



## Geography, transport and Africa's proximity gap

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### ABSTRACT

Geography causes African countries to experience a 'proximity gap'. To overcome this gap requires regional cooperation in four main areas: transport infrastructure, trade facilitation, decentralization and local economic development, and migration – each with implications for transport. Because incentives for regional cooperation in these aspects may not be symmetrical, commitments made may not be credible. Therefore, transport infrastructure at least should be bound in World Trade Organisation rules on trade facilitation to provide third party enforcement. Incentives for cooperation could also be improved with transport corridor design and collective peer pressure by landlocked countries. Regional cooperation could be supported by the international community with aid, the assurance of full implementation and adherence to international law on the rights of landlocked countries to transport to the sea, the extension of appropriate trade preferences to African regions and ensuring consistency of international agreements and trade preferences with current regional integration initiatives.

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### 1. Introduction

Africa remains the world's poorest continent. A recent study into the causes of Africa's lagging economic development described four *policy syndromes* as central to Africa's problems: state controls, adverse redistribution, intertemporally unsustainable spending, and state breakdown (Ndulu et al., 2007b).

In this paper it is argued that in addition to certain *policy syndromes*, there is also a *proximity gap* which is the cumulative result of long distances to markets, being landlocked, and sub-optimal agglomeration patterns. It will be argued that there is an important need in Africa for regional cooperation if sufficient investment in transport infrastructure is to be mobilized. Overcoming this proximity gap presents one of the strongest cases in support of regional integration and cooperation, but one that is most often not given adequate consideration, priority or articulation. Yet it has implications for the institutional design of African regional trade agreements (RTAs), some of which will be taken up in this paper.

The paper is structured as follows. In Section 2 the importance of proximity as a factor overcoming thresholds in nonlinear growth paths is explained. In Section 3, Africa's lack of proximity due to geography, and its impact on transport costs, is examined, and the nature of the proximity gap reviewed. Section 4 focuses

on overcoming the proximity gap through regional cooperation in four aspects: transport infrastructure, trade facilitation, decentralization and local economic development, and migration. The role of the international community in assisting these regional cooperation imperatives is discussed in Section 5. Section 6 concludes.

### 2. Proximity and productivity

Africa's growth depends on the extent to which it can raise the productivity of its labour and capital. Proximity is the central issue affecting African productivity. Here, proximity refers to proximity to markets, customers, suppliers, competitors, supporting industries, and governments. It is the ease with which economic agents can coordinate decisions, and, as will be explained here, is influenced by amongst others physical distance and accessibility. When economic activity agglomerates it increases the proximity between the economic agents involved. This has beneficial effects (static and dynamic externalities) that have been described as localization and urbanization economies: it allows for specialization and economies of scale to be realized. The impact of proximity results in positive feedback effects and scale effects. For instance, when capital and labour agglomerate, the externalities result in their higher productivity. The more resources are invested, the greater the returns-to-investment become (Krugman, 1991, p. 651). Because of the higher productivity of capital and labour, more of these are drawn to the agglomeration, thereby setting in motion a process of cumulative causation (Venables, 2006, p. 65). This process is nonlinear,

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and requires that a certain threshold level is reached before positive feedback and scale effects come into force. Therefore, a big push may be needed through coordinated government intervention, for instance, to steer the economy beyond this threshold (e.g. Murphy et al., 1989).

In many African countries, productivity is low because of insufficient proximity between economic agents. This insufficient proximity has two dimensions: the lack of proximity (i) between African countries and international markets, and (ii) between economic agents within Africa, due to insufficient agglomeration of economic activity. Africa's economic development will require the continent to make, as a minimum requirement, progress in two mutually dependent directions: it will (i) need to industrialize (diversify) and move away from an overtly dependence on primary commodities, and it may need to promote manageable urbanization (Zhang, 2002).<sup>1</sup> Successful industrialization requires integration into the world economy, with African industry exporting manufactured (non-traditional) goods into world markets (Chamon and Kremer, 2006). Currently, these requirements may not be met due to the lack of proximity resulting from geographical reasons.

### 3. The proximity gap

#### 3.1. The nature of geography

A distinction can be made between first-nature, second-nature and third-nature geography (see e.g. Bloom et al., 2003 and Ioannides and Overman, 2000). First-nature geography implies the inherent features of an area that are independent of human activity. It includes topography, latitude, incidence of natural resource endowments, agricultural potential (soil quality and rainfall), and climate. Africa's first-nature geography affects its development negatively through geographic isolation<sup>2</sup>, its disease burden<sup>3</sup> due to its largely tropical location<sup>4</sup> (more than 90% of SSA is located within the tropics), scarcity of large, navigable rivers and lack of alluvial plains, high evaporation rates, and the 'curse' of abundant natural mineral resources.<sup>5</sup> The shape of the continent in terms of its north–south orientation has traditionally made technological transfers, especially in agriculture, between different climatic zones more difficult than in Asia and Europe, for instance (Diamond, 1997).

Second-nature geography is features that depend on the spatial interaction between people in an area but are not necessarily inherited. Second-nature geography is important in explaining why areas with similar first-nature geography may end up at different levels of productivity and income. It includes population densities, population location and composition. Africa has the larg-

est number of landlocked countries of any continent. Since being landlocked was an outcome of the determination of borders during the 19th century, it can be treated as second nature, although the size of the continent and differences in climate amplify the effects of border demarcation.

