THE BURGENLAND RULE : A SIMPLE THEORY OF THE GEOGRAPHY OF REGIONAL INEQUALITY WITH A BRIEF LOOK AT EUROPE, NORTH AMERICA AND BEYOND

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The Burgenland Rule : A Simple Theory of the Geography of Regional Inequality with a brief look at Europe, North America and beyond

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RÉSUMÉ/ABSTRACT

Pourquoi les disparités régionales sont-elles plus prononcées dans certains pays que dans d'autres; même à des niveaux analogues de développement économique? Nous proposons une théorie simple qui s'appuie sur deux éléments : 1) localisation des plus grandes villes; 2) la localisation des principaux partenaires commerciaux. Ces deux facteurs détermineront largement la l'emplacement des régions pauvres et des régions riches et aussi la dimension géographique de la « périphérie »; à savoir, les parties du pays qui affichent des revenus par habitant systématiquement en dessous de la moyenne nationale. Les disparités régionales sont examinées pour les pays de l'Union européenne et pour le Canada et le Mexique. Plus les forces nationales et continentales d'agglomération se chevauchent plus l'espace potentiel à haut revenu sera réduit et plus la probabilité de disparités extrêmes sera élevée.

Mots-clés : Disparité régionales; Inégalités territoriales; Développement régional.

■■■

Why do some nations exhibit higher levels of spatial inequality, even at comparable levels of development? This paper proposes a simple theory, using two pieces of information: 1) The location of the nation's largest city or cities; 2) The location of the nation's chief trading partners. These determine, it is argued, which regions are poorer and which richer, and also the size of the periphery: regions with per capita incomes systematically below the national average. Spatial inequality is examined for EU nations and Canada and Mexico. The greater the spatial overlap between national and continental forces of agglomeration, the smaller the area with a potential for generating high incomes and the greater the probability of high extreme values within any nation.

Keywords : Work and fertility; Event history analysis; Canada.

INTRODUCTION

Why are some regional disparities more difficult to overcome than others? This paper proposes a simple theory of the geography of regional income inequality within nations, building on a previous paper (Paelinck and Polèse 1999). The adjective *simple* is used on purpose. The proposed "theory" is founded on what might be called a Big Picture approach, grounded in stylized facts. No complex statistical analysis is called for, nor is one proposed. Only two pieces of information are required for any nation : 1) The location of the nation's largest city or cities; 2) The location of the nation's primary trading partners. These two facts, it is argued, will largely determine which regions are poorer and which are richer, and will also determine the relative size of the periphery; defined here as regions whose per capita incomes fall systematically below the national average. The first fact, as Krugman (1995) suggests, is most often a result of historical accident, and once established rarely changes over time. The second fact – the direction and importance of trade - can change over time, altering the relative fortunes of regions.

Following a brief literature review on regional income inequality, the internal spatial distribution of per capita income (or product) is examined for the European Union (EU) and for the NAFTA are[1], focusing on Canada and Mexico. As posited by Paelinck and Polèse (1999), certain communalities are discernable. The combined effects of the forces of agglomeration (city size) and of trade produce analogous spatial patterns on both sides of the Atlantic. Some nations have more "equal" geographies than others. Following from these general observations, I derive the "the Burgenland Rule" so named in honour of the small "Land" lying at the extreme eastern edge of Austria, which provides an archetypical example of a nation with a small periphery. The Burgenland Rule provides, I suggest, a useful template for interpreting national income geographies; for understanding, for example, why regional inequality will continue to loom large as a policy issue in the UK, but will remain a non-issue in the US.

1. REGIONAL INCOME INEQUALITY : A BRIEF OVERVIEW

An abundant literature exists on the subject of regional income (or product) inequality within nations (Coulombe 2000, 2007, Barro and Sala-i-Martin 2004, Duranton and Monastrioitis 2002, Kanbur and Venables 2005, Meliciani 2006, Petrakos *et al* 2005, Puga 1999, Rodriguez-Pose and Gill 2004, Rodriguez-Pose and Sánchez-Reaza 2005, Williamson 1965). Other labels such as regional disparity, spatial inequality, and similar expressions are also used to designate the existence of spatial welfare differences within nations. Much has been written on the opposing forces which, on the one hand, propel regional inequality, driven by agglomeration, increasing returns and cumulative causation (Dumais *et al* 1997, Fujita and Thisse 2002, Lucas 1988, Myrdal 1957, Romer 1987) and those, on other hand, that favour convergence via factor mobility, trade, and falling distance costs (Barro and Sala-i-Martin 2004, Puga 1999). The general consensus, certainly among mainstream economists, is that economic growth and economic integration will on the long run reduce income disparities between regions. The evidence largely supports the convergence view[2]. For almost all industrialised nations where data is available, income or product disparities have fallen sharply since the Second World War (Barro Sala-i-Martin 2004). In the United States, the ratio between average per capita income in the two richest states and in the two poorest has fallen from 3.2 to in 1900 to 1.4 in 2000; in Canada, ratio between the two richest and in the two poorest provinces fell from 2.7 in 1930 to 1.3 today[3]. Williamson's (1965) model of initially rising and then falling regional disparities, as economies integrate and nations grow, still seems a fairly accurate, although stylized, depiction of reality.

However, spatial income inequalities never totally disappear, if only because of the friction of space and the costs of migration. Some disparities are more stubborn than others, with Italy a classical example in Europe. Italy's South – the Mezzogiorno – seems to be an eternally lagging region. In the original EU member nations, regional income disparities appear, as a whole, to have stabilized, and in some case are on the rise, even if only slightly (Rodriguez-Pose and Gill 2004). The disparity between the North and the South of England seems immovable, recent evidence suggesting that it may be widening (Duranton and Monastiriotis 2002), and a continuing subject of concern (Godchild and Hickman 2006).

