

# **Trust & Trade**

**... Is distance dead?**

Guri Sandelien

**R 2003: 4**

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Chr. Michelsen Institute *Development Studies and Human Rights*

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## **Indexing terms**

Trade flows  
Trade barriers  
Transportation costs  
Globalisation  
Economic models  
Information and communication technology

# Contents

<b>CONTENTS</b> .....	<b>III</b>
<b>ACKNOWLEDGEMENTS</b> .....	<b>IV</b>
<b>1. INTRODUCTION</b> .....	<b>1</b>
<b>2. TRUST</b> .....	<b>3</b>
2.1. TRUST AND TRANSACTION COST ECONOMICS .....	9
2.1.1. <i>Transaction cost economics – an overview</i> .....	9
2.1.2. <i>Main TCE topics</i> .....	11
2.1.3. <i>Trust in Transactions</i> .....	14
2.1.4. <i>Trust and economic performance</i> .....	16
2.1.5. <i>Trust and developing countries</i> .....	19
2.1.6. <i>Summary</i> .....	21
<b>3. INTERNATIONAL TRADE</b> .....	<b>22</b>
3.1. THE GRAVITY EQUATION.....	22
3.1.1. <i>The framework</i> .....	23
3.1.2. <i>Trade models and the gravity equation</i> .....	24
3.2. DISTANCE AND BORDER EFFECTS.....	25
3.2.1. <i>Transportation costs</i> .....	27
3.2.2. <i>Distance as a multidimensional concept</i> .....	28
3.3. SOME PLAUSIBLE EXPLANATIONS.....	29
3.3.1. <i>Consumer preferences</i> .....	29
3.3.2. <i>Currency unions</i> .....	30
3.3.3. <i>Contract enforcement and institutions</i> .....	31
3.4. NETWORK/SEARCH VIEW OF TRADE.....	33
3.4.1. <i>Search</i> .....	33
3.4.2. <i>Networks</i> .....	35
3.4.3. <i>The exclusionary effects of networks</i> .....	36
3.4.4. <i>A theoretical approach</i> .....	38
3.5. POLICY DISCUSSION .....	39
<b>4. CONCLUSION</b> .....	<b>42</b>
<b>5. REFERENCES</b> .....	<b>43</b>
<b>6. APPENDICES</b> .....	<b>51</b>

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# 1. Introduction

Why do Norwegians trade more with Germans than Ecuadorians? This is almost a trivial question, Germany is closer to Norway, and transportation costs are therefore obviously lower. Yet, when we look at the empirical trade data, the situation is less obvious. Transportation costs and formal barriers to trade are not substantial enough to explain the bias in trade towards countries that are situated nearby.

There seems to be a 'lack of trade' in the world. This 'missing trade' is a puzzle that several scholars have tried to solve. They seek to understand if there is an 'invisible' trade barrier that impedes trade over distance. Another issue, closely related to distance, is the 'border effect'. This is the phenomenon that trade flows are drastically reduced by national borders. This report will focus on both effects, and give plausible explanations of these phenomena. The reasoning I find most interesting focuses on trust, a psychological sentiment usually avoided in the economic trade literature.

Why is trust related to economics and trade? In everyday life, trust is a sentiment found between friends and family. Yet, economic relations and society in general are dependent on trust. Individuals must be confident that money has value. Businesses must believe that their banks look after their money. Individuals must be convinced that the government will protect their property rights. These – and many other types of trust – are prerequisites for a modern society. If individuals never trusted each other, it would be almost impossible to enter into an economic transaction. Therefore, trust has everything to do with economics.

It is hypothesised in this report that the 'lack of trade' is explained by the difficulty of finding a trustworthy trading partner in international trade. The global situation is such that we have little information about distant business alternatives. This makes conditions for trust more cumbersome. However, one can avoid this problem of information and trust by trading with the established trade network. Networks are characterised by personal trustworthy information, and are predominantly located in a restricted area. This can create an obstacle to international trade because businesses prefer to trade with their local networks and do not search for other more distant business alternatives. The importance of information and communication technology (ICT) is discussed in this context, and I will elaborate on the possibility that ICT can reduce the problems in international searching.

The current process of globalisation, which started in the 1950s, has reduced the costs of information (indicated in appendix 1).<sup>1</sup> The Internet – in particular – has increased the possibility of obtaining less expensive information, and new economic opportunities. This phenomenon has created the buzzword 'the new economy'. Yet, empirical studies claim that the world is not so 'new' after all; the elasticity of distance has not changed over the last 20 years, and therefore seems not to be fundamentally influenced by ICT.

To discuss the claimed 'lack of trade' and the influence of ICT, there is a conscious bias towards emphasis on trust in the context of transaction costs. Other factors, like historical events and consumer preferences, do of course highly influence the patterns of trade. However, thorough discussion of such factors has been considered to be outside the scope of this report.

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<sup>1</sup> 'Globalisation' has been a trendy term ever since the 1980s, but especially from the mid-1990s. In economics, globalisation is understood as the integration of economic activity all around the world, particularly through trade and financial flows. This integration process is motored by reductions in tariff, transportation and communication costs. Yet, it is wrong to believe that 'globalisation' is a new phenomenon. In the late 19<sup>th</sup> and early 20<sup>th</sup> centuries, there was also a period of rapid growth in world trade. Appendix 2 shows that this period was also characterised by falling transportation costs (caused by the invention of the internal combustion engine, the steamship, and the establishment of many new railroads).

The report is structured as follows. Section 2 elaborates on the concept of trust in economics. This is done by looking at how the sentiment of trust is created, and how it influences economic transactions and growth. The costs involved in transactions are also an important topic in this section, owing to the fact that these costs can reduce trade flows. Section 3 starts with a short introduction to international trade theory. These theories are then used to explain the foundation of the empirical gravity equation in subsection 3.1. The empirical gravity equation is applied in subsection 3.2 to predict less trade over longer distances. Subsection 3.3 discusses some possible explanations for the 'missing trade' phenomenon. Subsection 3.4 puts special emphasis on the search/network explanation by focusing on trust and information. The importance of how modern technology can be used to transmit information is discussed in this context. The final subsection 3.5 indicates some policy implications of the findings. Section 4 summarises and concludes the report.

