries, exhibit a positive and significant effect (+14% and +38% respectively).

The dummies for one (and only one) partner belonging to a RTA describe the impact of agreements on trade with third countries. COMECON, CAN and Australia-New Zealand CER Trade Agreement exhibit significant diversion effect. NAFTA and MERCOSUR does not seem to have had any significant impact on trade with third parties. West European agreements are found to have originated sizeable trade creation, raising trade flows by 9% (EU) or 22% (EFTA). ASEAN is a clear outlier, with a positive impact outreaching 100% on trade with non-member countries. This estimate is perhaps surprising by its high magnitude, but it reflects the above-mentioned outward orientation of ASEAN members, in particular as far as exports are concerned.

The estimation concerning relative intensities instead of level of trade (Table 5, column c) calls for a different interpretation. As already mentioned, the dependent variable refers to the geographic orientation of trade, not to the volume of trade. As a consequence, this equation does not incorporate partners GDP, nor dummies indicating RTA membership of one partner only. In addition, the metrics are not comparable, since RTI is a relative index, while trade flows are absolute values.

Thus, the coefficients obtained for joined RTA membership should not be compared directly to those obtained in the previous two estimates. The impact on RTI is a relative impact, compared to third countries; as such, the comparison, if any, should be made with the impact previously found for joined membership, minus the impact on third countries. For EFTA, for instance, the estimate found in column (c) (1.24) should be compared not to 2.17, but to 2.17-0.57 (where the latter is the coefficient for membership of one partner only).

This being clarified, the results appear less clear-cut for RTIs. The global fit of the estimation, as measured either by the Fisher or the adjusted R squared, is far weaker. This is normal, to some extent, given the transformation made on the dependent variable. A very strong preferential impact on trade between members is found for COMECON, MERCOSUR, the Andean Community, and to a lesser extent CER. Amore limited impact is found for EU, EFTA, EU-EFTA and Euromed agreements.

For NAFTA a positive but low an insignificant impact is found. This is surprising given the results found based on trade values. Similarly, several non-significant impact are found with the within estimates (column d). The explanation probably lies in the imperfect fit of the estimates, and in the difficulty to identify the impact on RTI when a shock concerns a

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[9] The effect of COMECON is only identified here through the consequences of its collapse: the result shows that trade between its former members subsequently significantly decreased in intensity.

large part of a country's trade, as is the case for European countries with the EU, and North-American ones with the NAFTA. Consider for instance Austria entering the EU: this will boost its trade with Italy, but also with all other EU members. As a consequence, the numerator of the RTI will increase, but so will do the denominator. At the end of the day, the change in the index will be moderate, making the impact more difficult to assess. In sum, despite the appealing theoretical advantages of RTIs, the within estimates based on trade values appear to be the most reliable. ASEAN is found to have an insignificant effect on trade between its members. While this is paradoxical, the fact that ASEAN did not have a strong preferential impact is consistent with within estimates based on trade values (in column (b) the coefficient for trade within ASEAN (0.84) is close to the one for trade with non-ASEAN countries (0.72)).

When carried out by stage (Table 6), the estimates show that the effect is not uniform across types of goods. Focusing on the impact of RTAs, except in few cases, joint membership exhibits a positive and significant impact on exports. This impact is most often stronger on consumption goods and more limited on primary goods. Noteworthily, however, ASEAN has a stronger impact on intermediate and capital goods than on consumption goods.

Variables denoting membership of one partner only enable the picture to be further characterised. The results for NAFTA are biased by the strong US deficit in the period following the enforcement of the agreement, and this is probably why the impact of the importer belonging to the NAFTA is far stronger, whatever the stage is, than the impact of the exporter membership.

As a general rule, final good exports (consumption and, to a lesser extent, capital goods) tend to be significantly increased by RTA membership. This is most of all true for the EU, NAFTA (in relative terms, compared to intermediate or primary), EFTA and ASEAN. This is consistent with the idea that a RTA may facilitate further division of labour among members, thus boosting their external competitiveness for final goods. Intermediate exports are also increasing in the case of the EU, MERCOSUR, and most of all EFTA and ASEAN. In the latter two cases, this might reflect the existence (and perhaps deepening) of a division of labour outside the agreement members, *i.e.* with neighbouring countries. The regional division of labour might then be reflected in increased competitiveness in intermediate production stages.

As far as imports are concerned, the impact of RTA membership is generally positive and significant for intermediate and primary goods. Trade creation thus clearly dominates for these products, with stronger effects on intermediate products (frequently above +50%). A remarkable exception is the negative and significant impact of EU membership on primary imports (-25%), as a result of the Common Agricultural Policy.

Impacts are more contrasted on final goods imports. They are positive (and even quite large) for NAFTA, EU, EFTA and MERCOSUR, suggesting trade creation dominates for these agreements. In contrast, the results points out trade diversion as far as COMECON, ASEAN and CAN are concerned.

Table 6: Gravity estimates of export values by stage of production, within estimator, 1967-2001

Dependent variable (ln): Specification: Stage:	Export value Within Primary (a)		Export value Within Intermediate (b)		Export value Within Consumption (c)		Export value Within Capital (d)	
Time-specific variables, other than RTAs								
ln GDP exporter	-0.18	(0.02)	0.06	(0.02)	-0.16	(0.01)	0.28	(0.02)
ln GDP importer	0.24	(0.02)	0.24	(0.02)	0.33	(0.01)	0.26	(0.02)
ln PPP GDP pc exporter	0.47	(0.03)	0.75	(0.03)	1.36	(0.02)	1.29	(0.03)
ln PPP GDP pc importer	0.84	(0.03)	0.69	(0.03)	0.58	(0.02)	0.70	(0.03)
ln (relative) distance	0.19	(0.06)	0.71	(0.06)	0.30	(0.06)	0.35	(0.07)
ln (relative) similarity	-0.27	(0.02)	-0.30	(0.02)	-0.36	(0.02)	-0.31	(0.02)
economic distance (dif. ln GDP)	-0.52	(0.05)	-0.17	(0.05)	*-0.07*	(0.04)	-0.23	(0.05)
Dummy for one (and only one) partner belonging to the RTA								
NAFTA_exporter	-0.30	(0.04)	-0.13	(0.03)	0.07	(0.03)	0.11	(0.04)
EU_exporter	0.28	(0.04)	0.40	(0.04)	0.46	(0.03)	0.48	(0.04)
EFTA_exporter	0.31	(0.05)	0.76	(0.04)	0.59	(0.04)	0.49	(0.05)
COMECON_exporter	0.26	(0.05)	-0.16	(0.04)	0.28	(0.04)	-0.24	(0.05)
MERCOSUR_exporter	0.32	(0.05)	0.41	(0.04)	0.12	(0.04)	-0.11	(0.05)
ASEAN_exporter	*-0.04*	(0.03)	1.11	(0.03)	0.83	(0.03)	1.31	(0.03)
CER_exporter	*-0.06*	(0.04)	-0.10	(0.04)	*0.00*	(0.04)	0.33	(0.04)
CAN_exporter	0.15	(0.04)	-0.33	(0.04)	0.24	(0.03)	-0.50	(0.04)
NAFTA_importer	0.28	(0.04)	0.42	(0.03)	0.41	(0.03)	0.61	(0.04)
EU_importer	-0.29	(0.04)	0.65	(0.04)	0.63	(0.03)	0.31	(0.04)
EFTA_importer	0.14	(0.04)	0.39	(0.04)	0.46	(0.04)	*-0.03*	(0.05)
COMECON_importer	0.15	(0.05)	0.21	(0.05)	-0.71	(0.04)	-0.37	(0.05)
MERCOSUR_importer	0.41	(0.05)	0.62	(0.05)	0.99	(0.04)	0.44	(0.05)
ASEAN_importer	0.66	(0.03)	0.14	(0.03)	-0.14	(0.03)	*0.05*	(0.03)
CER_importer	0.34	(0.04)	*0.04*	(0.04)	0.14	(0.04)	0.13	(0.05)
CAN_importer	0.34	(0.04)	-0.20	(0.04)	-0.13	(0.03)	-0.40	(0.04)
Dummy for both partners belonging to the RTA								
EU-EFTA								
Euromed								
Israel-US-Canada FTA								
NAFTA	*0.32*	(0.19)	*0.34*	(0.18)	0.77	(0.17)	0.55	(0.19)
EU	0.47	(0.06)	0.97	(0.06)	1.23	(0.05)	0.79	(0.06)
EFTA	*0.16*	(0.09)	1.42	(0.08)	1.46	(0.07)	0.72	(0.09)
COMECON	1.03	(0.32)	0.79	(0.30)	0.98	(0.28)	0.72	(0.32)
MERCOSUR	0.72	(0.33)	1.82	(0.31)	2.40	(0.29)	1.52	(0.33)
ASEAN	0.53	(0.08)	1.04	(0.07)	0.72	(0.07)	1.36	(0.08)
CER	0.76	(0.30)	*-0.28*	(0.28)	*0.20*	(0.26)	*0.30*	(0.30)
CAN	1.21	(0.14)	1.67	(0.13)	2.13	(0.12)	1.10	(0.14)
No. obs	99 096		96 863		98 221		91 405	
% of non-zero obs.	85.6%		83.7%		84.9%		79.0%	
Adj R-Sq	0.33		0.55		0.60		0.56	