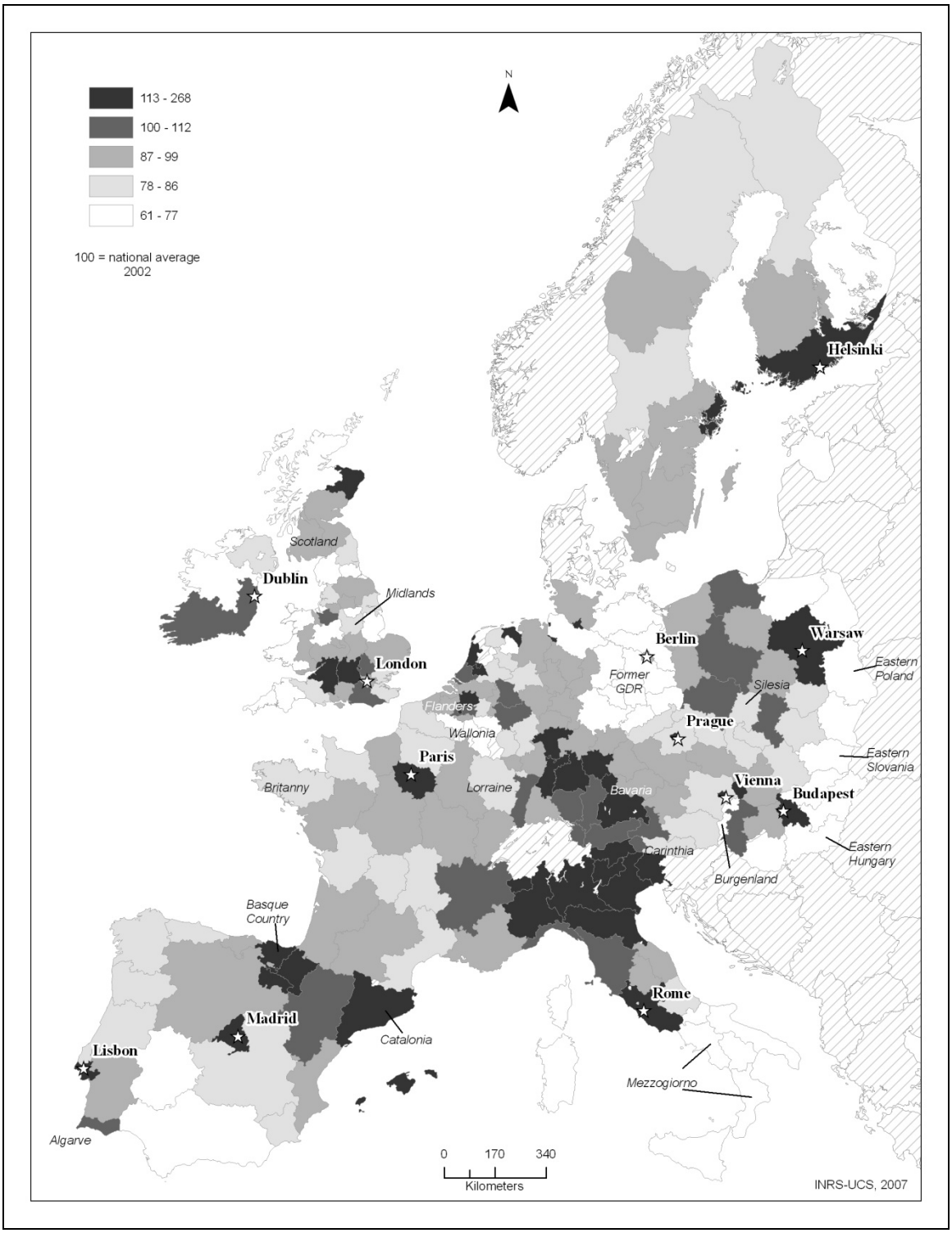
Many factors can explain why, even at comparable levels of development, some nations exhibit more pronounced levels of regional disparity than others. Size is an obvious factor. Smaller nations should *ceteris paribus* have lower regional disparities. However, for Europe, Felsenstein and Portnov (2005) find no necessary relationship between country size and levels of regional inequality. They conclude that other intermediating factors such as social cohesion, natural resource endowments, population composition, agglomeration economies,

and openness to trade may be as important, if not more. Clearly, internal barriers to labour mobility, a characteristic of nations with cultural and linguistic divides, will dampen the forces of convergence. Also, nations characterised by spatially very unequal resource endowments – where some regions generate “windfall” resource rents – should also exhibit more unequal income geographies, at least while the windfall lasts. By the same token, the negative legacy of past resource rents (coal, being the eminent example in Europe) will also generate income inequality over space; again, while the impact lasts, which may be very long if the British experience is anything to go by. This paper, focus on the latter two factors suggested by Felsenstein and Portnov (2004) : agglomeration economies and openness to trade. We begin with trade.

2. CONTINENTAL AGGLOMERATION

Paelinck and Polèse (1999) posited – for any nation - that economic activity will, with time, shift in the direction of the nation's most important trading partner and source of direction investment. The greater the percentage of trade in national GDP, the greater the will be the geographical pull of the trading partner. Replacing the term "trading partner" with the concept of Continental Core (CC) - the area of highest market potential - Paelinck and Polèse (1999) formulated two complementary "theorems" : 1) The most dynamic regions within a nation will develop in those areas where distance from the CC is minimized; 2) the dynamic regions of nations located at some distance from the CC will often be located near lagging regions of nations closer to the CC. The identification of a Continental Core is not a major problem in Europe where the so-called Blue Banana has long been recognized as a good schematic representation of the continent's economic heartland.