## 2. Trust

Yogis, a Malaysian tourist in Norway, stopped his car in a road juncture somewhere by the Norwegian fjords. To his amazement, he finds baskets of ripe cherries for sale, but no one in sight. On a cardboard sign, Yogis finds the price and puts his money in a box. He is dazzled by the level of trust in this strange country. Why did the cherry owner trust the motorists to pay for the cherries?

Trust is not a new concept in economics; it was mentioned as an important factor by Adam Smith and John Stuart Mill at the end of the 18<sup>th</sup> and the beginning of the 19<sup>th</sup> century.<sup>2</sup> However, because of the bilateral character of trust and the vagueness of the concept, empirical investigations were not common before the 1990s.<sup>3</sup>



Trust between individuals can be defined as one agent's sentiments of expectations towards another agent's positive behaviour with respect to oneself, in a situation involving risk.<sup>4</sup> Hence, the cherry owner is confident about Yogis' behaviour, even if there is a risk that he will drive away putting no money in the box. Why are these expectations present?

The source of trust most frequently found in economics is the 'rational explanation', presupposing that individuals are inclined to trust each other due to pay-offs in the long run.<sup>5</sup> This explanation is based on neoclassical thinking.<sup>6</sup> Trust is a bilateral concept, and can be depicted in a game.<sup>7</sup> We consider a common public goods game, as depicted in table 1, where two individuals, denoted **A** and **B**, are represented in the game. It is supposed they know they will only interact once.<sup>8</sup> What would be the outcome of this game? The most commonly used solution framework is the Nash equilibrium, characterised by any situation where all the participants in a game are pursuing their best possible strategy given the strategies of all the

---

<sup>2</sup> Citations on trust by these authors, and others, can be found in Zak and Knack (2001).

<sup>3</sup> The interest in trustworthiness as a measurable concept was stimulated in part by Putnam (1993) and Fukuyama (1995), but with antecedents in, for example, Coleman (1990).

<sup>4</sup> This definition is based on Boon and Holmes (1991).

<sup>5</sup> See Kramer and Tyler (1996) for further discussion on trust as a rational concept.

<sup>6</sup> The term 'neoclassical thinking' is a crude and imprecise way to classify a group of different economists. Complete agreement has not been reached on what is meant by neoclassical economics. However, some generalisations can be justified. The theories generated from the marginal revolution proclaim that value is not only created from the supply side (as in classical thinking) but also from a relationship between demand and supply. This relationship is based on individuals who maximise their utility, and companies maximising their profits. These behavioural assumptions are normally used by neoclassical theoreticians in combination with the assumption that people act rationally on the basis of relevant information.

<sup>7</sup> 'A game is any situation in which there are participants, rules of conduct and pay-offs' (Bannock, Baxter and Davis 1998, p.290).

<sup>8</sup> This is called an ultimatum game.

other participants.<sup>9</sup> All players' expectations are fulfilled, and all players' strategies are optimal. In this scenario, the only stable solution is that both diverge from co-operation.<sup>10</sup> Why do they not co-operate? The problem is that when **A** decides to co-operate (giving 3 units), the rational response by **B** is to diverge (given the higher profit, 5 units). If **B** chooses to co-operate (giving 3 units), **A** will diverge (giving the higher profit, 5 units).

**Table 1: Common public goods game**<sup>11</sup>

<b>A\B</b>	<b>Co-operation</b>	<b>Divergence</b>
<b>Co-operation</b>	3, 3	-3, 5
<b>Divergence</b>	5, -3	-1, -1

Yet, in real life we can frequently observe co-operation taking place and people exposing themselves to risk without exploitation. Neighbours construct playgrounds for their children, couples get married (sometimes ending up in exploitation), and the cherry owner got money from Yogis. The rational model of trust explains this phenomenon by expanding the game depicted above to an infinitive time perspective. The agents **A** and **B** are impatient and discount the future by the factor  $d \in \langle 0,1 \rangle$ . Both individuals act under the same strategy: *Choose co-operation in period  $t$  if both have co-operated in every period before period  $t$ . Choose divergence in every period in the future if the agents have breached the agreement earlier.*<sup>12</sup> Under these assumptions, divergence by one of the agents, say **A**, will lead to the profit  $5 - d - d^2 - d^3 - \dots$ . The profit will be large in the first period, but because of the strategy there will be no co-operation thereafter, and consequently the pay-off is  $-1$  in the following periods. However, if **A** co-operates, the profit will be equal  $3 + 3d + 3d^2 + 3d^3 + \dots$ . Breaking an agreement will only be profitable in this case if  $d < \frac{1}{3}$  (this result is calculated in appendix 3). Hence, co-operation is a stable equilibrium in this situation given that  $d$  is large, which indicates that individuals can co-operate in the long run, due to the higher profit under collaboration.

The 'rational explanation' coincides with the definition of trust, because the two rational agents will have optimistic expectations about one another in a situation involving risk, owing to the possibility of earning higher profits in the future. Nevertheless, I find the rational model quite questionable. Firstly, the Nash assumptions seem unlikely, given the fact that individuals seldom know all possible outcomes of a transaction. Secondly, the concept of trust can go beyond the certitude that two individuals will co-operate because it is beneficial for both in the long run. However, I mention the rational model in this report because it may well contain some truth. The interesting part of the explanation is the notion of frequent interactions. A positive experience of trustworthy behaviour can initiate expectations of future trustworthy behaviour. Frequent interaction can also create a learning process where more confidence is created during the process. However, someone still has to start the interaction, making a 'leap of confidence' that can be risky and costly. So, either the interaction starts

<sup>9</sup> The Nash equilibrium is not sufficiently limited to be universally interesting as a tool of analysis. More refined concepts of equilibrium have been created. However, the Nash equilibrium remains the foundation for most discussions in game theory.