Source: Authors' calculations, based on CHELEM-CEPII database for international trade flows and GDPs.

Note: All estimates are carried out using the within estimator (i.e., deviation from country-pair average), with Heckman's two-stage procedure. Stages are classified according to CHELEM-CEPII classification. Since the current balance constraint does not apply at the level of each stage, country pairs can be studied separately, hence the separate introduction of various variables concerning the exporter and the importer. Notations are identical to Table 5.

3.3. Conclusions for the impact of RTAs

In sum, these results highlight the differences across agreements. The only important feature shared by all agreements studied is to strengthen trade relationship between members, but this is almost a tautological result. The EU, EFTA and MERCOSUR, strongly boosted trade between members as far as final goods are concerned; with regard to third countries, they induced trade creation (except the EU regarding primary products). NAFTA also spurred significantly trade between its members, but it is difficult to conclude in terms of global effects on third countries. Nevertheless, this seems to be most of all related to the poor export performance (in particular of the US), compared to what is predicted by the model, during the nineties. In terms of imports, trade creation is found unambiguously. ASEAN induced a strong trade creation with third countries, and this creation consisted of imports of primary goods and exports of transformed goods, pointing to the increased division of labour across member countries.

Given the contrasted nature of results across agreements, it is not possible to infer from the above-described results any projection about the possible of future agreements. It is necessary to proceed by analogy with existing agreements to gain further understanding of their probable impact. In this perspective, one lecture of the results is that large RTAs generally create new opportunities for foreign producers, given the opportunity they offer to access a large market from a single country. This is most of all the case when the RTA is also a custom union, since rules of origin do not prevent from taking full advantage of these opportunities. The existence of large import markets for consumption goods is possibly another factor favouring positive effects for third countries, since RTAs can facilitate a deeper division of labour, with imported intermediates. These conclusions should however be considered as tentative: strictly speaking, as outlined above, the estimates do not give insights about the impact of future agreements, they only assess the impact of past agreements.

Broadly speaking, the trade creation effect found for the EU and EFTA is consistent with several previous estimates (Frankel, 1997, Li, 2000, Clark and Tavares, 2000, Soloaga and Winters, 2001 for the EU, Soloaga and Winters, 2001, for EFTA), although other studies deliver opposite results for EFTA (Frankel, 1997, Li, 2000, Clark and Tavares, 2000). Mainly based on the above-cited studies, the broad picture is that ASEAN is found to have a significant trade creation effect (see in particular Soloaga and Winters, 2001, and Gilbert, Scollay and Bora, 2001), while the evidence is mixed for NAFTA, and trade diversion tends to dominate for MERCOSUR. However, trade diversion dominates for AFTA, EFTA, MERCOSUR EU, NAFTA and CER according to the recent and thorough study by Adams et al. (2003) (see also Dee and Gali, 2003). Given the numerous specificities of the present study, however, the comparison with previous results is not straightforward. As emphasised above, using a within estimator dramatically modify the results, confirming Haveman and Hummels (1998) statement that the omitted variable bias can significantly blur the analysis. This bias is reduced, when a fixed effect is introduced for importer and exporter (Matyas, 1997, 1998, Adams et al., 2003), but this is only a partial adjustment, not taking into account the bilateral dimension of specificities.

4.   THE DYNAMICS OF REGIONALISATION

While the importance of intra-regional trade has been slightly declining in Eurafrica since the early seventies, it increased steeply in America during the nineties, and in Asia-Oceania throughout the whole period (Graph 3). The estimates presented above make it possible to disentangle the contributions of institutional factors (new RTAs being signed) and of "gravity" factors, *i.e.* of changes in variables identified previously, in the gravity equation, as determining the magnitude of trade flows. A positive "gravity" factor of regionalisation would be, for instance, a rapid relative GDP growth of other countries within the same regions. Clearly, institutional arrangements prevented European countries from trading more intensively, in relative terms, with the rest of the world, as should have been the case otherwise, given the lower-than-average economic growth experienced in Europe across the period considered here. Similarly, higher growth in Asia partly explains the growing share of intra-regional trade observed in this region.

Graph 3: Share of intra-regional flows in total trade* (%)
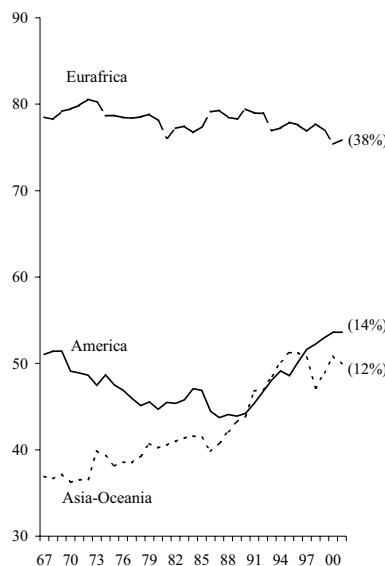
Source: CEPII, CHELEM data base, authors' calculations.

* Intra-regional flows / [(total exports + total imports)/2]. Figures in brackets display the share of intra-regional flows in world trade in 2001.

The question addressed in this Section is whether there has been a trend in regionalisation, over and above these factors. In particular, references are often made to a trend toward regionalisation in Southeast Asia, with a deeper division of labour across countries and the

42

creation of new production networks[10]. Is such trend merely the result of the factors identified so far, or are there additional, omitted factors underlying this evolution? Such additional, unexplained trend toward regionalisation could result from any determinant other than those identified in the gravity equation (included institutional changes). Changes in industrial organisation (with different patterns of division of labour), in the form of transport costs or in the dissemination of information, but also cultural changes could be a reason for such changes.

For the sake of identifying the existence of such changes, the gravity model used previously is augmented, in order to account for the possibility of a change over time of the level of trade flows within given regions. Three regions are considered: North-America (*i.e.*, NAFTA), Southeast Asia (ASEAN+3, namely Japan, South Korea and China), and Western Europe (EU, EFTA, Turkey, Israel and North Africa). This choice is arbitrary. It intends to focus on the three main regions within which an advanced division of labour is taking place.

Table 7: Gravity equation estimates: "unexplained" regionalisation trends, 1967-2001

Dependent Variable: Specification:	Trade value Within+dyn. (a)		RTI Within+dyn. (b)	
Regionalisation trend, by region				
AME_T	0.10	(0.04)	*0.03*	(0.03)
EUR_T	*-0.01*	(0.01)	-0.05	(0.01)
ASI_T	-0.12	(0.02)	*-0.03*	(0.02)
AME_T2 (x 100)	-0.88	0.40	-0.02	0.37
EUR_T2 (x 100)	0.17	0.15	0.50	0.14
ASI_T2 (x 100)	1.20	0.26	0.07	0.24
AME_T3 (x 1000)	*0.30*	(0.17)	*-0.06*	(0.16)
EUR_T3 (x 1000)	*-0.11*	(0.06)	-0.22	(0.06)
ASI_T3 (x 1000)	-0.45	(0.11)	*-0.01*	(0.10)
AME_T4 (x 10000)	*-0.03*	(0.02)	*0.01*	(0.02)
EUR_T4 (x 10000)	*0.02*	(0.02)	*0.03*	(0.02)
ASI_T4 (x 10000)	0.06	(0.01)	*0.00*	(0.01)
Root MSE	0.87		0.82	
N	55880		55 880	
Adj R-Sq	0.66		0.05	
F Value	3 035		100	

Source: Authors' calculations, based on CHELEM-CEPII database for international trade flows and GDPs.