Africa's landlocked countries face a threefold proximity gap: first, in terms of the sizeable distances to international markets and the need to cross numerous borders. A typical African country borders on four neighbouring nations (Ndulu et al., 2007a, p. 102), making border delays notorious (Zanamwe, 2005, p. 8). Transport costs overland are also much higher than shipping costs (Hausmann, 2001, p. 47). Whereas trade with the rest of the world is 30–40% for the landlocked countries in Europe and other developing countries, respectively, this is on average 60% less for SSA countries (Coulibaly and Fontagné, 2005, pp. 314–315). Landlocked African countries also trade up to 92% less with one another than with coastal countries (Coulibaly and Fontagné, 2005, p. 337). The greater loss of trade in Africa's landlocked countries in comparison with other landlocked nations is due to the effect being amplified by two other dimensions of the proximity gap.

Second, the proximity gap is more severe because of the small-sized economies in these countries. Sub-Saharan Africa consists of 48 small economies with a median GDP of US\$ 3 billion, the highest number of countries per square kilometre in the world (Ndulu et al., 2007a: 102). These small internal markets face difficulty in achieving gains from specialization, compounded by low population densities, low urbanization, and weak internal transport links. The degree of openness of a country may be influenced by its size (Spolaore and Wacziarg, 2005, p. 332), and thus small international markets may reinforce the lack of openness that results from being landlocked. In this way, it can even create a proximity trap.

Third, the proximity gap of landlocked countries is further increased by neighbouring countries that are economically poorly performing, often as a result of conflict (Collier, 2006a). This creates a proximity gap in terms of reduced interaction among the economic agents of different countries (hence, low volumes of intra-African trade) which induces spatial spillover effects of very low growth. Collier and O'Connell, (2007) quantify these effects. They show that for each percentage of annual growth experienced by neighbouring countries, the landlocked nations in Africa managed on average a mere 0.2% annual growth in comparison to 0.7% for landlocked countries elsewhere.

In addition to being landlocked, a substantial portion of Africa's population resides in the interior, basically for reasons related to first-nature geography. For instance, in Ethiopia, one of Africa's poorest countries, 89% of the population live in the northern highlands, a region covering about 45% of the country's area, because of its better rainfall, lower temperatures and less exposure to malaria (Benin et al., 2004, p. 167). However, through reduced proximity effects, the impact on economic growth is negative. It has been observed that the growth rate on average is 0.6% lower annually in a country where the population lives further than 100 km from the sea than in a country where the population resides within this limit (Hausmann, 2001, p. 46).

A further feature of Africa's second-nature geography that relates to the interaction of economic agents across space is the high level of ethno-linguistic fragmentation. Earlier studies find this to have a significant negative impact on Africa's growth (Easterly and Levine, 1997). More recently, however, Bloom et al. (2003, p. 360) concluded that once first-nature geography is controlled for, ethno-linguistic fragmentation becomes insignificant.<sup>6</sup>

<sup>6</sup> This may be due to the fact that the authors use latitude as proxy indicator for first-nature geography. This indicator is positively correlated with the homogeneity of population (Bloom et al. 2003, p. 360).

<sup>1</sup> Zhang (2002) amongst many others suggests that urbanization is a salient feature of economic development – despite also have negative consequences, there is not a single country that has made the transition to a modern, advanced economy without urbanizing. Africa is the least urbanized continent – only eight countries are over 50% urbanized. Its average population density (77 people per km<sup>2</sup>) is amongst the lowest in the world (Ndulu et al., 2007b, p. 101). See also Henderson et al. (2001, p. 93).

<sup>2</sup> The Sahara desert has long been a barrier to overland trade with Europe (Sachs et al., 2004, p. 131).

<sup>3</sup> The eradication of malaria in Africa, where approximately 90% of malaria deaths occur annually, is difficult because of climatic conditions (Sachs et al., 2004, p. 133).

<sup>4</sup> Tropical countries have average growth rates 0.5–1.0% less than those of temperate countries. Furthermore, life expectancy in the tropical zone is on average seven years less than in temperate countries (Hausmann, 2001, p. 46). In cross-country empirical studies, location in the tropics or elsewhere is often measured by latitude. Latitude is strongly and positively correlated with per capita income (Bloom, et al. 2003, p. 361). See also Sachs (2001) and Easterly and Levine (2003).

<sup>5</sup> African countries with large mineral wealth have generally had poor performance, leading to the description of these countries being *resource cursed* (Sachs and Warner, 2001). Mehlum et al. (2006) find that a resource curse is not inevitable: with appropriate institutions it can be avoided. However, if not it tends to have a particularly detrimental impact on countries with a 'low degree of openness', such as Africa's landlocked nations (Arezki and Van der Ploeg, 2007).

Third-nature geography concerns features of an area that are based on prior human intervention, such as the adoption of new technology, which implies that a certain level of human skills is available (see Ioannides and Overman, 2000, p. 1). Here the pattern of city formation in Africa is relevant. Existing city agglomerations offer greater scope for new sustainable activities, because human capital accumulation is faster in cities. It should be noted, however, that both second- and third-nature geography is often given the initial impetus by first-nature geography. Warner (2002) recognizes this and points out that geography exerts important effects in agglomeration – for instance, cities are more likely to be established and to develop in favourable geographic areas. First-nature geography is thus an important factor affecting urbanization and city growth in Africa, the continent with the least number of mega-cities and the lowest rates of urbanisation.