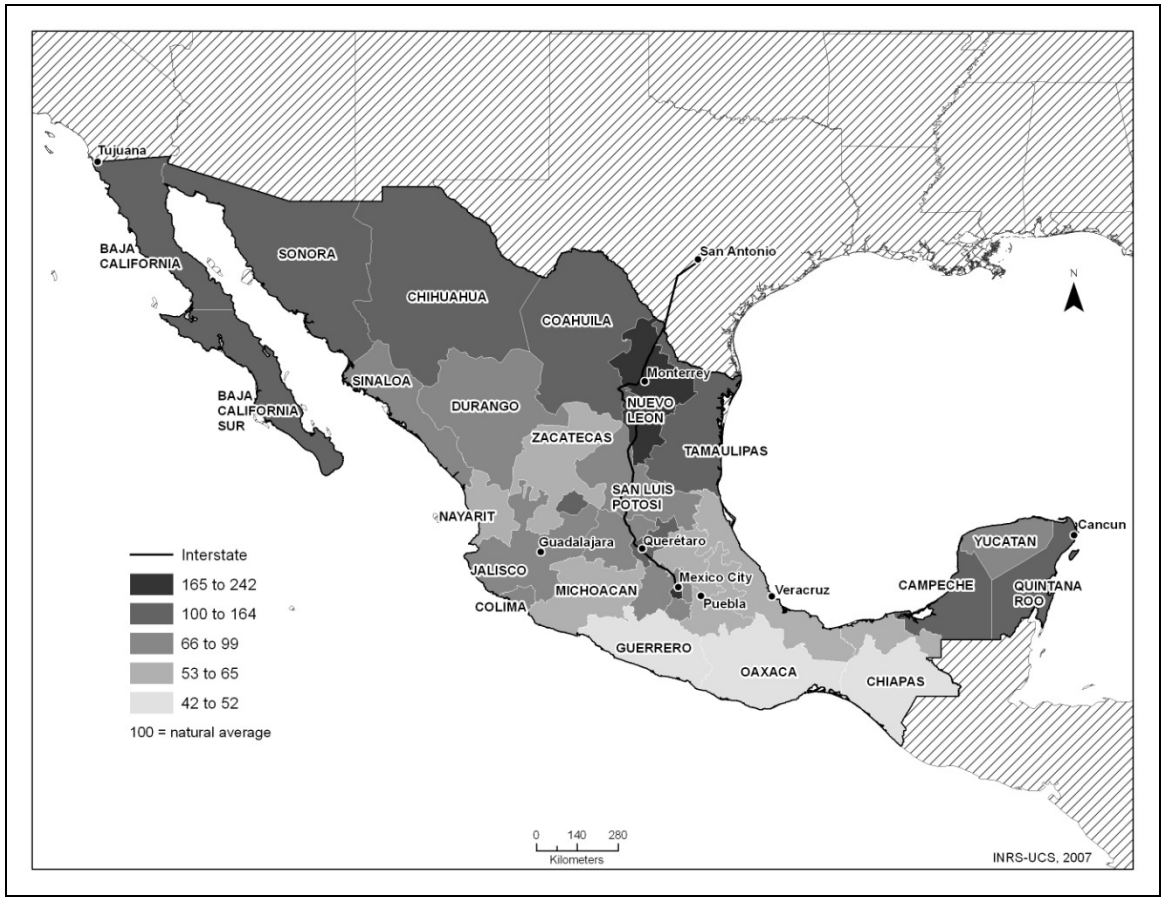
The two theorems appear to work surpassingly well in Europe, using deviations from the national average in per capita GDP to distinguish between dynamic and lagging regions (**Map 1**). Spain's two wealthiest regions outside Madrid lie in the north, closest to the Blue Banana, across from south-western France, traditionally among the least developed. By the same token, Poland's wealthiest areas, outside Warsaw, lie in the west closest to the CC, bunched up against Germany's poor east. In Hungary, the richest province outside Budapest lies on its western border across from Austria's poorest, Burgenland. This cartographic regularity is basically a stylized restatement of the importance of market accessibility as a determinant of industrial location and, indirectly, of wage and income levels. Numerous studies for Europe have confirmed the existence of a positive relationship between per capita GDP (or other welfare measures) and market potential with a strong centre-periphery gradient, with the highest values in the core of the traditional Blue Banana somewhere between Basel and Rotterdam (Breinlich 2006, Meliciani 2006, Niebuhr 2006). The main intervening factor is the presence of national boundaries, reducing interaction; although their impact has diminished.



Source : Eurostat (2003)

Map 1. ***Per capita GDP by region compared to national average. Europe 2002.***

North America has no similar over-towering Continental Core, although the densely populated Megalopolis, stretching from Boston to Washington D.C, can be said to play that role. The economic geography of the United States comes closer to a bi-polar model with a second Pacific-centred core increasingly exerting a countervailing pull towards the west. The long-term historical trend suggests a hollowing-out of the centre with Americans being increasingly pulled to the two shorelines, now that the initial era of settlement lies in the past (Rappaport 2004, Rappaport and Sachs 2003). As in Europe, the continued pull of a "core" - be it singular or plural - is evident. But, unlike Europe, a clearly dominant market centre cannot be easily identified. In the following paragraphs, I shall use the US market as a proxy for the continental core, which allows me to consider Mexico and Canada from a similar core-periphery perspective.



Source : CEFP (2006)

Map 2. ***Per capita GDP by State. Mexico 2004***

3. A BRIEF LOOK AT MEXICO AND AT CANADA

For both Canada and Mexico, US markets today account for approximately 80% of exports and for an ever increasing share of national GDP, a trend which has accelerated since the signing of NAFTA in 1994. For Canada, Apparicio *et al* (2007) found a strong positive relationship between employment growth and continental market accessibility for each of the three decades between 1971 and 2001, after controlling for other factors such as intra-Canadian centre-periphery relationships, city size, education levels and industrial structure. The strength of the positive relationship has grown over time, specifically for manufacturing employment growth. Shearmur and Polèse (2007) observe a positive relationship with local employment growth since 1981 using simple South-North coordinates, a turn-around from 1981 when growth was relatively more concentrated in Northern mining towns and other natural resource dependant locations.

A simple Pearson correlation analysis, without any intermediating factors, between continental market potential[4] and per capita income in 2001 yielded an R coefficient of 0.427 for the 358 spatial units (Census metropolitan areas, Census agglomeration, Census divisions) covering all of Canada below the 55th parallel. Going back in time, the coefficients were 0.319 in 1981 and 0.413 in 1991 (all significant at the 0.001 level), again suggesting a strengthening relationship. In the Canadian case, the relationship would probably have been stronger were it not for the interference of the many resource-dependant towns that dot the Canadian landscape (specialized in aluminum smelting, oil drilling, forestry, mining, etc.) and which, as a rule, pay above average wages. The local 'distorting' effects on wages of resource rents are much less of a factor in Europe, although they undoubtedly explain the high relative GDP values for eastern Scotland (**Map 1**).

A short digression on the delineation of spatial units is in order. Measures of regional inequality are sensitive not only to country and spatial unit size, but also to the manner in which unit boundaries are drawn. Canada provides a case in point. For Canadian provinces, Coulombe (2007) finds that the convergence of relative per-capita GDP observed across Canadian provinces since 1981 can in part be accounted for by the convergence of international trade flows. In sum, economic integration (with the US) has favoured greater equality at the *provincial* level. Canada has ten provinces (fairly large units) whose borders generally run south-north from the US border, except on the Atlantic seaboard. Most occupy a fairly similar position relative to the US border. Or, to put it differently, almost all are as favourably, if not better, located for trade with American states than with Canadian provinces. Thus, as trade barriers recede, it is to be expected that cross-border trade flows

will converge. If Canadian provinces were drawn differently, in increasingly distant layers from the US border, the result would have been different, a warning that the shape and the disposition of spatial units affect results. Thus, in Europe the elongated north-south shape of certain **NUTS 2** regions in Finland should drive inequality measures down, while the west-east layering of units in Slovakia should drive them up. No completely neutral measure – perfectly comparable across nations - of regional equality exists. With this cautionary note in mind, let us move to Mexico.