Note: Only regional trend are reported, others variables are not affected by their inclusion (see Table 5 for estimates). Standard errors are reported between parenthesis. All coefficients are statistically significant at the 5% level, except those in italics. The suffix "_T" is used to denote a multiplication of the dummy variable by a time trend (t), "_T2" denotes a multiplication by a squared time trend (t²), etc.

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[10] See Borrus *et alii* (2000) and Lemoine & Ünal-Kesenci (2004).

Practically, this means that an unexplained regionalisation trend is added to the previous estimates, for each of the three regions considered. In order to identify it properly, this trend is represented through a polynomial of degree four. The results displayed (for the regionalisation trends only) in Table 7 show that these region-specific, unexplained trends of regionalisation are statistically significant. The resulting time path of regionalisation within the three regions, as identified through estimate (a), is plotted in Graph 4.

Regionalisation (recall, over and above institutional and gravity factors identified previously) in Asia-Oceania turns out to be declining, between 1967 and 1975, and since the mid-eighties. As far as America is concerned, a strong positive trend toward increasing regionalisation is found in the seventies, with a relative stability subsequently. Finally, Western Europe is found to experience a decline of regionalisation until the mid-nineties, followed by an increase, but this time-trend is not statistically significant.

Graph 4: Unexplained trend of regionalisation within three regions
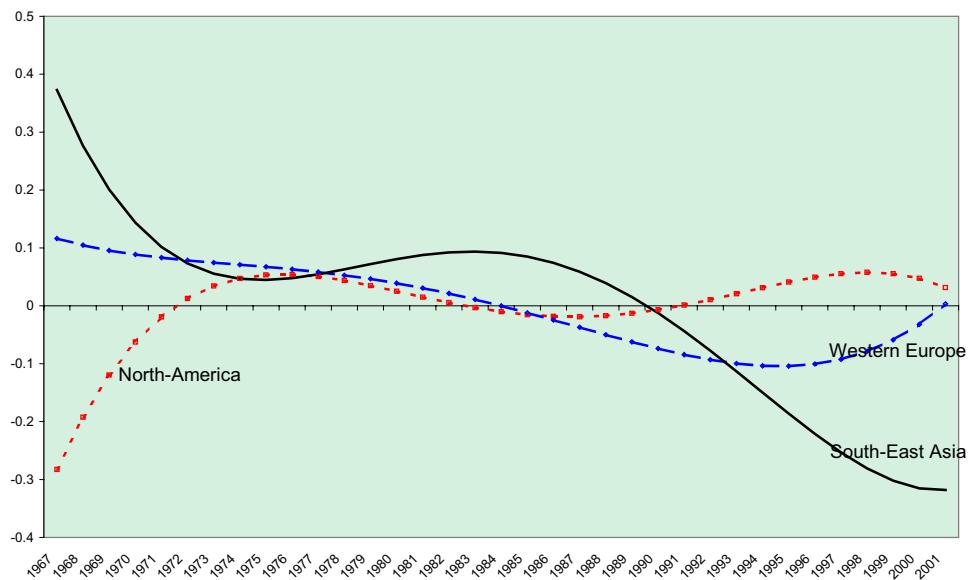
Source: Authors' calculations, based on Table 7, column (b).

Note: This figure should be read only in terms of evolutions. The integral of each curb throughout the period is zero. CEECs and FSU countries are not included in Western Europe.

These results are not easily interpreted, given the residual nature of the time trend identified. The decline in the "natural" level of regionalisation in South East Asia, in particular, does not imply by any means that countries traded less between each other in this region. It shows that the increase in intra-regional trade observed in this region is lower than would have been expected given the economic growth observed in this region and the institutional arrangements signed across the period. In other words, there is no need to look

for any additional factor to understand the strengthening of trade relationships in Asia. On the contrary, there is possibly still room for closer trade relationships.

Above this general answer to the nature of the dynamics of regionalisation, it is worth describing the specific trend observed by country, if only to serve as a guide for understanding these results. The share of intra-regional trade, presented above, is obviously a crude indicator. A country-specific index of trade regional polarisation is thus computed as follows:

(5)
$$\text{TR } P_{ir} = \frac{V_{ir}/V_{i.}}{\left(V_{.r} - V_{rr}\right)/\left(V_{..} - V_{r.}\right)}$$

where TRP measures the trade regional polarisation of country i with regard to region r. A dot refers to the world, other notations are defined as before.

This index compares the share region *r* represents in country *i*'s trade, to the share region *r* represents in the trade of world trade outside the region. The index can be calculated for total trade, as in equation (5), but also for exports or imports alone. Their evolution over the time period concerned is shown in 0 for selected (group of) countries in the three regions considered here.

These graphs suggest that the unexplained increase in North American level of regionalisation during the late sixties and the early seventies is mainly linked to the US increasing its share in Mexican and Canadian import sourcing. The regional polarisation of imports also intensifies, for all three partners, during the nineties, mainly as a result of CUSFTA and NAFTA.

For Southeast Asia, Panel B in 0 shows that the regional polarisation of foreign trade declined sharply for almost all countries in this region until the mid-eighties. This might come as a surprise, given the growing size of this region compared to the rest of the world during this period, but it results in part from the initially low level of extra-regional trade of many countries in this region. Noteworthily, indeed, regional polarisation of foreign trade was very high in Southeast Asia at the end of the sixties, probably reflecting the weak capacity to export outside the region. And the estimates show that trade intensification during the subsequent period have been lower than would have been expected, based on the relative growth of this region's countries and on the agreements signed (here, ASEAN FTA).

For Western Europe and Mediterranean countries, institutional changes played a leading role, with successive EC's enlargements, the EC-EFTA agreement, and agreements with Turkey, Israel and North African countries. Although the impact found in econometric estimates for these agreements is not large by comparison to other agreements (such as MERCOSUR, CAN or ASEAN), their coverage in terms of initial share in member countries' trade is very large. As a consequence, their impact has been sizeable. This is

reflected in the increasing level of our TRP index for most countries and for the region as whole (Panel C, 0). The contribution of institutional arrangements is spectacularly illustrated by the steep increase in the TRP indicator for Iberian countries and Greece in the second half of the eighties, and for Turkey as of the early eighties.

Since the level of this TRP index depends on the definition of regions adopted, it is difficult to draw any conclusion from the cross-region comparison of level in this indicator. Still, it is remarkable that these three regions end up with similar levels of trade polarisation in the recent years. This means that the degrees of extraversion of these three regions are now comparable –which was far from being the case only three decades ago.

5. CONCLUSION

Regionalisation is an important device of trade across the world, both in terms of trade patterns and in terms of institutions. The link between both aspects is not straightforward to establish, since trade flows are influenced by a bunch of ties between countries, which are not easily controlled for. Beyond the thorough description of the nature and evolution of regionalisation, this working paper proposes an empirical analysis for a large number of (group of) countries covering the whole world over the period 1967-2001, based on the CHELEM-CEPII database. This analysis updates and extends the one carried out in Freudenberg et al. (1998).

The most salient particularity of the analysis is probably to control for country-pair fixed effects when assessing the impact of RTAs on trade flows. This has a strong influence on the results. RTAs are found to boost significantly trade between members, for each stage of production. The impacts on trade with third countries are mixed, but trade creation tends to dominate, and no clear evidence is found of trade diversion. Treating separately the different stages of production also allows the heterogeneity of effects to be further qualified.