Ndulu et al. (2007a, p. 100) argue that these geographical features make investment and productivity growth more expensive in Africa, where the cost of capital ranges on average between 15% and 20% compared to 5–6% in Latin America (Pfeiffer, 2007). Of course, not the entire gap is due to geography, although remoteness does seem to have a direct effect, resulting, for instance, in capital equipment being twice as expensive in South Africa as in the UK (Venables 2005). Geography also renders agriculture a low-productivity activity: due to the relative scarcity of large rivers and alluvial plains, Africa has the lowest share of irrigated cropland in the developing world (Sachs et al., 2004, p. 133). Human capital is also negatively affected by the disease burden, which undermines productivity and capacity-building.

By way of concluding this section, a word of caution needs to be offered. The focus on the role of geography, as explained here, does not suggest that geographical features, particularly first-nature geography alone matters for development (geographical determinism). Consideration of the distinctions between first, second and third-nature geography ought to make clear that human activity and choices are important – especially in the way that they shape institutions. The purpose of this paper is not to get involved in the relative impacts of geographical features and institutions on development,<sup>7</sup> but to examine what is known about the influence of geography on development in Africa, and to discuss the extent to which these forces can be minimized where negative, and to identify the implications that this has for regional cooperation.

### 3.2. Geography and transport costs

In Africa geographical factors affect proximity and productivity through higher transport costs. A number of recent studies, including UNCTAD (2003), suggest that these are indeed significantly higher in Africa than elsewhere: at 12.5% international transport costs in African countries are almost twice as high as the world average of 6.11 per (Naudé and Matthee, 2007).

Other evidence of high African transport costs comes from Ndulu et al. (2007a, p. 102) who point out that the median transport costs in intra-regional trade for a 40-foot container is US\$7,600, which is about US\$2,000 more than in other developing regions. This is even higher in landlocked countries. The Africa Commission Report notes that it costs more to transport a vehicle from Abidjan to Addis Ababa than to ship it to Japan. The World Bank estimates that significant benefits in intra-regional trade would be achieved by upgrading road linkages: for instance, trade between the Central African Republic and the Democratic Republic

of the Congo could increase by US\$10–30 billion per year if road links were improved (Buys et al., 2006).

Africa's relatively high transport costs are an important factor in the continent's slow growth in exports compared to other developing regions (Amadji and Yeats, 1995). Limão and Venables, (2001) find that a 10% increase in transport costs would reduce trade volume by 20%, and as much as 50% for the landlocked nations. Trade volumes in these landlocked states are as much as 60 lower than those of coastal countries (Radelet and Sachs, 1998; Limão and Venables, 2001).

How precisely do the geographical factors discussed above contribute towards high transport cost in Africa? The most obvious factor is through the continent's great distance from world markets. Despite advances in transport and communication technology, distance remains one of the most important variables determining transport costs (Naudé and Matthee, 2007). A 1% increase in distance increases transport costs by approximately 0.25% (Martínez-Zarzoso et al., 2003). It is therefore no surprise that trade volumes decline over distance, as many gravity model studies indicate. In fact, around half of the world's trade takes place among countries located within 3000 km radius (The Round Table, 2004). In 1990 the average distance of SSA countries from their trading partners was over 7800 km (Márquez-Ramos et al., 2007, pp. 20–21). Gravity models have estimated that the elasticity of trade with respect to distance ranges between –0.9 and –1.5. This implies that for a region such as Sub-Saharan Africa where the distance to trading partners is thousands of kilometres, trade will be 90% lower than what it would be for partners within 1000 km (Venables, 2006, p. 65).

Second, high transport costs in Africa are also caused by the fact that many countries are landlocked. This has a significant cost-inducing effect, through rising costs of transiting various borders, as well as in the time lost at border delays. The median landlocked country faces 50% higher transport costs than the median coastal nation (Hausmann, 2001, p. 47). In southern Africa, bottlenecks caused by border controls have been estimated to cost US\$48 billion annually (Phasiwe, 2007).

Third, Africa's geography adds to costs through the inability to reap sufficient economies of scale. This hampers international trade, and keeps the per unit transport costs high. In many cases this reflects the absence of the effect of the home market,<sup>8</sup> resulting from a relatively low level of urbanization, low per capita income, and lack of progress in regional integration (Naudé and Matthee, 2007). Most businesses in Africa are small micro-enterprises, and there are relatively fewer medium and large sized firms than elsewhere. Various reasons account for this predominance of small and micro-sized firms – low level of financial development, lack of skilled entrepreneurs, high level of risk and transaction costs, and heavy taxation of medium-sized firms (Naudé and Krugell, 2007). But geography also plays a role. Lack of adequate transport infrastructure makes it difficult for firms to distribute products and thus obtain economies of scale (Acs, 2006; Bigsten and Söderbom, 2006). Fragmented markets often produce firms that manage to obtain some measure of economies of scale, become monopolies, and subsequently limit the entry and growth of other firms (Venables, 2006, p. 67).

Fourth, the type of goods produced also affects a country's ability to benefit from the economies of scale and achieve reductions in per unit transport costs. This is because different goods have different logistical requirements. Intermediate goods (which Africa imports in significant quantities) and goods such as fertilizer tend to have higher freight rates than other manufactured goods

<sup>7</sup> In the words of Warner (2002, p. 1) 'research on the causes of the large differences in economic development across countries has framed the issue as a competition between geography and institutions'. See also the summary in Naudé (2004) and Naudé and Krugell (2007).

