Has Distance Died?
An Update

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Contrary to expectations, evidence of a death of distance has eluded numerous estimations in the popular gravity model of trade: estimates of the coefficient of distance are markedly higher in studies with recent data. This column shows that this is only so for the poorer countries who are trading with geographically closer partners. This regionalization of trade for low-income countries could reflect the dramatic decrease in a host of costs independent of distance (MFN tariffs, border-related costs, administrative costs, communication costs or increasing containerization), all of which would enhance the relative importance of transport costs that depend on distance.

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••• / ••• There is a widespread perception that the current wave of globalization, much like the first, should have led to the "death of distance". Under this popular interpretation of the "death of distance" scenario (Cairncross (1997), Friedman (2005)), ceteris paribus, the average distance of trade for poorer countries should increase (as lower transport costs would open more distant markets). In terms of the gravity literature used to estimate trade costs, a reduction in trade costs should imply a smaller "distance effect", i.e. a declining value (in absolute terms) of the elasticity of trade to distance, θ. However, the opposite is revealed by a recent meta-study of the estimates of θ in the literature (see figure 1 which shows that distance has exerted a more powerful negative effect on the volume of trade in recent times). This paradoxical result, now well established, is referred to as the "distance puzzle" or the "missing globalization puzzle" (Coe et al. 2007).

Figure 1. The rising Distance Effect in Gravity Models

Distance effect θ

Midpoint of Sample
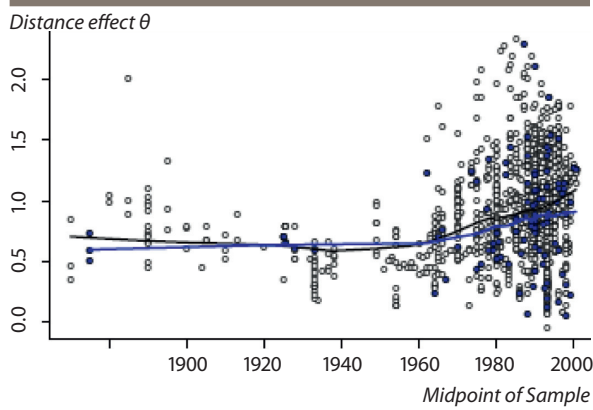
Source: Disdier and Head (2008, figure 3, p.19).

▶ The Regionalization of Trade for Low-Income Countries

According to the gravity model, a relative fall in border-related costs should lead countries to increase the volume of international trade (relative to internal trade). This prediction is largely borne out by the data: since 1980, world produc-

tion has increased by 75% while international trade has increased by 300% (Berthelon and Freund, 2008). Second, a reduction in all costs related to distance (including better information about distant markets) should lead countries to increase their volume of trade with distant partners, while on the contrary, if relative costs associated with distance increase, countries should trade with closer partners. This implication of cost minimization was exploited by Carrère and Schiff (2005) who computed the average distance of trade (ADOT) directly from the bilateral trade data at successive points in time and more recently by Berthelon and Freund (2008) who computed a measure of potential trade (ADOT^P) predicted by relative country size. This "potential" measure is the gravity-predicted bilateral trade in a frictionless world where the volume of bilateral trade is proportional to the product of the countries GDPs. Then, if gravity is an adequate description of the volume of bilateral trade, the average distance ratio (ADR = ADOT/ADOT^P) should be a measure of the inverse of trade costs so that a fall in the value of ADR implies a relative increase in trade costs.

Figure 2. Average distance and Indirect Trade Cost Measures for 124 countries, 1970-2006

Figure 2a. Overall

Distance (km)

ADOT^P-Poor
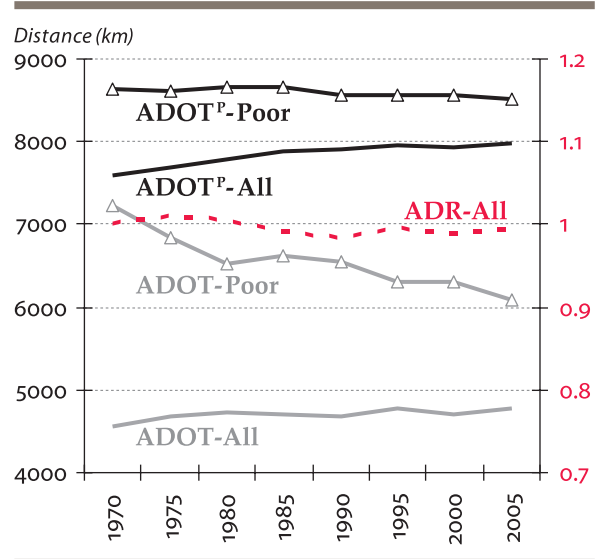
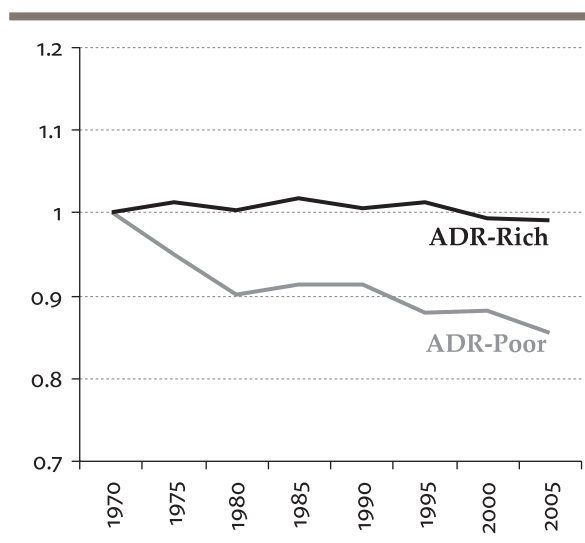ADOT^P-All