The dynamics of regionalisation are also studied. In particular, the question addressed is whether any region-specific, unexplained trend of regionalisation exists, that could be linked for instance to changes in infrastructure, information or cultural ties in the region. Such unexplained trends are indeed found. Quite surprisingly, however, it is found to be negatively sloped in Southeast Asia, showing that the traditional determinants of trade flows, linked to "gravity" and institutional factors, are more than enough to explain the strong increase in trade across Southeast Asian countries. In Western Europe and its periphery, institutional arrangements are consistently found to be the leading explanation for the increasing regional polarisation of foreign trade. The institutional process of regionalisation also played an important role in North America since the late eighties.

Of course, studying more specifically the case of former communist countries would deserve further interest. It is not straightforward to do so, however, since the changes in these countries have been very widespread, making it very hard to disentangle the specific contribution of trade agreements in the massive re-orientation experienced in trade flows. However, it is likely that the impact of institutional arrangements was very strong in these

countries, thus strengthening the acknowledgement of the role played by institutions in regionalisation around the EU.

On the whole, however, the distorting impact of RTAs on the geographical polarisation of member countries' foreign trade appears to be far more limited than found based on OLS estimations. In many cases, regionalism might in fact have followed or accompanied regionalisation, rather than caused it.

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APPENDIX 1 - GEOGRAPHICAL CLASSIFICATION

	Country Name	ISO		Country Name	ISO		Country Name	ISO
*	Albania	ALB		Iceland	ISL	*	Russian Federation	RUS
	Algeria	DZA		India	IND	*	Serbia and Montenegro	YUG
	Argentina	ARG		Indonesia	IDN		Singapore	SGP
	Australia	AUS	#	Iran	IRN	*	Slovakia	SVK
	Austria	AUT		Ireland	IRL	*	Slovenia	SVN
*	Belarus	BLR		Israel	ISR		South Korea	KOR
	Belgium-Luxembourg	AAA		Italy	ITA		Southafrican Union	AAI
*	Bosnia and Herzegovina	BIH		Japan	JPN		Spain	ESP
	Brazil	BRA	*	Kazakhstan	KAZ		Sweden	SWE
	Brunei Darussalam	BRN	#	Kuwait	KWT		Switzerland	CHE
*	Bulgaria	BGR	*	Kyrgyzstan	KGZ		Taiwan	TWN
	Canada	CAN	*	Latvia	LVA		Thailand	THA
	Chile	CHL	#	Libya	LBY		Tunisia	TUN
	China	CHN	*	Lithuania	LTU		Turkey	TUR
	Colombia	COL	*	Macedonia	MKD	*	Ukraine	UKR
*	Croatia	HRV		Malaysia	MYS	#	United Arab Emirates	ARE
*	Czech Republic	CZE		Mexico	MEX		United Kingdom	GBR
	Denmark	DNK		Morocco	MAR		United States of America	USA
	Ecuador	ECU	#	Netherl. Antilles	ANT		Venezuela	VEN
	Egypt	EGY		Netherlands	NLD			
*	Estonia	EST		New Zealand	NZL			
	Finland	FIN		Nigeria	NGA			
	Former USSR	AAW		Norway	NOR			
	Former Yugoslavia	AAF		Pakistan	PAK			
	France	FRA	#	Panama	PAN			
	Gabon	GAB		Peru	PER			
	Germany	DEU		Philippines	PHL			
	Greece	GRC	*	Poland	POL			
	Hong Kong	HKG		Portugal	PRT			
*	Hungary	HUN	*	Romania	ROM			

Notes: The geographical classification refers mainly to CEPII-CHELEM database (*: data available only since 1993 in CHELEM classification). A small number of countries covered only in the study of FDI, and not in our trade database are signalled by (#).

**APPENDIX 2 - DISTRIBUTION OF COUNTRIES' TOTAL TRADE
BETWEEN THE TRIAD'S REGIONS**

**Distribution of countries' total trade between three regions:
Countries in America and Asia-Oceania**

	AMERICA				ASIA-OCEANIA		
	America	Eurafrica	Asia-Oceania		America	Eurafrica	Asia-Oceania
MEX	**86**	8	7	BRN	11	11	**78**
CAN	**80**	10	9	ZZE*	9	25	**66**
VEN	**80**	14	6	IDN	15	22	**63**
COL	**72**	20	8	HKG	12	27	**61**
ECU	**66**	20	14	SGP	18	22	**61**
PER	**61**	20	19	MYS	23	18	**59**
ARG	**59**	28	13	NZL	19	22	**59**
AAK*	**56**	26	17	AUS	16	26	**58**
CHL	**52**	25	23	THA	20	25	**55**
BRA	**48**	38	14	PHL	28	19	**54**
USA	**40**	28	31	TWN	25	22	**53**
				KOR	24	27	**49**
				AAU*	17	34	**48**
				JPN	30	25	**45**
				CHN	30	26	**44**
				IND	21	**49**	30
				PAK	17	**55**	28

Source: CEPII, CHELEM data base, authors' calculations.

AAK: America nes; ZZE: Cambodia, Laos &Vietnam; AAU: Asia-Oceania nes.

Distribution of countries' total trade between three regions: Countries in Eurafrica

WESTERN EUROPE

	America	Eurafrica	Asia-Oceania
PRT	6	**90**	4
AUT	7	**87**	6
GRC	6	**85**	9
BLEU*	9	**84**	7
ESP	9	**84**	7
DNK	8	**83**	9
ISL	12	**83**	5
TUR	10	**82**	8
SWE	11	**80**	9
ITA	11	**80**	9
FRA	11	**80**	9
NLD	10	**79**	11
NOR	14	**79**	7
FIN	11	**79**	11
CHE	13	**77**	10
DEU	12	**77**	11
AAG*	7	**76**	17
GBR	16	**71**	13
IRL	18	**71**	11
ISR	34	**49**	17

CEEC's & BALTIC ESTATES

	America	Eurafrica	Asia-Oceania
BIH	2	**97**	1
SVK	2	**96**	2
ALB	2	**96**	2
LTU	3	**95**	2
SVN	3	**94**	3
YUG	3	**94**	3
HRV	4	**93**	3
CZE	4	**92**	4
MKD	6	**92**	2
POL	4	**91**	5
LVA	7	**91**	2
BGR	6	**91**	3
ROM	5	**91**	4
EST	5	**89**	7
HUN	7	**86**	7

CIS

	America	Eurafrica	Asia-Oceania
BLR	6	**91**	4
AAY*	8	**88**	4
UKR	5	**87**	8
AAZ*	7	**84**	9
RUS	10	**77**	13
KAZ	15	**73**	12
KGZ	2	39	**59**

AFRICA & MIDDLE-EAST

	America	Eurafrica	Asia-Oceania
TUN	4	**92**	4
MAR	8	**83**	9
DZA	22	**73**	5
AAO*	9	**66**	25
ZAF	17	**60**	23
AAQ*	16	**59**	26
EGY	25	**58**	16
NGA	40	**43**	17
GAB	**51**	35	14
AAN*	15	34	**51**

Source: CEPII, CHELEM data base, authors' calculations.

BLEU : Belgium & Luxembourg Economic Union; AAG: Europe other nes; AAY: Caucasus (Armenia, Azerbaijan, Georgia); AAZ: Other CIS; AAO: Middle East, no OPEC; AAQ: Africa nes; AAN: Persian Gulf countries.