<sup>8</sup> The 'home market' effect posits a positive relationship between export success and the size of the local market. See e.g. Davis and Weinstein (2003).

(Hummels, 1999). The dominance of the agriculture sector in many African countries can also raise transport costs due to the seasonality of crops. For example, distribution of maize needs branch railway lines to be linked to storage silos. Storage is expensive because, due to the undiversified nature of the economies, silos are used only during the season, but their maintenance extends throughout the year. Often costs are raised by fluctuating weather conditions which make prediction of crop sizes and their resulting transport needs difficult (Williams, 2007, p. 70).

The section above discussed the relation between first- and second-nature geography on transport costs in Africa. It should be noted, however, that high transport costs in Africa are not only due to geography, but also because of inappropriate transport policies. Policies regulating the domestic freight transport industry often protect inefficient monopolies, and fail to provide for intermodal transport facilities and maritime transport development. Policy ‘failures’ are evident in the dominance and expensiveness of road freight in many African countries despite the fact that rail transport can – and should – be cheaper. Policy failure is also obvious in the lack of appropriate maritime strategies for Africa. For instance, ports are saddled with inefficiencies and high dwell costs (including loading and unloading ships and the cost of queuing for entry into port). Delays in African ports add to international transport costs: an additional day in transit for manufactured goods adds on average 0.8% to the value of the goods (Hummels, 2001) with chartered vessels costing between US\$15,000–30,000 per day (Planting, 2007, p. 79). The lack of a maritime strategy is also responsible for the reduction in national shipping lines and inadequate complementary industries such as shipbuilding, repairs and maintenance. South Africa, one of the continent’s largest sea-trading nations with 3,000 km of shoreline, currently has only one national shipping company. According to Planting (2007, p. 78) this is because South Africa, as most other African coastal nations, does not have adequate policies, incentives and legislation in place for registering ships.

#### 4. Regional cooperation and proximity

A growing body of evidence suggests that investment in transport infrastructure can reduce transport costs. According to Boughéas et al. (1999), an improvement of 1% in infrastructure could lower transport costs by 0.14%. Limão and Venables (2001) find that poor infrastructure accounts for 40% of the transport costs for coastal economies and 60% for landlocked countries. Thus, better infrastructure would imply large reductions in transport costs. Infrastructure in ports – as well as policies to increase port efficiency – can also make an important contribution. International transport costs can be reduced by 12% if the operating efficiency of a seaport increases from the 25th to the 75th percentile, and could stimulate trade up to 25% (Martínez-Zarzoso et al., 2003). Coulibaly and Fontagné (2005), with a gravity model, find that if all interstate roads in the West African Economic and Monetary Union (WAEMU) were paved, this could increase trade threefold between member countries. The empirical evidence thus supports the assumption that infrastructure could reduce Africa’s transport costs.

There are growing calls that more aid to Africa should be channelled into investment in transport infrastructure. Due to the cross-border nature of these infrastructure investments, regional cooperation is essential (e.g. Sachs et al., 2004, pp. 130–131). Regional integration through regional trade agreements (RTAs) can reduce the proximity gap of countries by increasing market size. This may result in returns for closer proximity and higher productivity which, in turn, improve the returns from proximity by providing better foreign market access (especially to landlocked

countries) and by creating a larger internal market (Spolaore and Wacziarg, 2005, p. 333).

This section further strengthens the rationale for regional integration. Regional cooperation, although important, might be unable on its own to be effective. Binding agreements on trade facilitation to the WTO level should be considered as an additional mechanism to provide incentives for regional cooperation. The emphasis is on regional cooperation rather than regional integration since the former suggests a broader agenda than regional integration which has focused on trade preferences and currency unions. Important as these may be, an understanding of Africa’s geographical features implies that regional cooperation should be targeted urgently to joint infrastructure projects, transport corridors, trade facilitation, and cooperation at least in terms of health, environmental, safety, ICT and tourism. Many of these require a long-term focus, distanced from the current situation of short-term crises and conflicts dominating the concerns of African RTAs (Africa Commission Report, 2005, p. 62). In this paper four priorities in such regional cooperation will now be discussed. These are transport infrastructure and services, trade facilitation, local economic development, and decentralization and migration.

##### 4.1. Transport infrastructure and services

In the past, the problem with infrastructure investment in Africa has been its fragmented, uncoordinated, and predominantly national focus. However, transport infrastructure, such as roads, is shaped by three important effects which necessitate a regional scale and region-wide coordination: (i) network effects, (ii) threshold effects, and (iii) compatibility requirements.

Network effects are obtained when the value of a commodity or service increases with the number of users of the item in question. Direct network effects refer to the immediate benefits from the good or service itself (such as lower travel times due to a road) and indirect network effects refer to benefits accruing from the added availability of complimentary goods (such as vehicles in the case of roads) (Liebowitz and Margolis, 1998). In view of the current levels of economic activity in most individual African states and the existing patterns of road-carrier trade, consideration of road investment and financing only on the basis of local (national) demand will suggest that there is no justification for the investment of such a road infrastructure. However, as Buys et al. (2006) show, taking a network approach will often indicate otherwise, with region-wide benefits exceeding local cost. They examine the World Bank’s proposed 1,00,000 km trans-Africa road network to link 83 major sub-Saharan African cities. The cost of this proposed network is in the vicinity of US\$32 billion over 15 years, which is small compared to the expected increase in trade between these countries of over US\$250 billion. Network effects imply that returns to infrastructure investment will rise with population density (Ndulu et al., 2007a, p. 104).