<sup>10</sup> This solution is frequently called 'prisoner's dilemma' in game theory.

<sup>11</sup> The table is from Torsvik (2000).

<sup>12</sup> This strategy is an example of a *trigger strategy*; which is characterised by co-operation until the point where someone fails to co-operate. This triggers a switch to non-cooperation forever after. The trigger strategy can sometimes be observed in the setting of a monopoly price. See Gibbons (1992) for further information about game theory.

without trust, and the initial ‘step’ is very small, with a low degree of risk, or else trust may have another origin.

Why did the cherry owner trust Yogis to pay when he most probably never would return? Maybe the fruit owner looks at all motorists as a group and has prior positive dealings with them, and therefore trusts the motorists. However, an experiment by Engle-Warnick and Slonim (2001) showed that individuals may trust each other at the beginning of the game with no knowledge about each other. This does not coincide with the ‘rational explanation’. Consequently, there may be other reasons why economic agents have the ability to trust. Adam Smith (1759) wrote in his ‘The theory of Moral Sentiments’:

*‘How selfish so ever man may be supposed, there are evidently some principles in his nature, which interest him in the fortunes of others, and render their happiness necessary to him, though he derives nothing from it, except the pleasure of seeing it. Our imagination therefore attaches the idea of shame to all violations of faith’.*<sup>13</sup>

Maybe the cherry owner trusted the motorists because he knew they would feel shame and guilt if they stole the cherries.<sup>14</sup> These sentiments could exist because individuals have norms that can trigger sentiments when they are violated. In their book ‘Trust in organizations’ (1996), Kramer and Tyler discuss the subject ‘social contextualism’: individuals act in their social contexts, not necessarily in their self-interest. The social model of trust considers trust as a public good with a value of its own, and hence explains trust in terms of moral bonds, social obligations and identity formation. The motive behind trust in the social model can also be described in a game theory scheme<sup>15</sup>, which explains the interaction between two altruistic agents. An altruistic person will increase his own welfare by the benefit of the other agent. This is controlled for by the parameter  $a$ , between 0 and 1, connected to the opposing agents’ income. This creates the situation depicted below:

**Table 2: Altruism**

A\B	Co-operation	Divergence
Co-operation	$3 + 3a, 3 + 3a$	$-3 + 5a, 5 - 3a$
Divergence	$5 - 3a, -3 + 5a$	$-1 - 1a, -1 - 1a$

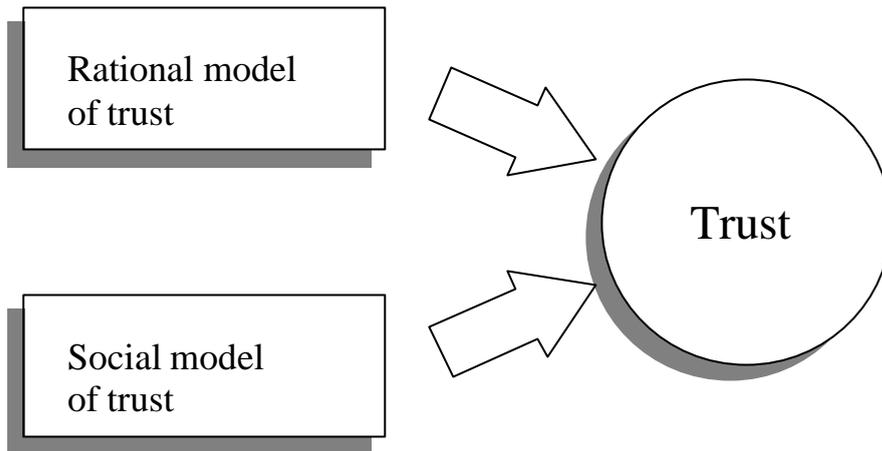
Co-operation is the equilibrium if  $a \geq 1/3$ , hence if the parameter for the importance of the other individuals’ pay-off is more or equal to 1/3. If **A** and **B** co-operate, **A** will get  $3 + 3\left(\frac{1}{3}\right) = 4$ . If **A** diverges she gets  $5 - 3\left(\frac{1}{3}\right) = 4$ . The first alternative is strictly better when  $a > 1/3$ . Altruism can therefore give basis for trust and co-operation depending on the degree of self-sacrifice. The social type of trust can often be created in religious, ethnic or family groups, where it is assumed that one individual’s welfare will be augmented by increasing the profits of the other individuals. Individuals are not necessary ‘greater human beings’ by acting out of a social definition of trust, considering that the social context can also be a selfish strategy.

<sup>13</sup> Cited in Bowles and Gintis (2001) p.2.

<sup>14</sup> Such sentiments are of importance in the article by Gintis (2000), Bowles and Gintis (2001), Gintis, Bowles, Boyd and Fehr (2002).

<sup>15</sup> Figure from Torsvik, G. (2000), p. 22.