The evidence suggests that the integration of Mexico into the North American economy since NAFTA has hardened regional income inequality and sharpened the north-south divide (Esquival *et al* 2003, Rodriguez-Pose and Sánchez-Reaza 2005). Because of its funnel-like geography, the pattern for Mexico is unmistakable, recalling Italy's north-south split (**Map 2**). Per capita GDP increases almost systematically along a south-north continuum with the highest values for states located on the US border and along the Caribbean coast facing the southern US. With the exception of the Mexico City region, which has the nation's highest per capita GDP, the highest values are for the State of Nuevo León, home to the industrial metropolis of Monterrey - the republic's third largest - which is located on the principal highway and rail link between Mexico City and the Texas border, entry point to the markets of the US Midwest and the eastern Megalopolis. For Mexico, a simple correlation analysis for its 2444 *Municipios* (similar to US counties) between income levels in 2000 and a very crude distance measure (from the US border) yielded an R coefficient of 0.414, significant at the 0.001 level[5].

Map 2 brings out the importance of trade corridors, specifically corridors linking national cores – centered on the capital or largest city (as in Mexico) – with continental cores or dominant trading partner. Note the high per capita GDP value for the State of Querétaro, home to the city of the same name, located on the Mexico City-Texas highway, which registered the most rapid population of growth (1990-2000) of any major metropolitan area (population over 100,000) not directly located on the US border (INEGI on-line). The automobile industry, largely foreign-controlled, for which employment more than tripled between 1989 and 2003, is almost exclusively concentrated in mid-sized cities linking Mexico-City to the US border (INEGI 2004). The principal exception **:** the Volkswagen assembly plant with some 15,000 employees, in the city Puebla, located, as one might expect, on the principal highway and rail link between the Atlantic port of Veracruz and Mexico City.

Summing up : as the share of GDP exported to the continental core (the US in this case) grows so should the relative value, within each nation, of proximity to core markets, reflected in turn in higher growth rates and in higher incomes. This re-statement of Paelinck and Polèse's (1999) first theorem is almost self-evident with, of course, the usual *ceteris paribus* thrown in. This theorem however leaves aside one of the principal foundations of economic geography : the continuous tug-of-war between the irresistible forces of agglomeration, on the one hand, and the centrifugal forces which they unleash, on the other.

4. SPREAD EFFECTS AND BORDERS

The reasons why all economic activity does not pile up in one huge sprawling continental core has been admirably explained by Henderson (1997) and Henderson *et al* (2001). In a nutshell, the answer is the trade-off between agglomeration economies and diseconomies. The most rapidly growing sectors of the economy, most notably producer services and entertainment-related industries, continue to concentrate in the very largest cities – the cores – in turn pushing up real estate prices, wages, and congestion costs in general. Those sectors least able to bear such costs, chiefly non high-tech manufacturing industries, will move to other locations, often mid-sized cities, at some distance from the core. The higher the congestion costs in the core, the greater the pressure for such industries to move to more peripheral locations.

The evidence both for the continued concentration of high-order services and knowledge-rich activities in the largest cities and for the deconcentration of manufacturing is impressive, citing respectively studies for the US, France, Spain, and Canada (Desmet and Fafchamps 2005, Gaigné *et al* 2005, Polèse *et al* 2007, Polèse and Shearmur 2006). For Europe as a whole, Hanell and Neubauer (2006) observe the continued concentration of knowledge-rich activities in or near the Blue Banana. Brülhart (1998) found that manufacturing employment in industries sensitive to labour costs was shifting to the EU periphery, noting in a more recent article (Brülhart 2006) that accession to the EU has favoured countries' peripheral regions in terms of manufacturing employment and their central regions in terms of service employment. But, manufacturing does not spread out haphazardly from the core or cores. Proximity to larger cities remains a factor, in part because of the importance of producer services as inputs to manufacturing, and thus of interaction with service firms in the big city (Wood and Parr 2005). In the national studies cited above, the observed deconcentration of manufacturing is spatially constrained, falling off beyond a certain distance, notably for mid-tech industries.

Placing the processes described above in a continental setting, two parallel spatial dynamics can be said to be at work. On the one hand, industries – services and manufacturing - are concentrating and deconcentrating *within each national space*, with labour cost-sensitive manufacturing fleeing the national core. On the other hand, the same spatial process is at play *within continental space*, with labour cost-sensitive manufacturing and analogous activities fleeing the continental core. The process is not the same in each case. The reason is the presence of borders and of national differences. Borders continue to matter, even under conditions of high economics integration, reducing trade and interaction (McCallum 1995,

Niebuhr 2006, Nitsch 2000). For the US and Canada, after controlling for various factors, Brown (2003) finds that inter-provincial trade (within Canada) is six fold stronger than interstate trade. But, as in Europe, the impact on trade has been declining (Coulombe 2005) as economic integration advances.

National borders continue to matter for various reasons. As long as institutions, language, and culture differ between nations, labour will not be totally mobile; nor will capital. Even within the highly integrated Canadian economy, with an absence of formal borders for more than a century, labour is not truly mobile between Quebec and other Canadian provinces. Language remains a powerful barrier to mobility. In Europe, the effects of language are clearly visible for Belgium (**Map 1**), which despite its small size has one of the most unequal geographies in Europe[6] (Felsenstein and Portnov 2005). The social divide between poorer Wallonia and richer Flanders also has other roots, notably the former's "old industry" heritage; but the lack of mobility between French-speaking Wallonia and Dutch-speaking Flanders is certainly a factor. The classical adjustment mechanisms – via the movement of labour from poorer to richer regions – are inoperative in Belgium.

Linguistic, cultural, and national borders also operate to reduce the mobility of capital; specifically direct investment decisions. The deconcentration of manufacturing, referred to earlier, necessarily implies direct investment decisions : the decision to locate plants. For deconcentration within *national* space, the preference for location close to the national core will in part be guided by management considerations in cases where the point of origin of the direct investment is the national core – the nation's largest city. The need to communicate with the plant on a regular basis, with frequent travel back and forth, will *ceteris paribus* favour closer over more distance locations. The value of proximity will increase further if, in addition, intra-firm trade between plants in intermediate inputs is important. I will henceforth refer to location decisions originating in the national core as NDI (National Direct Investment).