Threshold effects have been defined as ‘a particular sort of causal relationship in which the magnitude of the causal influence changes dramatically past some critical point’ (Galster et al., 2000, p. 703). It implies a nonlinear relationship between variables. In the relationship between road transport investment and trade, two types of feedback effects can come into play: first, transport infrastructure is *endodynamic*, meaning that if the level thereof reaches a certain threshold, it subsequently causes a much greater change in itself, because of the direct effects of networks. And second, transport infrastructure is *exodynamically* related to trade volumes, meaning that after a certain plateau, increases therein will lead to much greater trade volumes (Galster et al., 2000, pp. 704–705).

Given network and threshold effects, transport infrastructure and services should not be studied at the level of the individual

link, but rather at the level of the entire logistic chain (Pedersen, 2001, p. 87). Also, network and threshold effects imply that particular quality standard or product standardization is required before a transport link can meet its expectations (Sachs, 2005, p. 250). A case in point is that in many instances Africa's transport infrastructure – because of the nature of its exports (bulk goods) that differs from the nature of its imports (containerized) – cannot as yet make optimal use of containers (one of the most important innovations in international trade that has greatly facilitated the integration of different modes of transport) (Pedersen, 2001, p. 87). Thus more containers enter Africa through imports than exit through exports. Containers are generally not used in inland transportation, but are unpacked at ports (according to customs regulations). Pedersen (2001, p. 88) argues that greater containerization of bulk/primary commodities in African trade could have three advantages: (i) reducing transport costs by achieving a better balance between container inflow and outflow; (ii) improving the integration between different modes of transport, a requirement for the smooth functioning of the logistics chain, and (iii) contributing to a more continuous export of primary goods as goods could be shipped as soon as a container is filled (rather than wait for a vessel to be loaded, as in the case of bulk exports).

The need for regional cooperation in infrastructure arises for a third reason, namely the need to ensure greater compatibility in transport systems, infrastructure and security. In all modes of transport, greater coordination and compatibility are required between countries. There are currently at least four different rail gauges in Africa, a fact which makes rail connections between many countries impossible (Phasiwe, 2007). In road freight transport, which in many cases is even more important than rail transport, axle sizes and axle load regulations differ substantially from one country to the next (Zanamwe, 2005, p. 40). Custom requirements differ between countries and are often unrealistic (Zanamwe, 2005, p. 40). Freight insecurity, especially thefts from trains, is reducing trade and costing money, as freight forwarders prefer the more expensive option of road hauling which enables trucks and freight to be better guarded and tracked via satellite.

Despite the impact achieved through network effects, threshold effects and through the compatibility for assuring regional coordination in transport infrastructure investment and in trade facilitation, mechanisms to ensure this coordination are also needed, since the incentives for coordination are often not symmetrical. There are two main reasons for asymmetrical incentives.

First, in the case of transport infrastructure that would connect interior economies with the coast, benefits are often smaller for the coastal country than for the landlocked state. Consider, for example, Malawi, a landlocked country, which ended up paying for road rehabilitation in Tanzania, in order to obtain better access to the Dar Es Salaam harbour. Similarly, there is less incentive for Kenya and Tanzania to invest in road corridors from the eastern seaboard to the landlocked countries of central Africa (e.g. Burundi, eastern Democratic Republic of Congo, Malawi, Rwanda and Uganda).

Second, customs officials in many countries have a negative attitude towards transit trade as it does not generate revenue for their country (Zanamwe, 2005, p. 38). Transit trade creates the risk that these goods may be diverted to the transit country. It also creates opportunities for smuggling, generating the need for trade guarantees that often cannot be met due to poor development of banking and insurance facilities (Zanamwe, 2005, pp. 40–41).

Given that the incentives for coordination are not symmetrical, there is a danger that commitments in regional trade agreements lack credibility – more likely, however, this danger may be due to the lack of third party enforcement (Dixit, 2007, p. 9; Acemoglu, 2003). As a consequence, it may be argued that transport infrastructure should be included in the World Trade Organisation's (WTO) binding rules on trade facilitation so as to provide third

party enforcement and thus improve the credibility of commitments. In addition the network of transport corridors should be designed and implemented in such a way that it maximizes the mutual advantages of landlocked and coastal countries – or instance, by fast-tracking transit trade. Finally, Collier (2006b) advocates that landlocked countries should 'recognize their collective interest' to ensure that peer pressure is being exerted on their neighbours. Such peer pressure (through the African Union and Economic Commission for Africa, for instance) could be targeted to compliance to regional agreements, international treaties, and general implementation of sound economic policies.

#### 4.2. Trade facilitation

Currently, the WTO perceives trade facilitation (rather narrowly) as the 'simplification and harmonization of international trade procedures, including activities, practices and formalities involved in collecting, presenting, communicating, and processing data required for the movement of goods in international trade' (Zanamwe, 2005, p. 6). There is room for improvement in these areas in Africa, where outdated procedures, excessive documentation and lack of information and communication technology contribute to unacceptable border delays, but the WTO overlooks the importance of transport infrastructure with its threshold effects in generating the very trade for which it is attempting to simplify cross-border movements. As argued by Zanamwe (2005, p. 7), there should be at least three explicit aims to trade facilitation: (i) to ensure appropriate physical infrastructure and facilities for the movement of goods; (ii) to ensure the harmonization and effectiveness of custom procedures and (iii) to ensure the upgrading of information and communication technology for the exchange of trade-related information.