**Figure 1: Definitions of trust**

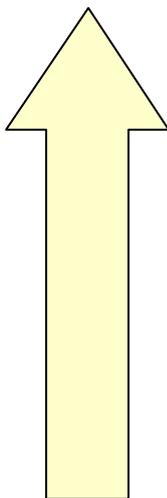


Therefore, we can roughly say there are two main perspectives on trust, the rational model and the social model. However, the sources of trust should not be separated completely, and it is important to draw knowledge from both definitions. Individuals can, for example, initiate interaction due to trust created by the feeling of similarity. However, through dealings with each other a rational type of trust may develop. Consequently, reasons for trust can be somewhat entwined. Instead of looking at the figure 1, choosing one or the other, we can change the view and use a distinction by Humphrey and Schmitz (1998) as depicted in table 3. They identify three levels of trust: micro, meso and macro.<sup>16</sup>

These distinctions are not contradictions of the definitions already mentioned, but are supplements. Micro-level trust is driven by the agent’s confidence in the reputation and capacity of the subjects being trusted, as the rational model depicted above. Meso-level of trust is based on individuals having confidence because they belong to the same social, religious or ethnic group. The meso level is related to stereotypes, and can be inaccurate. Macro-level trust relates to an agent’s belief in laws and formal institutions. Agents are

**Table 3: Levels of trust**

**Higher order trust**



**Lower order trust**

<p><b>Macro-level Trust</b></p> <ul style="list-style-type: none"> <li>• Driven by a belief in formal institutions or goodwill.</li> <li>• Higher risk, more generalised.</li> <li>• Emerges through higher order beliefs.</li> </ul>
<p><b>Meso-level Trust</b></p> <ul style="list-style-type: none"> <li>• Based on ascriptions – race, religion, kinship, etc.</li> <li>• Relatively superficial, less risky than macro-level trust.</li> <li>• Based on experiences, history, and cultural influences.</li> <li>• Useful when quick decisions must be made.</li> </ul>
<p><b>Micro-level Trust</b></p> <ul style="list-style-type: none"> <li>• Developed through shared experiences.</li> <li>• Relatively labour-intensive to create</li> <li>• Emerges through observed competence, is lower risk.</li> </ul>

<sup>16</sup> The table is based on Humphrey and Schmitz (1998) and Murphy (2002).

motivated to trust by a general belief in the goodness of human kind, or a belief in the institutions guaranteeing the accountability of other individuals (such as the court system). Both the meso level and the macro level contain elements of the social model of trust.

The separation from low order trust to high order trust<sup>17</sup> shapes a better and more flexible distinction between the concepts. Levels can overlap, depending on the individual and the situation in question. The concepts discussed in this section will be fundamental for further analysis.

### **Can trust be created?**

This question has already been answered to some extent. However, to understand the full complexity of trust some more origins should be discussed. The micro level and macro level of trust can be influenced by factors so as to promote trust. However, the meso level, where group membership is important, is somewhat difficult to influence. We will look at some factors that determine trust, and judge if man can shape these factors.

#### **1. Predictability**

- a) *Reputation/history of interaction/information*: A history of past interactions or information about the other party's behaviour can create trust and reputation effects. Frequent interactions can be institutionalised through a middleman. This intermediary can create a 'bridge of trust', since they have much more frequent and multiple dealings with sellers and buyers. Without the middleman, the transactions between the merchants would be scarce, and the potential for the reciprocal type of trust would be lower. Consequently, a middleman can be a mediator between traders that do not trust each other, but who trust the middleman.<sup>18</sup> It is possible to observe this phenomenon in the Namibian tourist industry. In this country, new technology has made it possible for local tourist dealers to promote their products over the Internet to consumers in far-away places. However, observations confirm that consumers prefer to organise their trips through established domestic travel agencies (that function as facilitators) rather than through cheaper local alternatives. This might be the case due to credible guarantees given by international travel agencies, or because these companies have established some kind of reputation that makes them trustworthy.<sup>19</sup> Reputation is also a factor that can be created through the establishment of a brand name that shows consistent quality over a long period of time. Reputation does not have to be connected only to a brand, but can also be connected to a company or a whole sector. A good reputation is created from a long history of trustworthy behaviour if it is the level of trust one is perceived to merit.
- b) *Similarity/identity/moral bonds*: Similarity can bring about trust due to the assumption that it is difficult to act opportunistically towards someone equal to oneself. This similarity can be manifested through equal religion, race, social belonging or a subjective sentiment of perceived equality.<sup>20</sup> Resemblance based on ethnicity has been an issue in many empirical studies on trust.<sup>21</sup> Several studies confirm the hypothesis that equal ethnic background increases trust; however, this

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<sup>17</sup> Similar definitions are given by Sako (1992), who distinguishes contractual, competence and goodwill trust. The latter category would resemble the macro-level trust defined in the text. Aubert and Kelsey (2000) also use similar definitions in their research.

<sup>18</sup> More about middlemen can be found in Landa (1994), Spulber (1999).

<sup>19</sup> Wiig (2002) has an ongoing project on the Namibian tourist industry.

<sup>20</sup> See Alesina and La Ferrara (2000) for more information on similarity as a determinant for trust. Perceived similarity is elaborated in Walczuch and Seelen (2000).

<sup>21</sup> See La Porta, Lopez-De-Silanes, Shleifer and Vishny (1997), Knack and Keefer (1997) for such studies.

depends somewhat on the specifications of the variables. Cheating is perceived to be more prevalent across cultures, and trust between communities is often low.<sup>22</sup> The same religion can create equal identity, and give assurance that certain values/norms will be complied with, promoting trust. However, these factors of similarity, representing the meso type of trust, are not easily created. Ethnicity and religion are normally not easily changed, even if there are a few examples of this.<sup>23</sup> Yet, identity and norms may well be manipulated. The education system is a channel for the creation of moral values. A type of macro-level trust can be created if the school system emphasises honesty and trustworthiness. An example of the contrary is the school system in Ecuador, where anecdotal evidence shows that several schools practise a high degree of corruption. Payments for grades, and 'gifts' delivered from parents when their children misbehave, are part of everyday life. These schools did not promote honest behaviour. A strong state might also create a sentiment of group identity and social conscience. However, it is doubtful that the state alone can create such a conscience, since other factors as history are important. A history of trusting business norms may establish a 'culture of trust' in the culture pattern. Norms in society may, hence, be self-reinforced. Sako (1998) claims that Japan is an example of such a development. Country-specific institutions and history give rise to *unique* levels of trust in each country.