APPENDIX 3 - FDI STOCK BY LARGE REGION

Inward FDI stock by country in 2000 (amount and share by region of origin)

To ↓ From →	Total amount (million US$)	America	USA	Eurafrica	EU-15	Asia-Oceania	Japan
TOTAL	4 202 480	31	26	60	55	10	6
AMERICA	1 447 596	26	17	59	54	15	11
Chile	18 466	75	54	24	22	0	0
Venezuela	15 280	70	69	29	26	0	0
Mexico	62 872	67	63	28	24	5	4
Canada	208 062	64	64	31	28	6	3
Colombia	6 730	63	55	37	28	0	0
Argentina	36 754	57	48	41	38	3	0
Brazil	83 307	49	44	45	42	5	5
USA	1 016 113	11	0	69	64	20	14
Panama	12	0	0	0	0	100	0
EURAFRICA	2 298 636	30	28	66	60	4	2
Algeria	112	0	0	100	100	0	0
Libya	276	0	0	100	100	0	0
Slovenia	1 300	0	0	100	99	0	0
United Arab Emirates	427	0	0	100	100	0	0
Morocco	2 310	0	0	98	91	2	0
Bulgaria	1 025	0	0	97	90	3	0
Iran	595	0	0	97	97	3	1
Finland	20 230	7	7	92	82	2	1
Romania	2 181	0	0	90	90	10	0
Czech Republic	14 721	9	8	90	80	1	1
Austria	33 127	10	9	90	81	0	0
Slovakia	4 072	10	0	90	76	1	0
Greece	6 569	12	12	88	70	0	0
Poland	28 821	14	13	84	74	2	0
Germany	358 195	16	15	82	77	2	1
Portugal	21 733	17	12	81	76	1	1
Norway	26 642	18	16	81	78	2	2
Denmark	30 506	19	17	80	68	1	1
Russia	6 202	21	18	75	68	3	0
Hungary	18 466	25	10	73	69	2	1
Ukraine	719	0	0	72	64	28	0
Spain	81 826	26	26	72	68	2	1
France	173 089	26	25	71	64	3	2
Iceland	461	28	28	71	31	2	1
Netherlands	481 410	25	24	70	68	4	4
Turkey	7 675	30	24	70	61	1	0
South Africa	13 475	27	26	69	64	3	3
Sweden	89 010	30	29	68	67	2	2
Ireland	128 670	32	28	68	62	0	0
Italy	84 041	32	28	66	59	2	1
Egypt	4 878	41	41	57	50	2	0
Switzerland	133 391	43	42	56	56	1	1
United Kingdom	517 196	49	45	41	34	10	4
Israel	5 280	76	71	24	16	0	0
Singapore	63 970	41	38	42	29	17	15
Japan	93 025	65	61	31	28	4	0

Inward FDI stock by country in 2000 (amount and share by region of origin) continued

To ⬇ / From ➜	Total amount (million US$)	Share by region of origin (%)					
		America	USA	Eurafrica	EU-15	Asia-Oceania	Japan
ASIA-OCEANIA	456 248	46	*43*	32	*28*	21	*13*
New Zealand	19 392	24	*22*	29	*28*	47	*6*
Korea	28 730	33	*31*	30	*28*	37	*16*
China	38 510	30	*29*	34	*31*	36	*24*
Thailand	15 997	41	*36*	24	*21*	35	*32*
Indonesia	20 142	52	*44*	13	*11*	35	*25*
Malaysia	19 001	43	*42*	31	*28*	25	*22*
Philippines	10 613	37	*34*	38	*29*	25	*20*
Australia	82 826	45	*42*	36	*33*	19	*10*
Hong Kong	54 972	55	*50*	26	*23*	19	*13*
India	9 071	27	*26*	54	*51*	19	*14*

Source: OECD, Statistical Directory of Foreign Direct Investment. Authors' calculations based on Benassy-Quéré et al. (2004).

Notes: The figures displayed in this Table are computed based on OECD countries' declarations. The scope is thus limited to foreign investment originating from or with destination to an OECD member country. Thus, for non-OECD member countries, investments from other non-OECD member countries are not covered. Underlined names refer to OECD member countries.

Outward FDI stock by country in 2000 (amount and share by region of destination)

From ↓ To →	Total amount (million US$)	America	USA	Eurafrica	EU-15	Asia-Oceania	Japan
TOTAL	4 202 480	34	24	55	48	11	2
AMERICA	1 286 950	29	9	54	48	16	5
Colombia	63	85	0	15	15	0	0
Chile	105	73	0	27	27	0	0
Canada	193 689	65	57	27	24	8	2
Brazil	1 902	24	0	75	75	1	1
USA	1 089 884	23	0	59	52	18	5
Argentina	367	15	0	85	83	0	0
Mexico	652	14	0	86	86	0	0
Venezuela	287	7	0	92	92	0	0
Netherlands Antilles	0.5	0	0	0	0	100	0
EURAFRICA	2 506 838	34	28	60	53	6	1
United Arab Emirates	733	0	0	100	100	0	0
Algeria	137	0	0	100	100	0	0
Kuwait	76	0	0	100	100	0	0
Libya	5	0	0	100	100	0	0
Morocco	390	0	0	100	100	0	0
Romania	32	0	0	100	66	0	0
Slovenia	131	0	0	100	77	0	0
Turkey	971	0	0	100	85	0	0
Ukraine	24	0	0	100	31	0	0
Greece	2 005	0	0	100	62	0	0
Bulgaria	25	0	0	100	85	0	0
Slovakia	363	0	0	100	21	0	0
Egypt	72	1	0	99	99	0	0
Iran	1 385	0	0	99	99	1	0
Russia	2 565	0	0	98	44	2	2
Hungary	400	0	0	97	28	3	0
Czech Republic	504	5	3	89	23	6	0
Israel	1 566	11	0	89	60	0	0
Ireland	21 992	2	0	88	86	9	0
Austria	21 393	12	9	84	47	4	0
Finland	50 565	16	16	81	66	3	0
Spain	23 409	24	0	76	72	0	0
Norway	11 339	24	0	76	73	0	0
Italy	135 735	22	15	75	62	3	1
Sweden	108 174	24	21	75	68	2	1
South Africa	2 034	5	0	72	72	23	0
Poland	701	14	14	66	39	21	0
Denmark	45 188	27	24	64	50	8	1
Iceland	534	37	31	62	48	2	1
United Kingdom	852 210	35	32	60	56	6	1
Germany	422 492	36	31	58	47	7	2
Netherlands	249 440	37	31	57	46	6	0
Switzerland	182 023	35	29	55	51	10	2
France	353 310	43	31	52	44	5	2
Portugal	14 917	51	3	49	42	0	0
Australia	90 968	59	57	28	28	13	1
Indonesia	498	0	0	90	90	10	1
India	655	38	0	60	59	2	1

Outward FDI stock by country in 2000 (amount and share by region of destination) continued

From ↓ To →	Total amount (million US$)	*Share by region of destination (%)*					
		America	*USA*	*Eurafrica*	*EU-15*	*Asia-Oceania*	*Japan*
ASIA-OCEANIA	408 691	54	*49*	23	*21*	23	*1*
Malaysia	5 582	1	*0*	13	*12*	86	*0*
New Zealand	7 577	21	*4*	11	*10*	68	*1*
Hong Kong	6 506	35	*0*	10	*10*	55	*29*
Philippines	104	0	*0*	52	*43*	48	*46*
Singapore	7 483	4	*0*	51	*51*	45	*6*
Korea	21 727	38	*34*	19	*10*	43	*2*
China	750	21	*0*	40	*37*	39	*12*
Japan	266 801	58	*53*	21	*20*	21	*0*
Thailand	39	0	*0*	80	*79*	20	*7*

Source: OECD, Statistical Directory of Foreign Direct Investment. Authors' calculations based on Benassy-Quéré et al. (2004).

Notes: The figures displayed in this Table are computed based on OECD countries' declarations. The scope is thus limited to foreign investment originating from or with destination to an OECD member country. Thus, for non-OECD member countries, investments toward other non-OECD member countries are not covered. Underlined names refer to OECD member countries.