Within the WTO negotiations on global rules for trade facilitation were started in 2004. Despite the importance of standards and harmonization in terms of transport infrastructure, the current negotiations seem to be limited on issues of transparency and the administration of trade regulations. This suggests that African priorities may be overlooked in these negotiations (Zanamwe, 2005, p. 5). It is important that African countries commit to broad and binding rules on trade facilitation. Country resistance to this could be reduced by linking these commitments to foreign aid, especially technical assistance and capacity-building.

If one takes a broader definition of trade facilitation, African countries also need to extend their focus beyond intra-regional road, rail and air links. One neglected dimension in the region's transport policies and infrastructure is maritime trade. Joint efforts and coordinated plans towards securing greater efficiency in maritime transport may be called for. Shortcomings that countries could address through regional cooperation are, first, the absence of national shipping lines, and second, the concentration of shipping to a few operators. Both of these facts may be raising shipping costs to and from Africa. With regard to shipping lines, the industry is dominated by two (the result of a takeover of South African Safmarine by Danish Maersk and the takeover of British OTAL by French Delmas, both in 1999). These two large shipping lines have entered into collaboration with a few smaller lines such as P&O and WAL. This concentration may generate increasing shipping costs (Pedersen, 2001, p. 90) from a level that already may be significantly higher than in other developing regions (Naudé, 2001).

#### 4.3. Decentralization and local economic development

Current literature on spatial disparities and Africa focuses on the first (top) level of aggregation and generally explains the continent's lagging position in income and wealth compared to the rest of the world in terms of its geography. The second dimension of spatial

inequalities within countries, however, is relatively neglected, but can be argued to be almost as important for the overall economic development as geography (Naudé, 2003; Jansen van Rensburg and Naudé, 2007). A subnational approach to Africa's spatial inequalities also highlights the necessity of different regions stretching across national borders to start planning and coordinating their initiatives for economic development (Kleynhans et al., 2003). It also emphasizes the importance of domestic transport costs and domestic transport infrastructure for economic development. Elbadawi et al. (2006) find that domestic transport costs are an even stronger constraint on exports than international transport costs.

The proximity–productivity relationship implies that greater spatial concentration is necessary to allow the advantages of economies of scale and industrial specialization to be reaped, and that this spatial concentration is beneficial for conserving scarce infrastructure investment to a few key places. This does not mean, however, that upgrading transport infrastructure in the rest of a country should be neglected. A number of obstacles against domestic (non-international) transport infrastructure exist.

First, the large number of civil conflicts in Africa over the past 50 years has had a major impact on transport infrastructure. Conflict resulted in the destruction of infrastructure: governments often demolished domestic infrastructure deemed to be useful to rebel groups, whilst rebel groups sabotaged infrastructure to isolate the areas under their control. But despite conflict, international transport and communication channels—such as ports and main roads – have often been kept open. Finally, after conflict, the rehabilitation of infrastructure is often prioritized in the capitals.

Second, African populations are fairly heterogeneous, with high levels of ethnic conflict. At times investment in local infrastructure is used to reward or punish particular ethnic groups or to impose central control over the countryside. Ethnic diversity also makes collective action for investment in public goods such as transport more difficult to coordinate (Collier, 2006c, p. 8).

Third, effective and efficient investments in local, subnational infrastructure require strong capacity at the local government level. In Africa, only limited progress has been made in fiscal decentralization and local economic development, with the result that transport infrastructure investment tends to predominate in capital cities. Fourth, Africa's internal geography is often overlooked so that the diversity of terrain, which needs to be accommodated in road construction, is underestimated. This raises costs, construction times, as well as maintenance of transport infrastructure. Fifth, internal network effects are ignored in cost-benefit analyses for transport infrastructure projects, so that regional roads, airports and railway lines appear unprofitable in terms of standard budgeting.

These obstacles need to be resolved so that the greater overall growth originating from the cities can be shared across regions and that migration to African cities can be encouraged without increasing the extent of poverty as people leave the rural areas for urban centres. The recent experience of China, where rapid growth took place in coastal cities, adding to the widening inequalities of the interior, shows that benefits from city growth do not trickle down to rural areas (Kanbur and Zhang, 2006). Domestic infrastructure within African countries could greatly benefit from fiscal decentralization and a greater emphasis on local economic development, promoting investment and locality marketing. Only when local politicians attempt to improve the investment environment of their localities, do they become acutely aware of the shortcomings in transport and related services. Thus, as a precondition to the involvement of local authorities in local economic development are the extension and deepening of participatory democracy, and the strengthening of the capacity of local governments, including institutions that can control corruption and self-serving councillors. (See, e.g. Rodrik (2000) and Jansen van Rensburg and Naudé (2007) on the South African case.)

In Africa, regional integration schemes can create consultative platforms for local authorities. A good case in point is the Maputo/Trans-Kalahari corridor, which stretches from southern Africa's east coast through to Mozambique, South Africa, Botswana and Namibia. In South Africa, local authorities – supported by their role and responsibility as enshrined with the country's Constitution and by the control of their own revenue as guaranteed by fiscal decentralization – were in a position to maximize the potential benefits of this transport corridor locally where it affected their jurisdictions (Kleynhans et al., 2003).