ADR-All

ADOT-Poor

ADOT-All

Figure 2b. by Income Tercile

Note: 5-years periods over 1970-2004 and a 2-years period 2005-2006
Source: Carrère et al. (2009, figure 3).

As shown by the diverging paths for the ADR ratios in figure 2b (both normalized to 1 for the sub-period 1970-1974), the costs of barriers to trade for the poorest countries have gone up in relative terms with a fall of 15% in the average distance of trade over the sample period. Melitz (2007) and others have suggested that composition effects might account for the puzzle (if the share of trade in comparative-advantage-based products has declined, the negative impact of distance on trade will increase). Likewise, omitted variable bias could explain the puzzle. For example, if transaction costs are higher in countries with poor institutions, falling communications costs will result in a lesser reduction in trade costs (François and Manchin (2007)). Rising distance costs could also be due to the fixed-cost component of trade costs falling more rapidly than the variable component (Brun et al. 2005) or to the handling of zeroes in the data (if zero trade flows positively correlated with distance, then ignoring zero trade flows could result in a spurious distance puzzle (Felbermayr and Kohler (2006)). Carrère et al. (2009) check these competing explanations for the puzzle. First, they inspect the

raw data and conclude that, as expected from gravity theory, the poorest countries have increased their trade share with geographically closer partners which would be expected from gravity theory if the relative trade costs with physically closer partners fell more than trade costs with further-away partners. This could be the case if the closer partners are those who reduced most their barriers to trade. In addition, even though on average partners with zero trade are further away than partners with positive trade, when extending trade to new partners, the poorest countries have selected those countries that are closest. Both patterns are consistent with a minimization of trade costs in a formulation in which distance matters. These patterns could also have resulted from the proliferation of regional trade agreements among the poorer countries.

► **Cross-Section and Panel Estimates of the Elasticity of Trade to Distance, θ.**

Carrère et al. (2009) then carry out cross-section (more suitable to handle zeroes in the data) and panel estimations of the gravity model (more suitable to incorporate time-dependent trade costs) to check that estimates of θ only increase over time for the low-income countries. The cross-section estimates show a clear and significant increasing impact of distance on trade, coupled with an increasing importance of sharing a common border, but only for the low income countries. The puzzle is also robust to the choice of estimator confirming that the handling of zeroes is not a contributory factor to the puzzle. In the panel estimates, the estimated trend for θ is only significant for the low income group, and the results are close to those obtained in the repeated cross-section estimates. The results are also robust to testing for a Sub-Saharan Africa effect and to proxies for regional trade agreements.

▶ Conclusions

The regionalization of trade for low-income countries could reflect the dramatic decrease in a host of costs independent of distance (MFN tariffs, border-related costs, administrative costs, communication costs or increasing containerization), all of which would enhance the relative importance of transport costs that depend on distance.

The regionalization of trade could also reflect "deep" integration effects as administrative and technical barriers to trade are being reduced more rapidly for the low-income country group relative to others over the period, generating new trade flows that are welfare-increasing. For example, a reduction in trade frictions in low-income countries could provide an incentive to move from the informal sector to the formal sector or from the previous formal sector in home trade to the one engaged in foreign trade. This would promote foreign trade generally, but because of the persistence of transport costs in foreign trade, it would especially favor foreign trade with close trading partners. If so, this welfare-increasing regionalization of world trade would be captured by the gravity model. Then this indirect evidence (since we do not have time-series data on the evolution of trade costs) would be good news as it would mean a deepening integration of this group of countries into the World Trading System.

The authors also suggest the possibility of a less optimistic view if one assumes that, over the period, a growing part of world trade is generated by vertical specialization and just-in-time production. In this case, trade costs can be viewed as a growing impediment in the supply-chain production. Then, if low-income countries' trade costs (in particular distance-dependant costs such as high markups in international shipping) remain high compared to other developing countries' trade costs, the observed regionalization of trade could be interpreted as a marginalization of these countries.

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