Cross-border investments originating in the continental core, which I shall call CDI (Continental Direct Investment), will be subject to the same distance constraint, but reinforced by language and culture, plus the need to communicate over greater distances. Several studies, beginning with Ray's (1967) pioneering study for Canada, have demonstrated the effects of cultural affinity and distance on foreign direction investment decisions (Mucchielli 1998, Croze *et al* 2004). Thus, German firms investing in France will, again with the usual *ceteris paribus*, prefer to begin with locations closer to the German border, not only to reduce distance costs, but also because the likelihood of finding German-speaking professional or scientific personnel

is greater, facilitating contacts between the French plant and the head office and the firm's other establishments in Germany. Given the choice, a firm will prefer a location which is culturally closer rather than further.

Cultural affinity also operates at another level. CDI will tend to favour the receiving nation's largest city. The largest city will, almost by definition, be the most cosmopolitan, where the foreign manager or executive has the highest probability of finding a compatriot community with restaurants, shops, and other services which are culturally familiar. Staying with the French example, the chances of finding a German restaurant are certainly greater in Paris than in, say, Poitiers. In addition, scale economies in transportation will in general reinforce the attraction of largest city since it is most often the natural point of entry for foreign firms. Flights between Frankfurt and Paris are more frequent than between Frankfurt and Poitiers (if any exist), although in this case a TGV might be a more appropriate means of transportation, but still centered on Paris. Moving further east, to Hungary, Brown *et al* (2007) note the spatial concentration foreign direct investment in Budapest and in locations lying between Budapest and the Austrian border.

The nature of CDI destined for the nation's largest city and that going to intermediate locations will not be the same. If investments are solely limited to labour-cost sensitive manufacturing, intermediate locations – comprising small and mid-sized cities – will be the normal destination. In Hungary, why would a German firm choose to locate a plant in Budapest where land and labour costs are highest ? The firm is more likely to prefer a smaller city located on a major thoroughfare leading to Germany. CDI in the nations' largest city – Budapest in this case – will be concentrated in other industries; but because of cultural *distance* rather than affinity in this case. Services in general, not only producer services, are sensitive to language. Most require interpersonal verbal or written contact. In Canada, the language divide has produced a flourishing advertising industry in Montreal to service Quebec's French-speaking market. Marketing and distribution facilities are concentrated in and around Montreal, Quebec's largest city. Returning to Europe, the need to market goods in distinct cultural markets will mean that outside firms wishing to serve those markets – whether they have plants there or not- will set up shop in the nation's largest city, investing in marketing facilities and support services adapted to the national market. Direct investments in high-order services – finance, management, adverting, engineering, etc. – will, almost by definition, be chiefly directed at the nation's largest city.

5. THREE STYLIZED SCENARIOS : COMBING THE EFFECTS OF NATION AND CONTINENTAL AGGLOMERATION

The spatial dynamics described in the preceding sections can now be brought together. A nation will, over time, be subject to two spatial processes : 1) the gradual shift of economic activity in the direction of its chief trading partner or the continental core, towards the US in Mexico and in Canada, and towards the Blue Banana in Europe for nations lying, in whole or in part, outside it; 2) the continued concentration of knowledge-rich activities in the largest city or cities and the countervailing deconcentration of less knowledge-rich industries to smaller cities and surrounding areas, and to more distant locations for the most labour-cost sensitive industries. The first process values locations close to the dominant trading partner, while the second values locations in or near the largest city.