#### 4.4. Migration

Migration in Africa is a complex phenomenon and has generated a large literature. Adepoju (2007), Lucas (2006) and Hatton and Williamson (2002) contain good recent reviews. The literature is in fair agreement that (i) most African migration is intra-African migration, within the continent, (ii) African migration is characterised by high volatility, (iii) is set to increase, and (iv) is driven mainly by demographic changes and conflict (a substantial number of migrants in Africa are refugees).

One relatively neglected aspect of migration in Africa is the role that borders play. It is well known that Africa's borders are artificial. The Economist (Anon, 1997, p. 17) has described Africa's borders as 'imposed arbitrarily, defended illogically and blamed incessantly'.

Easterly et al. (2006, p. 2) define an artificial state as one in which 'political borders do not coincide with a division of nationalities desired by the people on the ground'. According to these authors, most of Africa's borders were drawn up by former colonizers and more than 80% of these borders can be deemed artificial (see also the large number of landlocked, small economies that this created) (Easterly et al., 2006, p. 13). These artificial borders may limit the ability of populations to migrate, especially during adverse external shocks. Pritchett (2004, p. 50) argues that improving the living standards of a population is not the only way to raise their wellbeing; people should be allowed the option to migrate. There is no denying that strong pressures for mass migration exist in Africa – pressures which need to be taken into consideration with regard to regional cooperation. Therefore, mass migration as a measure to improve the living standards of these sectors should perhaps be given more positive encouragement and be incorporated within the regional cooperation agenda. Without migration, the costs of adverse geography are borne disproportionately by labour (Venables, 2006, p. 73).

Migration is not exclusively an African phenomenon, nor is it recent phenomenon. On a global scale populations are moving (or attempt to move) from poor inland regions toward coastal areas (Venables, 2006, p. 62). Given the proximity-productivity arguments made earlier in this paper, migration should be awarded high priority in the regional cooperation agenda. Explicit recognition needs to be given to the underlying forces driving migration and to the greater overall efficiency that the resulting redistribution of the African labour force would generate<sup>9</sup> – as well as to the implications of urbanization for the continent. Where (limited) agreements for the free movement of labour have been made in regional contexts in Africa, as in WAEMU, there was a significant movement of people: WAEMU documented more than 6.4 million migrations between 1988 and 1992 (Konseiga, 2007, p. 198). Although not unproblematic (a full discussion of the labour market issues in WAEMU and other regional blocks falls outside the scope of this paper), a first step could

<sup>9</sup> Migration can also be a catalyst for entrepreneurship development in Africa, as migrants often save money that is used to start a business on their return. Remittances have also been found to have a positive impact on business start-ups in poor regions (Mesnard and Ravallion, 2005).

be for similar arrangements to be extended to other regional trading blocks. Further research is needed in this area.

### 5. The role of the international community

Regional cooperation, as discussed here, could be supported by the international community in at least four ways.

The first is through higher levels of foreign aid, including non-financial aid, such as technical assistance, and linking aid to transport infrastructure with commitments to binding rules on trade facilitation. Here, the criticism and shortcomings of aid, should be acknowledged and consideration given to proposals on more generous non-financial aid (Chauvet and Collier, 2006), and non-aid support such as security guarantees (proposed by Collier, 2006a, p. 189) although these, given Africa's geography, will be more credible if the continent's transport infrastructure can be improved. Perhaps security issues for international/cross-border transport infrastructure could be a starting point. Funding for infrastructure should also be accompanied by complementary measures to reduce the potential for corruption in infrastructure construction. Corruption constitutes a significant risk that could reduce the extent, quality, returns on, and types of infrastructure investment, and could raise the maintenance costs of infrastructure as well as limit access to it (Collier, 2006a, pp. 199–202).

Second, the international community should help to ensure adherence to international law on the rights of landlocked countries to access to the sea. International law applicable include Article V of the General Agreement on Trade and Transport (GATT), the United Nations Convention on the Law of the Sea (1982, 1994) and the UN Convention on the transit trade of landlocked countries (1965). Zanamwe (2005, p. 38) argues that in many cases these have not been fully implemented, and that GATT Article V needs to be strengthened.

The third channel is through the extension of trade preferences (special and differential treatment) to African regions. Trade preferences are advocated by Collier and Venables (2007) who base their argument on the need for African countries to overcome a threshold effect as a location for international production—because Asian economies have already built up a competitive advantage in this regard. Furthermore, the heavy investments to be made for transport infrastructure in Africa would need to be supported by higher volumes of trade. Trade preferences can result in a positive and substantial export response – as the experience of Mauritius (with its preferences under the MFA) and, more recently that of many African countries with the African Growth and Opportunity Act (AGOA) prove. However, care must be taken in the design of these preferences to avoid undermining the ability of countries to diversify their export structures (Mold, 2005). Gamberoni (2007, p. 2), for instance, finds evidence that some EU preference schemes have hindered export diversification, either by creating an incentive for countries to specialize in product(s) with preferential access, or by limiting developing-country efforts to open up their markets in general.