Distribution across region of origin of inward FDI stock, by large region (shares in %)
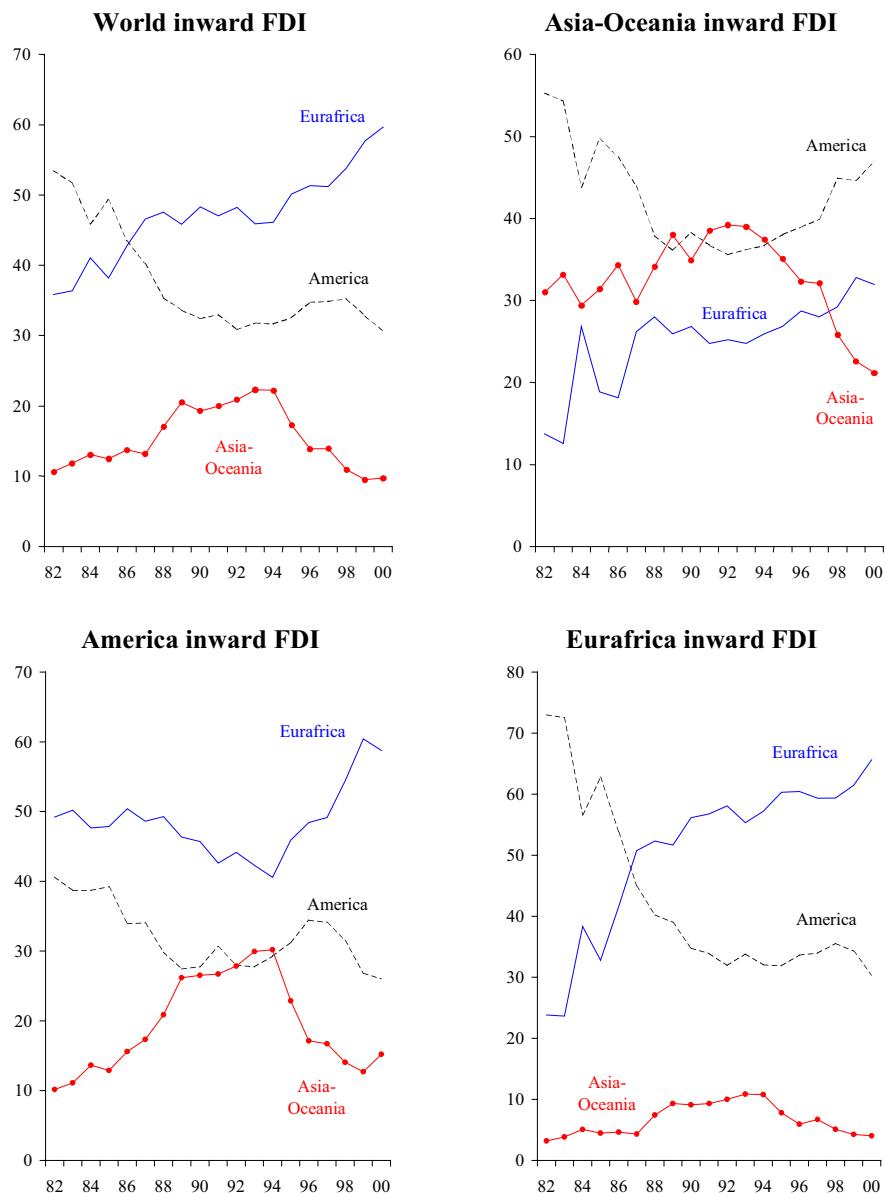
World inward FDI

Asia-Oceania inward FDI

America inward FDI

Eurafrica inward FDI

Source: OECD, Statistical Directory of Foreign Direct Investment. Authors' calculations based on Benassy-Quéré et al. (2004).

Notes: Calculations are based on OECD countries' declarations. The scope is thus limited to foreign investment originating from or with destination to an OECD member country. Thus, for non-OECD member countries, investments toward other non-OECD member countries are not covered.

Distribution across regions of destination of outward FDI stock, by large region (shares in %)

World outward FDI
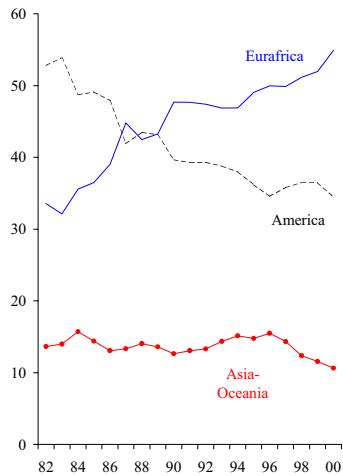
Asia-Oceania outward FDI
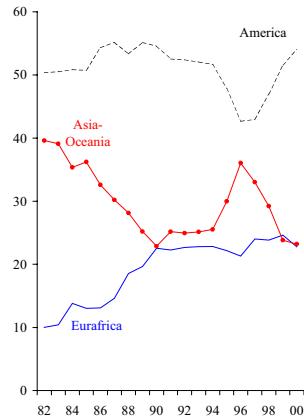
America outward FDI
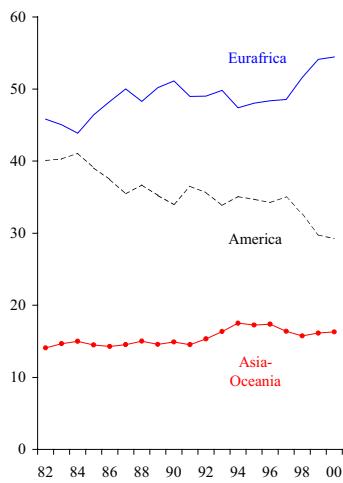
Eurafrica outward FDI
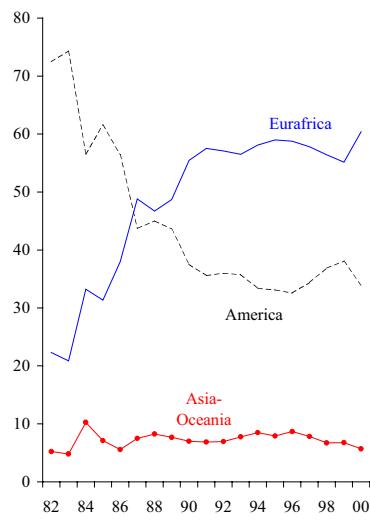
Source: OECD, Statistical Directory of Foreign Direct Investment. Authors' calculations based on Benassy-Quéré et al. (2004).

Notes: Calculations are based on OECD countries' declarations. The scope is thus limited to foreign investment originating from or with destination to an OECD member country. Thus, for non-OECD member countries, investments toward other non-OECD member countries are not covered.

APPENDIX 4 - REGIONAL TRADE AGREEMENTS

NAME OF AGREEMENT		TYPE OF AGREEMENT	MEMBER COUNTRIES
ASEAN	Association of South East Asian Nations	Free trade agreement	Brunei Darussalam Cambodia Indonesia Laos Malaysia Myanmar Philippines Singapore Thailand Vietnam
BAFTA	Baltic Free-Trade Area	Free trade agreement	Estonia Latvia Lithuania
BSEC	Black Sea Economic Cooperation	Preferential arrangement	Azerbaijan Albania Armenia Bulgaria Georgia Greece Moldova Ukraine Romania Russia Turkey
CAN	Andean Community	Preferential arrangement	Bolivia Colombia Ecuador Peru Venezuela
CEFTA	Central European Free Trade Agreement	Free trade agreement	Bulgaria Czech Republic Hungary Poland Romania Slovak Republic Slovenia
CER	Closer Trade Relations Trade Agreement	Free trade agreement	Australia New Zealand
CIS	Commonwealth of Independent States	Free trade agreement	Azerbaijan Armenia Belarus Georgia Moldova Kazakhstan Russian Federation Ukraine Uzbekistan Tajikistan Kyrgyz Republic
COMECON	Council for Mutual Economic Assistance	Customs union	Bulgaria Czechoslovakia Hungary Poland Romania Soviet Union
CUFTA	Canada Us Free Trade Agreement	Free trade agreement	Canada USA
EAEC	Eurasian Economic Community	Customs union	Belarus Kazakhstan Kyrgyz Republic Russian Federation Tajikistan
EC	European Communities	Customs union	Austria Belgium Denmark Finland France Germany Greece Ireland Italy Luxembourg Netherlands Portugal Spain Sweden United Kingdom
EEA	European Economic Area	Free trade agreement	EC Iceland Liechtenstein Norway
EFTA	European Free Trade Association	Free trade agreement	Iceland Liechtenstein Norway Switzerland
	Group of Three	Free trade agreement	Colombia Mexico Venezuela
LAIA	Latin American Integration Association	Preferential arrangement	Argentina Bolivia Brazil Chile Colombia Cuba Ecuador Mexico Paraguay Peru Uruguay Venezuela
MERCOSUR	Southern Common Market	Customs union	Argentina Brazil Paraguay Uruguay
NAFTA	North American Free Trade Agreement	Free trade agreement	Canada Mexico United States

APPENDIX 5 - SIMILARITY OF SPECIALISATION PATTERNS

International specialisation of countries is measured by the "contribution to the trade balance" (CTB) indicator (Lafay, 1990). Unlike other indicators of specialisation, the CTB is a symmetrical indicator in the sense that it focuses not only on exports but also on imports. CTB compares observed trade balance for a product to a theoretical trade balance corresponding to an absence of specialisation. The latter is calculated so as to spread the global trade balance on the different products according to their respective weights in the country total trade.

$$CTB_i^k = \left(\frac{1000}{GDP_i}\right)\left[\left(X_i^k - M_i^k\right) - \sum_k \left(X_i^k - M_i^k\right)\left(\frac{X_i^k + M_i^k}{\sum_k \left(X_i^k + M_i^k\right)}\right)\right]$$

with i the country, k the product, X are the exports and M the imports.