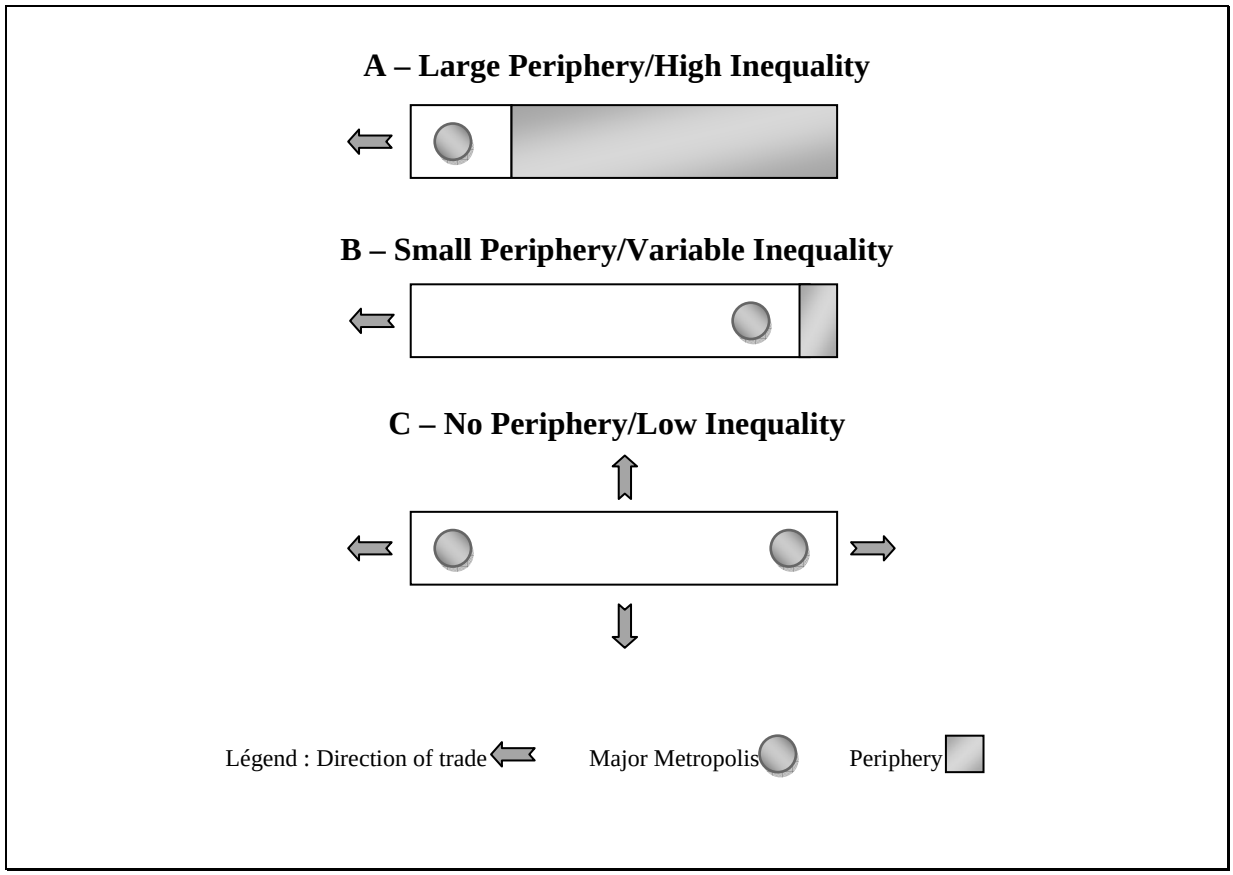


Figure 1. ***Three stylized economic geographies*****.**

The location of the largest city or cities and of the dominant trading partners will vary among nations, producing different national geographies of per capita income and product. In figure 1, three stylized cases are pictured. For the sake of simplicity, only one large city and one dominant trading partner are posited for scenarios A and B. But, as I shall argue, these stylized cases are surprisingly accurate representations of reality for some nations.

In case A – large periphery/persistent disparity – the nation's largest city and its chief trading partner are located on the same side of the nation; that is, on the left-hand side on figure 1. In case A, both spatial processes value the same locations. Both the forces of agglomeration and of trade are pulling in the same direction. For export-oriented industries and industries subject to agglomeration economies there is little advantage in locating in the periphery – shaded in grey – except perhaps for the least knowledge-intensive and most labour-cost sensitive. For this stylized case, the periphery's *only* advantage is lower wages, and thus also lowers per capita incomes. Unless the largest city moves to another location (to the left on figure 1) – highly unlikely – or the direction of trade changes - possible - the income disparity is likely to be very stubborn, with little chance of it dampening over time.

In Europe, scenario A is an almost picture-perfect representation of Slovakia. Bratislava, the capital and by far the largest city, lies on the extreme western end of the nation, across from Austria. Trade, we may reasonably assume, is overwhelmingly directed towards the west – towards the Blue Banana – undoubtedly also the source of most foreign investment. The evidence is consistent with what case A suggests : high regional income inequality. On the two regional disparity indexes used by Felsenstein and Portnov (2005), Slovakia comes out, respectively, as the second and first-most unequal nation among twenty-two European nations[7]. By the same token, Eastern Slovakia (**NUTS 2** *: Východné Slovensko*) registers the highest negative deviation from the national average of any European region pictured on **Map 1**, barring the exceptional case of the former GDR *Länder*, while the Bratislava region exhibits one the highest positive deviations. There is no evidence that disparities are weakening. Following our template, the best hope for greater regional equality in Slovakia is a resurgence of national economies to its east - Ukraine, Russia, etc. – thus becoming lucrative trading partners. How likely this is, I do not know, but certainly more so than Bratislava moving east.

Another European case which comes close to scenario A is the UK, specifically England. Felsenstein and Portnov (2005), classify the UK, respectively, as the first-most and the third-most unequal nation in Europe. To make England conform to figure 1, scenario A needs simply to be stood on its head with the arrow facing south, placing the grey patch in the north. England meets both conditions : its chief area of trade and interaction, the continental Blue Banana, points in the same direction – i.e. the south – as its largest city. On the second

condition, the English case is even more extreme than the Slovak one. The pull of London is not simply fuelled by a "normal" national spatial agglomeration process, but also by agglomeration at the continental level. Here, the forces of national and continental (even international) agglomeration almost perfectly overlap, driving up the value of a single point in space : greater London in this instance. This should, predictably, spark a corresponding spread effect, primarily benefiting those areas most accessible to London, which seems to be what is happening, notably along the east-west London-Bristol corridor. But, following scenario A, England's periphery remains problematic, if only because of its relative size compared to the natural area of deconcentration for industries seeking to flee London while yet remaining close.

The English case is, of course, more complex than scenario A suggests. The simplifying assumption of only one big city ignores the fact that the second city, Manchester, large by any standards, is located in the periphery, as well as a number of other good-sized urban centres. There is no *a priori* reason why Manchester should not again one day be one of Europe's most dynamic cities. Scenario A abstracts from other intervening factors which might either heighten or further depress the economic value of the periphery; notably, in the case of the Midlands and the North, the stubborn legacy of an old industrial structure. The essential point is that the stylized spatial process implicit in scenario A creates the basic conditions for an unequal geography of income, unless other countervailing pressures are present.

Case B presents the opposite scenario. Here, the national and continental forces of agglomeration and of trade are pulling in opposing directions. The largest city is located at the opposite end of the nation from that of its dominant trading partner. In this case, the spread effects emanating from the largest city and from the continental core (or dominant trading partner) cover a potentially very large area, leaving only a small periphery. The European nation which comes closest to this happier scenario is Austria, where Vienna, the largest city, lies at the almost extreme eastern edge of the nation, leaving a small sliver – Burgenland- at the periphery (**Map 1**). Which is why I have dubbed the general principal to be drawn from this scenario the Burgenland Rule, which can be stated thus : *Within the boundaries of any nation, the further removed the national core (largest city) is from the continental core (dominant trading partner), the smaller the relative size of the periphery, and the less intractable regional disparities will be*. It follows, as a corollary, that the majority of locations lying in the path between the two will exhibit incomes above the national average.

The Austrian case does not perfectly meet the conditions of scenario B; the southern stretches of the republic, notably Carinthia, do not lie in the path of trade linking the national core – Vienna - to the Blue Banana, and should thus also be considered peripheral. No nation is perfectly spherical or rectangular, although Slovakia comes close. But, this does not lessen the applicability of the Burgenland rule. A look at **Map 1** confirms that the higher income regions in Spain, Italy, Hungary, Poland, and Sweden are, as a rule, found in the parts of the nation that lie between the capital and respectively its northern (for the first two nations), western (second two), and southern boundaries. The Burgenland rule, by introducing a *national* agglomeration effect, is essentially a refinement of Paelinck and Polèse's (1999) first theorem of regional development. Not only does proximity to the Continental Core (CC) matter, but also to the National Core, valuing locations where accessibility to the two overlaps.

Staying in Europe, a number of observations follow, specifically for the new eastern member states. Seen through the lens of the Burgenland Rule, Poland's periphery is relatively constrained (though not small), given the easterly location of Warsaw. The Rule would also predict an increasing concentration of wealth in the Warsaw-Poznan- corridor leading via Berlin to the Blue Banana. For western Poland and perhaps also western Bohemia, current per capita GDP figures probably underestimate their relative economic value; these are in part areas whose populations changed after World War II. Poland's most easterly regions will remain problematic unless, as noted for Slovakia, the economies of the former USSR states become magnets for trade and major sources of direct investment. By the same token, the fate of Hungary's periphery, to the south and east of Budapest, is linked to the future economic health not only of the eastern states, but also of former Yugoslavia and Rumania.