## 2. Controllability

- c) *Contract/sanctions*: These factors are to some extent determinants in a trusting relation. A contract can for example be an institution that establishes a framework to promote trust in a relation. This framework consists of rules that generate control and transparency, giving a trusting sentiment of having the same goals. Micro-level trust can also be created in contracts through a step-by-step philosophy. Since one party has to make the first 'leap of confidence', a system is created where the first step is very small, with low risk. If no problems are observed, the next and bigger step can be taken by the other side, and so on. This strategy can establish micro-level trust in a long-term contract. This starting problem can also be observed in networks, where brokers and facilitators are used to kick-start networks. The starting problems are caused by the fact that networks are based on trusting co-operation.<sup>24</sup> Sanctions can also create an institution that can foster co-operation and to some extent trust. This could be observed during the Middle Ages in the long-distance trade around the Mediterranean. A network of Maghribian traders worked together, punishing individuals that swindled any participant in the network. The sanction mechanism was a widespread diffusion of information about the stained reputation and an understanding never to trade with this person again. This mechanism also functioned within the network, creating trust due to the threat of ostracism.<sup>25</sup>

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<sup>22</sup> Fafchamps (1999) also mention that trust is low between cultures.

<sup>23</sup> During precolonial times, some Kenyan traders converted to Islam to do business with the Arab traders. When it comes to ethnicity, one should not forget that it is a somewhat floating concept. In some places, group belonging can change only by changing the garment. In the Andean Mountains individuals belonging to the Indian ethnic group can change their ethnicity to mestizo just by putting on western clothes. The borders between groups conflicts can change according to the social preferences of the time and different emphasis on history, as it does in the history of Burundi, where the identity of the Hutus and Tutsis has gone from equal to differentiated (Eriksen 1998).

<sup>24</sup> See Humphrey and Schmitz (1998) for more information on 'kick-start'.

<sup>25</sup> For more information on the Mediterranean traders see Greif (1993) and Greif (2000).

### 3. Interdependence

- d) *Altruism*<sup>26</sup>: The confidence that the other party has interest in the well-being of oneself can create trust. This socially based trust is often used to explain trust in family relations. The state can also create this altruism through nationalistic propaganda, so the citizens might find the well-being of other inhabitants in the same country to be part of their own welfare. Similar to altruism is the notion of having the same goals; this sentiment can create trust in a contracting situation where much focus has been placed on emphasising equal goals (see e.g. in textbox 1).
- e) *Asymmetry*: If there is asymmetry in a relationship there is a possibility to create co-operation in the face of risk. Two individuals may know that the other will act in a trustworthy manner because one party has power over the other. However, this is not necessarily trust; it might be the sentiment of fright that leads to co-operation, not trust.

We can sum up the different factors that influence trust in table 4:

**Table 4: Determining factors for trust relationships**<sup>27</sup>

<b>Predictability</b>	a) Reputation/history of interaction/information
	b) Similarity/identity/moral bonds
<b>Controllability</b>	c) Contract/sanctions
<b>Interdependency</b>	d) Altruism
	e) Asymmetry

## 2.1. Trust and transaction cost economics

According to Arrow (1972, p. 357), ‘virtually every commercial transaction has within itself an element of trust, certainly any transaction conducted over a period of time. It can be plausibly argued that much of the economic backwardness in the world can be explained by the lack of mutual confidence.’ This is perhaps an exaggerated statement, but it conveys a clear invitation to further exploration of trust as a concept in economics. The nature of trust as a *bilateral* concept can best be understood economically in a transaction cost framework. This framework will be presented in the following chapter to create a deeper understanding of trust from an economic perspective.

### 2.1.1. Transaction cost economics – an overview

The neoclassical theory is the dominant theory for explaining economic behaviour, allocation of resources and growth. This theory was established in the late nineteenth and early twentieth century, and shaped the logic of trade models used today. This theoretical perspective makes strong assumptions about the success of a perfect market in allocating resources efficiently. One of these assumptions is that there are no costs involved in transactions. Coase (1937) disagreed with this perspective, claiming that transaction costs are the main reason why firms are created. He pointed out that different costs arise in market transactions when the price mechanism is used to allocate resources. He indicated that these costs could be avoided if the command system of a firm conducted these transactions. Coase (1937) was the first to make this important connection between institutions, transaction costs and neoclassical theory. However, many have followed up his research, the most prominent being Oliver E.

<sup>26</sup> Gintis, Bowles, Boyd and Fehr (2002) experiment on human behaviour in the contexts of altruism in their article ‘Explaining Altruistic Behaviour in Humans’. They find that individuals have ‘strong reciprocity’.

<sup>27</sup> Inspired by table 1, in Usunier and Roger (1999).

Williamson, who dominated the creation of the 'transaction cost economics' perspective.<sup>28</sup> Neoclassical economics and transaction cost economics are to some extent complementary, but there are some distinctions. A few of these differences are reviewed here, so as to grasp better how transaction cost economics part from the most dominant theoretical perspective today.<sup>29</sup>

**Individuals:** Firstly, neoclassical theory assumes agents to be completely rational; they have full information and know all possible outcomes of a transaction. Furthermore, the theory assumes that a third party can enforce contracts between economic agents without cost. This enables us to create complete contracts without unpleasant surprises. Contracts can even be unnecessary. In contrast, in a transaction cost perspective incomplete information and limited capacity to process this information makes it costly to identify all the possible outcomes. Individual behaviour is described as *boundedly rational*,<sup>30</sup> something Williamson (1998) defines as a behaviour *intended* to be rational but only *limitedly* so. The behavioural assumption of bounded rationality fosters incomplete contracts, which do not discuss all outcomes, and may give unpleasant contractual disagreements.

Secondly, transaction cost theory presupposes economic agents to be *opportunistic*. This characteristic signifies that individuals will act out of self-interest even if this makes them unfaithful to their contracting party. Consequently, if the agreement cannot be enforced by an external institution (courts, the state, the clergy), individuals will act in their most beneficial manner, but that does not necessarily create co-operation. However, the theory does not assume that individuals are identically or continuously opportunistic.<sup>31</sup>

**The firm:** In transaction cost theory one can view the company as a governance structure, or as Bjuggren (1985) describes it, a 'nexus of contracts'. This is a different perspective from that described in the neoclassical textbooks, where firms are understood as production functions with inputs and outputs. This latter perspective views the firm as a technological construction, while transaction cost theory sees the concept in an institutional framework.