A positive contribution is interpreted as a revealed comparative advantage. By definition, the sum over all products is zero. In CHELEM database we get 72 categories of products.

The "contribution to the trade balance" (*CTB*) indicator is used to evaluate the similarity of specialization patterns between pairs of countries.

Two steps are needed to transform the *CTB* indicator into a similarity index:

We first compute adjusted *CTB*, ($C\widetilde{T}B$), in order to get rid of the size effect (degree of specialisation) included in the *CTB*: *CTB* are multiplied by a coefficient so that the sum of adjusted values equals 100 for positive contributions and –100 for negative contributions;

then, for each pair of countries, we add up absolute differences of adjusted *CTB*. The similarity will equal 100, if the two countries have the same specialisation pattern (possibly with different intensities). If each comparative advantage for country i is matched by an equal disadvantage for country j then similarity will be 0.

The similarity of specialisation patterns between country i and j, Sim_{ij}, is defined as follow:

$$Sim_{ij} = 100 - \frac{1}{4}\sum_k \left|C\widetilde{T}B_{ik} - C\widetilde{T}B_{jk}\right|$$

An index of multilateral dissimilarity is then computed as: $MultiSim_i = \sum_j \dfrac{Y_j}{Sim_{ij}}$.

This index is the equivalent for similarity of what market potential is for distance. It measure how the position of the country in terms of structure of specialisation, compared to all other countries, influences its global propensity to trade.

**APPENDIX 6 - THE DYNAMICS OF TRADE REGIONAL POLARISATION
IN NORTH AMERICA, SOUTH EAST ASIA AND WESTERN EUROPE**

Trade regional polarisation index: $\dfrac{V_{ir}}{V_{i.}} / \dfrac{(V_{.r} - V_{rr})}{(V_{..} - V_{r.})}$

Panel A: North America

Exports

Imports
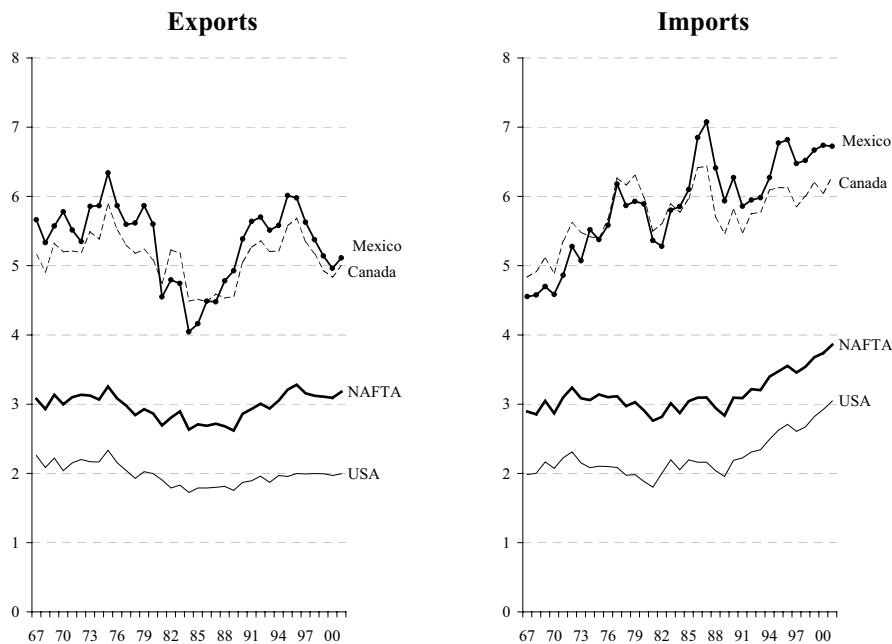
Source: CEPII, CHELEM data base, authors' calculations.