Other corollaries follow from the Burgenland Rule, essentially by dropping the two simplifying assumptions underlying scenarios A and B : one major metropolis; one dominant trading partner (or one continental core). Dropping the first condition : the greater the number of major cities, approaching the largest in size, and the more spatially dispersed they are, the more equal regional income distributions should be. For Europe, Cuadrado-Roura (2001) identifies the regional presence of at least a mid-sized city, with a corresponding local-city system, as the first condition for regional convergence. For Canada, Coulombe (2000) found that inter-provincial income convergence is in part driven by a corresponding convergence in urbanization levels. Stated more abstractly, if agglomeration economies are present everywhere; they can no longer act as a factor in regional income inequality. Dropping the second condition : the more spatially diversified the direction of trade, the more equal regional income distributions should be. Again, stated more abstractly, if all locations provide the same market access, then proximity to markets no longer acts as a factor in regional income inequality.

Scenario C presents a case with two almost equally sized urban metropolises and with no dominant trading partner. In this case, no periphery emerges. We would expect to find a fairly equal spatial distribution of per capita income with no large persistently below-average region. As the reader will have guessed, scenario C is a fairly accurate, if somewhat stylized, depiction of the US, imagining the Pacific coast on the left and the Atlantic to right. I could have added a third metropolis – Chicago in the US case – but this does alter the basic argument. Scenario C depicts an economic geography in which the national *and* continental forces of trade and of agglomeration do *not* combine to produce systematically poorer and richer regions. The direction of US foreign trade can be depicted as going in four directions. At the time of writing, Canada to the north and Mexico to the south were the two most important markets for US exports, followed by Japan and China (to the west) and Germany and the UK (to the east), in that order. Although the rise of China is most certainly accentuating the pull of the west, it would be difficult to argue that the US economy is being pulled in only one direction. This is different from the European situation where no countervailing force is redirecting trade away from the traditional continental core ports in or near the Blue Banana : Rotterdam, Antwerp, Hamburg, etc. Most European trade with Asia continues to take this route.

Returning to scenario C, the only periphery which might emerge would be in the centre. This is indeed what is happening in the US with, as noted earlier, a hollowing out of the centre of the continent, with population decline in large parts of Nebraska, Kansas, and the Dakotas (Rappaport and Sachs 2003). The poorest counties in the US are no longer in the Deep South or in Appalachia, but in the dry and declining middle (Economist 2005). This is not to say that poverty will not remain an issue in traditionally poor regions, but rather that the root causes of the problem do not lie in spatial economics. Historical legacies, often founded in “accidental” differences in resource endowments – cotton and coal, here – can sometimes override even the most powerful laws of economic geography.

In recent decades, resource endowments have entered the picture at another level. Natural amenities - sun, sand or mountains – increasingly influence migratory choices and industry location as retired populations grow and tastes evolve towards more hedonistic and green pursuits, both in Europe and in America (Cheshire and Magrini 2006, Rappaport 2004). Although natural amenities and climate are not part of our stylized economic landscape, the difference between the US and the UK is noteworthy. In the US, the ‘sun and sand’ factor has, in many cases, favoured what were historically peripheral areas (the South), thus further contributing to regional income

equalization. In the UK, on the contrary, the same factor has reinforced the pull and thus the value of the already richer South of England, although admittedly the sun does not shine very often (but more so than in the North; all advantages are relative).

In the stylized economic landscapes depicted on figure 1, the essential distinction is between context-specific processes and those that are universal. Figure 1 isolates the latter : the two attributes depicted – the location of major cities, the direction of trade – apply to all nations, with the possible exception of totally closed economies, a rare occurrence. By the same token, the more open a national economy is to trade and to outside investment the more the rules set out here should apply. That being said, I shall now turn to India and China, which provide a useful contrast in how the same basic forces of agglomeration and trade produce two very different geographies of income.

6. WHY IS CHINA MORE UNEQUAL THAN INDIA?

India has exhibits systematically lower per capita GDP disparities than China, although disparities are still on the rise in both nations as the Williamson (1965) curve would predict[8] Since the two nations are of comparable size, as are the regional units of measure (States, Provinces...), differences at this level cannot be invoked to explain the systematic difference. Institutional factors certainly matter in China, notably the earlier opening up and liberalization of the coastal provinces, which undoubtedly exacerbated the income gap between the coast and the interior, as did the administrative constraints on internal immigration (Bils 2005). In India, ethnic and linguistic divisions constitute a powerful internal barrier to labour mobility, which should also produce higher regional inequality. No totally adequate explanation exists for the persistent systematic difference between the two nations. A thorough study of the issue goes beyond the confines of this paper, requiring information I do not have. But, as I shall argue, the Burgenland rule and its correlates provide a "simple" possible explanation.

The Indian subcontinent is basically a funnel-shaped peninsula, pointing south, in which large stretches of the nation open up unto the sea, with several large port cities well-poised for international trade : Bombay (Mumbai); Calcutta (Kalkota); Madras (Chennai). Both sides of the subcontinent open up to trading partners. The West Coast with Bombay points towards Europe, while the East Coast with Calcutta and Madras point to Japan and the emerging economies of East Asia. The three largest cities in India - Bombay, Calcutta, Delhi - are located in very different parts of India. Bangalore, India's fifth largest metropolitan area and a growing high-tech centre, is situated in yet another part of the nation. In short, India's geography plus a few historical accidents have produced a "balanced" economic landscape with several competing cores located in different parts of the nation, recalling the U.S. case. India, in short, is an example of scenario C, with no true periphery. However, I do not wish to take the analogy too far. India's poorest States form a large swath of territory in the north-central part of the nation between the economic cores of Bombay, Delhi, and Calcutta. This remains consistent with scenario C in that the "periphery" is not located on the geographic margins of the nation. It is difficult to argue that Bihar, India's poorest State, suffers from a geographically peripheral location, situated in the densely populated Ganges lowlands between Delhi and Calcutta. This suggests that the reasons for the greater poverty of Bihar and the north-central States must be found elsewhere.