**The market:** The neoclassical market is a market where there is full information, and no asymmetries or trading costs. The market is a locality where demand and supply meet, with no frictions whatsoever. However, this does not fit with reality. Transaction cost economics incorporates the fact that a large amount of resources in the world is used on transfers, and that institutions are important determinants of the efficiency of the markets.<sup>32</sup> A market where exchange is costly is the view of transaction cost economics. Bjuggren (1985) classifies three categories of costs involved in transactions in his book 'A transaction cost approach to vertical integration':

- a) Search costs<sup>33</sup> are the costs required to match a buyer and a seller, so that they can decide to negotiate. Such costs can involve finding information about potential business partners and examining the quality of the products. This type of transaction cost will be important to understanding why we find less trade over longer distances.

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<sup>28</sup> For a thorough introduction to transaction cost economics, read Williamson (1998), Spulber (1999), and North (1990).

<sup>29</sup> One should be careful to emphasise too much on economic 'schools' (as the neoclassical), due to the crudeness of such generalisations. However, in this context it is done to create a clear distinction, so as to grasp the concepts better.

<sup>30</sup> Simon (1957) first developed this concept.

<sup>31</sup> More about opportunism can be found in Klos and Nooteboom (2001), Spulber (1999), North (1990), Williamson (1998), Hart and Holmström (1987).

<sup>32</sup> North (1990) discusses further the costs involved in transactions.

<sup>33</sup> Search costs have been incorporated into matching models of e.g. labour markets, but also outsourcing. (e.g. Grossman and Helpman (2002))

- b) Negotiation costs refer to the resources used to reach an agreement on essential questions such as price, payment, quantity and delivery terms. In other words, they represent the costs of concluding a contract. Meeting hours and legal fees are examples of such costs.
- c) Control costs are the costs involved in monitoring the agreement, settling smaller disputes, inspecting to ensure satisfactory quality, and making sure that payments and goods are delivered on time. This is necessary in order to prevent the other party from breaching the agreement.

These cost distinctions give insight concerning the nature of a transaction. There exist different stages, which encompass different requirements. This understanding of the longitudinal character of the exchange will be important in the discussion of trust in transactions. Trust may have varying influence during a transaction and different types of trust can play different roles.

**Contracts:** If we call neoclassical theory the 'science of choice', a natural description of transaction cost theory is the 'science of contracts'.<sup>34</sup> Contracts are consequently the building stones of the theory, creating the framework for discussion. We mentioned earlier that contracts are unavoidably incomplete, because of the assumption that individuals have bounded rationality. This incompleteness makes contracts risky, something that will be discussed in the following section.

The two theories seek to answer different questions and view the economy from different angles. Trust, being the concept of interest in this report, is better understood in the transaction costs perspective since trust can influence the cost of transactions. Since the neoclassical theory does not incorporate transaction costs or other market imperfections, it is likely to be less useful in a discussion of trust in an economic perspective. Nonetheless, transaction cost economics did not initially incorporate trust as a factor to examine at all. The theory was developed due to the desire to understand the creation of firms. The following section offers some insight into the main topics of transaction cost economics (TCE) and the questions the theory seeks to answer. These concepts will be applied in a further analysis to understand the influence of distance on trade flows.

### *2.1.2. Main TCE topics*

One issue that has received extra attention in the TCE literature is the costs created by specialisation. For instance, when a plastics producer delivering cups enters into a contract with a plate purchaser, the plastic company has to invest in new machinery and maybe even employ a new engineer to handle the new process of making plates. Transaction cost economists emphasise that when a business partner makes investments specifically adapted to the transaction process, they are more dependent on the collaborator. For this reason, the plastics producer is dependent on the plate purchaser. If the plastic producer acts opportunistically, he is left with equipment he cannot use or that is expensive to dispose of. This asset specificity increases risk because it makes the producer more vulnerable to opportunism. Williamson (1981) distinguishes between three different types of asset specificity:<sup>35</sup>

- a) Site specificity: where location-specific investments are made.
- b) Physical asset specificity: where machinery or other capital goods are modified in a specific manner.
- c) Human asset specificity: where educational or other human investments are made for a specific purpose.

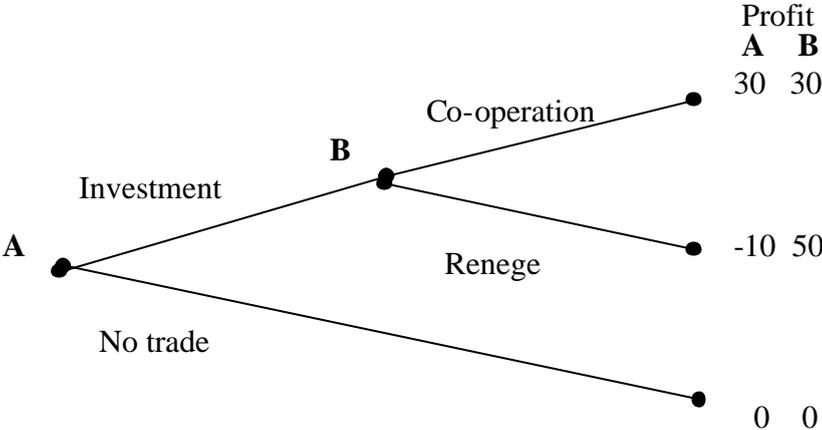
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<sup>34</sup> Terms used by Williamson (1998).

<sup>35</sup> Asset specificity is also elaborated thoroughly by Bjuggren (1985), Klos and Nooteboom (2001), Spulber (1999).