Panel B: South East Asia
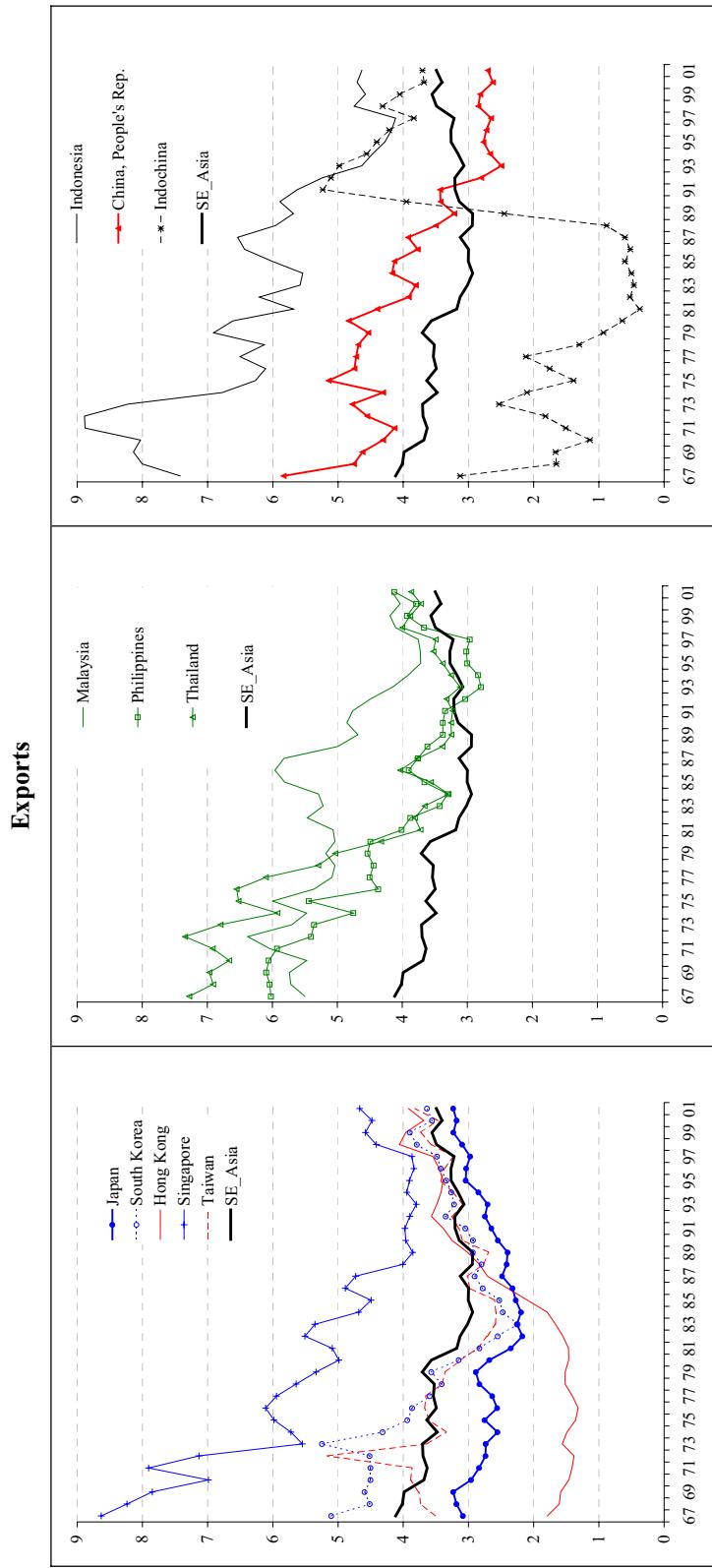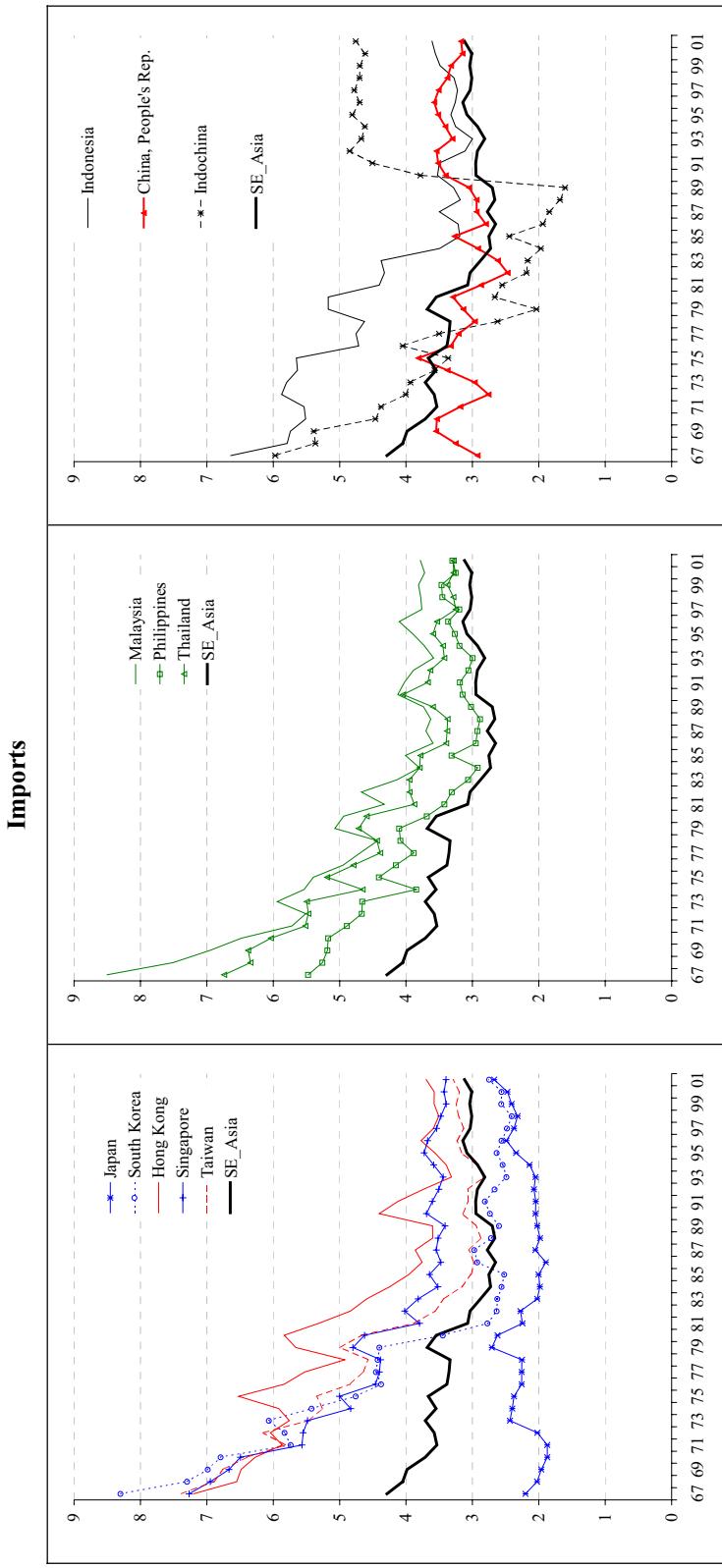
Exports

Imports

Source: CEPII, CHELEM data base, authors' calculations.

Panel C: Western Europe and Mediterranean
Exports
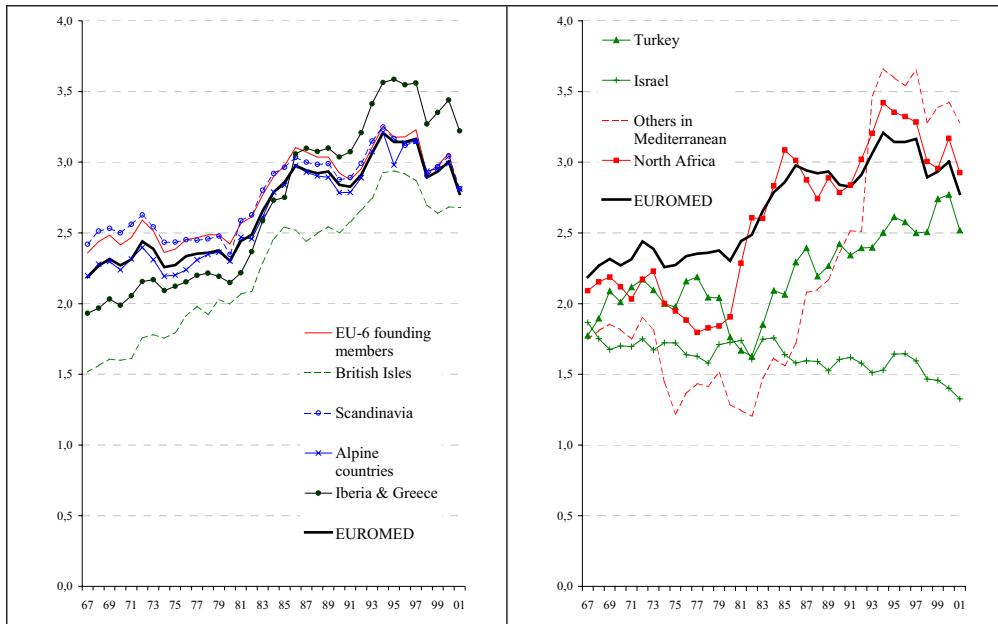
Imports
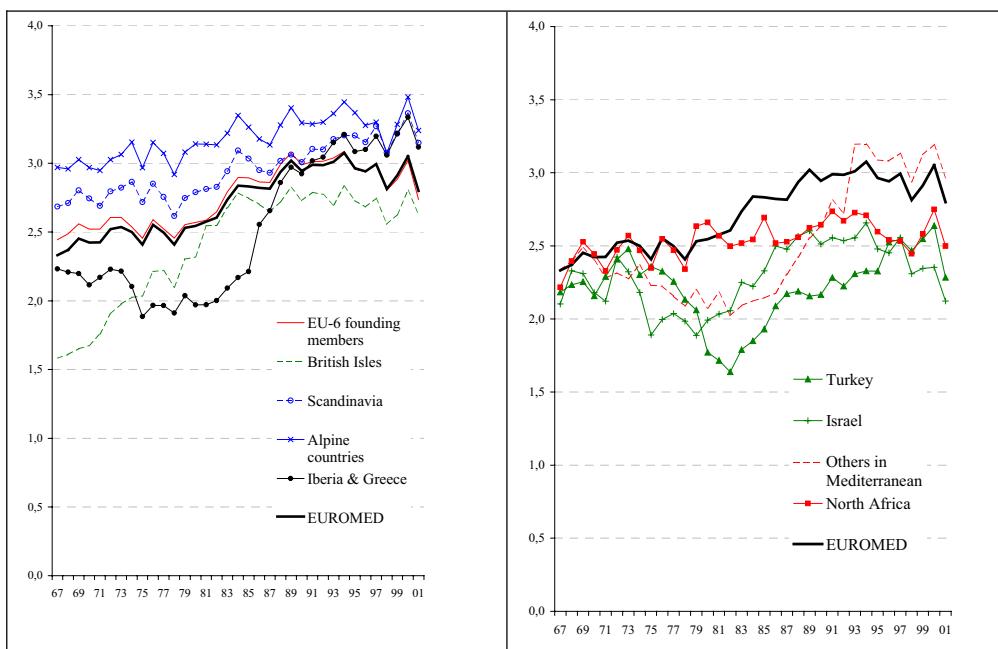
Source: CEPII, CHELEM data base, authors' calculations.

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