China's geography is different. Located at the eastern end of the Eurasian continent, China looks to the sea in only one direction, with one seafront and one dominant direction for international trade. Some 80% of foreign direct investment is concentred in ten coastal

provinces, which accounted for over 85% of China's exports in 2002 (Bils 2005). This is consistent with scenario A. The second postulate of scenario A also holds : its largest cities are located at the same end of the nation as the direction of trade. The fact that we are here dealing with three urban centres - Shanghai, Beijing-Tianjin, and Hong Kong-Guangzhou – rather than one does not weaken the argument; quite to the contrary. It's as if London, Manchester, and Birmingham were all located in the South of England. The pull of the South would be even greater than it already is. In sum, the Chinese economy is being pulled in one direction, towards the sea, not unlike the pull which the North exerts on the Mexican economy, to use another analogy. China is different, however, in that there is no countervailing force comparable to that of Mexico City. Inland development is not absent. Chongqing, located at the head of the Yangtze River system and China's fourth largest urban area by some accounts, is situated more than a thousand kilometres from the coast. However, the overall picture is that of scenario A, in which both agglomeration economies and trade systematically favour one part of the nation over the rest.

CONCLUSION

In this paper, I set out to identify universal processes that cause regional income (or product) disparities to be more pronounced in some nations than in others. The "simple" theory proposed here is so because it is essentially a return to basics. The value of a location, and thus the income it generates, is a function : 1) of the agglomeration economies it generates; 2) its proximity to markets, leaving aside input transport costs. Von Thünen modeled (2) some two centuries ago, while the new economic geography has diligently modelled the mysteries behind (1). In simple English, it helps to be big and to be close. The principal spice I have thrown into this rather conventional sauce is the existence of borders. Borders are historical accidents, even more so than the location of the first large cities. Once the location of major markets and urban centres is given, it is borders that make the difference. The fate of little Burgenland demonstrates this wonderfully. If in 1919, Burgenland (not yet named at the time) had remained part of Hungary rather than being transferred to Austria, it would today be one of the richest regions of Hungary rather then the poorest of Austria. By the same token, if North America had remained united under the British flag, with no border between what are now the US and Canada, then southern Ontario would most likely have developed as an extension of the Midwest rustbelt, rather than being the most prosperous part of Canada - barring Alberta's current resource boom - and home to an international financial centre. Toronto might have developed into another Cleveland (with all due respect to its citizens) rather than emerging as the continent's second financial centre on some counts.

The basic building blocks of the model are : a) the pre-existence of a national economic core – centered on the largest city – to which economic activity is naturally drawn; b) the pre-existence of a continental core, the continental (even global) market centre, to which activity and trade are drawn. It is the location of each that determines outcomes. Within the borders of any nation, the greater the locational overlap between national (a) and continental (b) forces of agglomeration, the smaller the area with a potential for generating high incomes and the greater the probability of high extreme values. By the same token, the greater the distance between the locations favoured by the forces of national (a) and of continental (b) agglomeration, the greater the potential area for generating high incomes and the less the potential for extreme spatial deviations from the national average. In no two nations do the two forces interplay in exactly the same manner. There is thus no reason to assume that regional inequality levels should be the same, even between nations at analogous stages of development.

Because of its simplicity, the "theory" has obvious limits. It adds little to the understanding of the geography of regional inequality for nations in which the direction of trade is not a significant economic marker, usually because of the nation's particular physical geography or location. In such cases, standard core-periphery structures will most often emerge. Japan is an example. In Europe, it would be difficult to argue that the North of Portugal has a clear location advantage over the South because of its greater proximity – as the crow flies – to the continental core. Most trade goes through ports, which then become the significant markers, rather than simple distance from the chief trading partner[9]. Nor is the model terribly useful for nations such as Belgium that are wholly contained in the continental core.

However, a glance around the globe suggests that this simple "theory"provides a useful template for a large number of nations, always remembering that we are dealing with stylized regularities. It would predict, for example, high and persistent regional inequalities in Argentina and in Brazil as well as in many West African nations, where the direction of trade points in the same direction as the nation's largest city, generally on the coast, with an increasingly marginalized interior. This is certainly not good news for the nations concerned, where the economic divide thus created is often superimposed on an ethnic or religious divide. On the other hand – staying in Africa - the "theory" suggests that we should not observe acute regional inequality in South Africa, where its economic powerhouse (the Johannesburg-Pretoria conurbation) is located at some distance from the two next largest urban centres, – Durban and Cape Town - which are also primary gateways for trade, located in very different parts of the nation.

END NOTES

[1] North American Free Trade Agreement

[2] The technical issues surrounding the measurement of regional per capita income (or product) convergence are not discussed, as they are not central to arguments presented in this paper.

[3] The author's calculations; sources : For the US : Bureau of Economic Analysis, U.S. Dept. of Commerce, www.bea.doc.gov/bea/regional; For Canada : Statistics Canada (periodic) *Provincial Economic Accounts*, Catalogue # 13-213, Statistics Canada. Ottawa.

[4] The market potential figures come from Apparicio *et al* (2007), based on a gravity type model using population figures and road distances and travel times for the some 3300 spatial units (counties, census divisions…) of the US and Canada.

[5] Municipios were classified into the three classes, depending on which State they were located in, where "3" identifies States contiguous to the US. No direct income data exists for Mexico. The variable used was the percentage of the employed labour force earning more than the equivalent of five minimum wages. The data is drawn from the 2000 Mexican census (INEGI). I should look to thank my colleagues Isabel Angoa and Enrique Bueno at the *Universidad Autónoma de Puebla* for their hep both with this source as well as other Mexican data used in this paper.

[6] Felsenstein and Portnov (2005) use two indicators of regional inequality : 1) the ratio of the richest to poorest region; 2) the so-called Williamson Index. On both of these, Belgium is among the most unequal countries in Europe, more so for example than Italy, generally considered a highly unequal nation.

[7] See preceding note.

[8] For India, the ratio of the two richest regions to the two poorest went from 3, 18 to 4, 81 between 1980 and 2000. The equivalent figures for China are 7, 27 and 9, 07. For the coefficient of variance (in GDP per capita), the results were 0, 38 and 0, 43 for India and 0, 78 and 0, 76 for China. Sources : Government of India, Ministry of Statistics and Programme Implementation (2001), http://www.mospi.nic.in/; National Bureau of Statistics of China, China Statistical Yearbook (2005), http://www.mospi.nic.in/

[9] This limit does not, however, negate the model. It simply states that the concept of 'distance' as related to trade needs to be refined.

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