The fourth area is though greater consistency in international agreements and trade preferences with regional integration and cooperation schemes in Africa. Currently, the EU is negotiating economic partnership agreements (EPAs) with regional bodies in Africa. Different agreements are in effect being finalized with SACU and SADC members despite overlapping memberships.<sup>10</sup> In addition a trade agreement exists between South Africa and

the EU. Not only can this process retard regional integration in southern Africa, but the fact of overlapping memberships in RTAs could result in complex rules regarding origin (Sandrey, 2006, p. 42). These rules of origin can, however, have significant impacts on a region's ability to take advantage of trade preference, as Venables (2006) points out.

Through these channels, the international community can assist in the promotion of Africa's regional cooperation on infrastructure investment. But changes in the international economy can also offer opportunities in the way that Africa's regional cooperation approaches the current proximity gap. One of the most significant changes is the increasing importance of Asia in African trade, and in particular, the rise of China (Phillips, 2007, p. 14; Zafar, 2007).

Traditionally, the European market has been vital for Africa (which is why the alignment of RTAs and EPAs is important). However, in developing its international trade position and networks, Africa's relationship with Asia –and with China in particular – is crucial for success in managing its industrialization and urbanization. Perhaps too often the perception is that Africa's main market is the EU, where Africa competes against the 'competitor' – Asia. In this view the challenge for Africa is merely 'how to compete with Asia' (Collier, 2006b, p. 11) but Asia should not be viewed as a mere competitor – Asia is an important market for African goods, especially from the eastern seaboard. Exports to China and India have the potential of making a significant positive impact on economic growth in SSA (Phillips, 2007, p. 14; Zafar, 2007, p. 103). Studies have already shown that the growth of China and India have had substantial benefits for Latin America through higher commodity prices, cheaper inputs and growing capital inflows, for instance (Bizquez-Lidoy et al., 2006). Similar benefits can be expected for Africa (Zafar, 2007), and African countries are beginning to avail themselves of this opportunity. South-south trade is rising dramatically: exports to China and India have been growing 1.7 times faster than the continent's total exports to the rest of the world. Between 1999 and 2004 exports from Africa to China and India grew 48% and 14% per annum respectively. In total, 27% of Africa's exports are now destined for Asia (compared to 14% in 2000) which is almost equivalent to the share of its traditional EU markets (Broadman, 2007, p. 11, 2).

Africa's geography, together with developments in international maritime and air transport, is making trade with Asia increasingly attractive. The technical advances made in new large container-ships and the growth of large transnational freight forwarders managing the logistic chains have driven the development of 'hubports' by large global shipping companies. Increasingly, Africa trade is being transported via the hubports in Asia and the Middle East, replacing direct shipment to its main market, the EU.

Africa could also take advantage of Dubai's development as a transfer centre for air cargo between Europe, the USA and Asia, and of Mauritius's ambitions to develop into an intercontinental air hub for African-Asian trade (Pedersen, 2001, pp. 89–90). These advancements could give a further push to African airborne trade; currently about 25% of African exports are transported by air (Venables, 2006, p. 61) and this is likely to increase given the opportunities presented by the growth of China and India.

### 6. Concluding remarks

It has been argued in this paper that the lack of proximity between economic agents in Africa is largely due to geographical features which make investment and productivity growth more expensive than elsewhere. To overcome the proximity gap that has a nonlinear relationship with investment and growth because of the effects of threshold, networking and coordination, a big push may be needed, particularly in infrastructure. The cross-border nature of the required infrastructure investments suggests that

<sup>10</sup> Overlapping memberships of RTAs (the 'spaghetti bowl') are seen as a complicating factor and a number of current efforts – including the Regional Integration Facilitation Forum (RIFF) in Eastern and Southern Africa – are underway to address these (Mutai, 2003). International organizations could provide greater support for these initiatives.

regional cooperation is important. Four longer-term issues need to be prioritized in regional cooperation: transport infrastructure, trade facilitation, decentralization and local economic development, and migration. Because incentives for cooperation are not symmetrical, there is the danger that commitments in regional agreements lack credibility. Thus, transport infrastructure ought to be included in WTO binding rules on trade facilitation to provide third party enforcement. The additional measures discussed for improving the incentives for cooperation included transport corridor design and collective peer pressure by landlocked countries.

Such regional cooperation should be supported by the international community through aid, through ensuring full implementation and adherence to international law on the rights of landlocked countries to access to the sea, through extension of trade preferences to African regions and through ensuring greater consistency of international agreements and trade preferences with current regional integration agreements in Africa.

Further research is required in at least three directions. For one, although Africa has been treated here as a homogenous block, this has been a generalization, and one must recognize that there are substantial differences in the type of geographic features that individual African countries face. These will determine the nature and content of for instance regional integration agreements, infrastructure investments, policy changes, as well as international assistance. Second, more substantial data is needed to quantify the impact of lower proximity on productivity. Currently, there is a lack of comparable, cross-country and time-series data on transport and logistics costs in Africa. Finally, more research is needed on the implications and results of overcoming Africa's proximity gap. Measures for Africa's success in overcoming the proximity gap would result in higher levels of urbanization, agglomeration, industrialization, and per capita incomes. It is also likely, at least initially, to result in greater spatial inequalities in economic activity within Africa: between cities and rural areas, and between countries and regions. Such spatial inequalities will come about as a result of the imperatives of achieving economies of scale and specialization in manufacturing, and due to the benefits of localization and urbanization economies in expanding cities. As long as these spatial inequalities are supported by population migration to denser, richer areas, they could be seen as an important route for closing the global spatial disparities between Africa and the rest of the world, and could be a prerequisite for eventual industrial success in Africa.

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