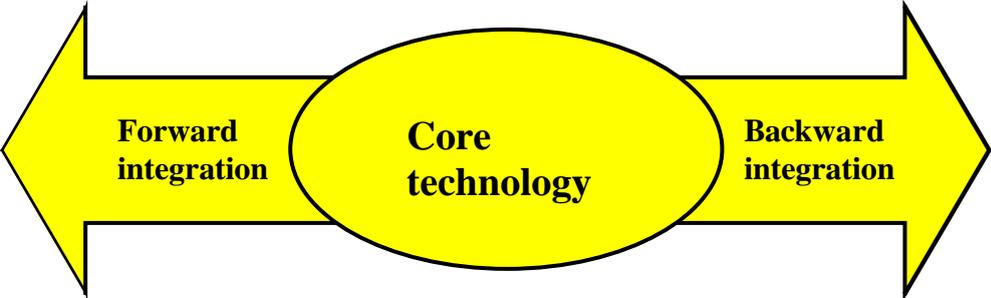
Therefore, if a firm in a contracting situation changes its physical production process, hires new employees, or builds a construction on a new site adapted to the other firm, it can find itself facing a 'hold-up' problem. This problem can be summarised in figure 2:

**Figure 2: The hold-up problem**<sup>36</sup>



The economic agents **A** and **B** are trading partners. However, in order to trade, **A** has to make a relation-specific investment, which involves a cost. This cost can occur in the explicit transaction process as classified by Bjuggren (1985). The plastics producer may have used considerable resources to find an appropriate purchaser (search costs). The negotiations with the plate purchaser may have taken time in assuring capabilities (negotiation costs). Finally, the producer needs to monitor that payments are made in time and that the agreement in general is being maintained (control costs). However, the cost involved in the 'hold-up' problem can go somewhat beyond Bjuggrens' definition. It is a cost connected not only to the transaction *process*, but also to the physical investments created by the contract. If **A** and **B** co-operate, they gain equal amounts: 30 dollars to **A** and 30 dollars to **B**. But if **B** reneges on the original agreement, he will earn a larger profit of 50 dollars for himself and agent **A** will lose 10 dollars. If no trade is conducted, there will be zero profits for both trading partners. To make any trade take place in this situation, there have to exist commitments between the economic agents.<sup>37</sup> Trust is one type of commitment that can make **A** and **B** co-operate. If **A** has confidence that **B** will not act opportunistically, there will be no risk in the transaction and trade will be beneficial for both.

**Figure 3: Vertical integration**<sup>38</sup>

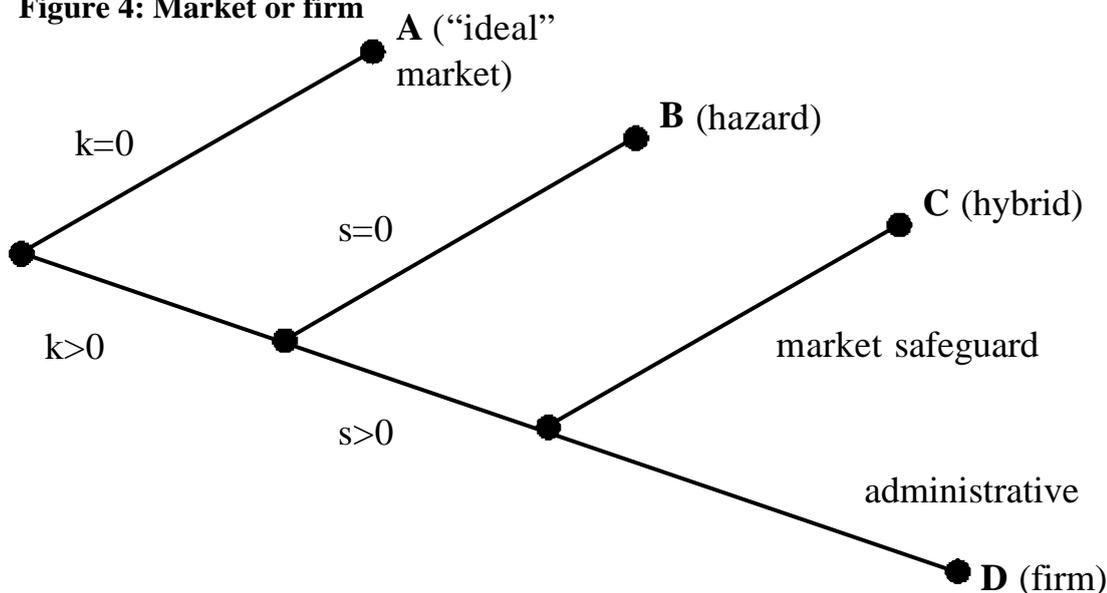


<sup>36</sup> This figure can also be found in Torsvik (2000).  
<sup>37</sup> See Torsvik (2000) for more information about the 'hold-up' problem  
<sup>38</sup> This illustration is based on the text of Williamson (1998).

The vulnerability of transactions due to asset specificity is seen by transaction cost economists as the main reason why firms decide to handle the whole production process by themselves. This is in the literature called *vertical integration*. The concept of vertical integration refers to the process of internalising costs normally found between businesses, giving common ownership of the whole process. Consequently, an interesting perspective in the field of transaction cost economics is the firms' decision to 'make-or-buy'. What is most advantageous, buying articles from the market or making the products oneself? As illustrated by figure 3, a firm can be described by an integrated core technology with a possibility of downstream integration (backwards) into the production of inputs. Upstream integration (forwards) into distribution is another alternative. Some larger companies have integrated the whole process from inputs to advertisement and distribution.<sup>39</sup> The vertical integration decision gives the foundation for a comparative study in alternative institutions of governance. This is a fundamental tool for transaction cost economics and can be illustrated by a 'simple contracting scheme', as depicted in figure 4. Given the level of asset specificity, uncertainty and transaction costs, it is possible, by a comparative view, to observe what constitute adequate institutional arrangements.

As shown in figure 4, there exist 'hybrid' models between the poles of market (A) and hierarchy (D).<sup>40</sup> The  $k$  in the 'simple contracting scheme' denotes the degree of asset specificity. If the asset is for general purpose ( $k=0$ ), then transaction costs will be minimised through flexible purchases in the market (as long as the market is competitive). Consequently, the firms' best choice will be the market solution (A). Nevertheless, if the asset is investment specific ( $k>0$ ), and there are no safeguards ( $s=0$ ), we have a hybrid solution with hazard (B). However, if investments are made in safeguards ( $s>0$ ) to the contract, there may be created a hybrid solution, such as a joint venture or a licensing regime (C). One type of safeguard against opportunism is trust, and this can create such a hybrid solution, which will be elaborated in the following section. Finally, it is possible to take total control of the process

**Figure 4: Market or firm**



<sup>39</sup> Look up Williamson (1998) and Bjuggren (1985) for more information on vertical integration.

<sup>40</sup> Figure from Williamson (1998) p. 38.

by full vertical integration and creation of firm (D). The predictions are based on the degree of asset specificity and the willingness to expose oneself to risks.<sup>41</sup>

Transaction cost economics is a theory focusing on how we can predict the shape of institutions from transactions and costs.<sup>42</sup> In this section, I have tried to give some insight into the central topics of TCE, but there are several themes that are not mentioned. The important element for further analysis is the notion that there are costs involved in transactions. This is important because it opens up the possibility for a cost-reducing factor, namely trust.

### 2.1.3. Trust in Transactions

What happens if one does not trust the trading partner? The most extreme consequence is that many exchanges (that would benefit both parties) will not materialise, which can lead to efficiency losses. If risk is involved in a transaction, agents may choose spot trade instead of more binding and profitable solutions. Mistrust can thus be looked upon as a market imperfection problem.<sup>43</sup> Some transactions entail a higher degree of risk, especially when goods and services are exchanged for future payments, or employees perform a task that is difficult to monitor. Differentiated goods are frequently associated with a higher degree of asset specificity and risk due to the uniqueness of the products.<sup>44</sup> Nevertheless, trade can take place under imperfect conditions because safeguards can be made against opportunism. If one or more of the factors now following are fulfilled, trade can materialise between trading partners even if there is a risk of opportunism.



#### **Textbox 1: "Partnering agreement"**

*In 1995, the Norwegian Road Department in Oslo started a new concept called 'partnering agreement', when contracting an entrepreneur. They have started 9 different contracts, and 8 have been completed since the beginning. The agreement is an addition to the classical legally binding contract, and is based on free will. A partnering contract tries to unify the goals of the Department and the entrepreneur, creating relationships at all different levels of the organizations. The 'partnering' document that is written in co-operation with the entrepreneur is not a contract, but a symbol of commitment. 'Having fun' is specified in the agreement, and this tells something about its contents. The experience gained by the Road Department has been solely positive. Conflicts were solved more easily and at a lower hierarchical level (because people knew which level to contact). They trusted and understood each other and saved time created by misunderstandings. The estimated economic gain by this agreement was 600 000 NOK per contract (Interview with Svein Røed, Norwegian Road Administration in Oslo, head of the 'Bjørvika project', and Flaate (1994)). In this example from the Road Department we find a combination between different levels of trust. The Department tries to create macro-level trust through emphasis on the equal goals between the two institutions. In addition, informal social gatherings connect the employees, making it possible to create micro-level trust (rationally based).*

<sup>41</sup> For more information about the 'make-or-buy' dilemma, look up Shelanski and Klein (1999), Woolthuis, Hillebrand, and Nooteboom (2002), Bjuggren (1985), Spulber (1999), Williamson (1998).

<sup>42</sup> Hodgson and Knudsen (2000) argue that the TCE scope fails to consider the learning effect inside firms. This firm-specific learning can give firms an advantage even if there are low costs in the market. A further discussion of such topics is outside the scope of this report.

<sup>43</sup> See Landa (1994) on trust as a market imperfection problem.

1. Complete contracts, with a third party to monitor and punish divergence from the agreement.
2. Trust between the trading partners because they calculate a long-term profit by co-operating ('rational model of trust').
3. Trust between the trading partners because the economic agents have each other's interests under consideration due to moral obligation, altruism or social status ('social model of trust').

There is a tendency to consider these conditions as substitutes. When there is trust there is therefore no need to make a formal contract. Or, with a complete contract, there is no need to trust. This might be right in some cases, but Woolthuis, Hillebrand and Nooteboom (2002) have conducted a longitudinal case study following four different cases combining high/low trust and high/low formal control. The study confirms many predictions put forward by transaction cost economics, but there existed a case of high trust and a high degree of formal control. This does not support the idea of substitution. However, contracts can also serve other functions. A contract can make safeguards against risk from the external environment, such as the bankruptcy of a partner, accidents and other similar external incidents. A contract can also function as a technical aid to manage the relationship, keeping track of the meeting schedule, problem-solving techniques, etc. Furthermore, contracts can be a sign of commitment, giving a signal to trust (see textbox 1).<sup>45</sup> Consequently, one has to conduct studies of transactions over time to observe whether trust exists before the contract is made or whether it is a consequence of a contract. The study carried out by Woolthuis, Hillebrand and Nooteboom (2002) indicates that trust and formal control can function as both substitutes and complements. However, they also argue that if a relationship starts with a formal contract, and the relationship is characterised by high asymmetric dependence, it is difficult to create (macro-level) trust due to the atmosphere of suspicion. Consequently, when looking at the preconditions for possible trade *one or more* of the three factors should be considered, not taking for granted that they are substitutes.

Complete contracts are difficult and expensive to create owing to the assumption that individuals act opportunistically. Making the contract as complete as possible will require a transparent, consistent and legitimate court system, and functioning laws. Costs may well increase due to high lawyer's fees, and time will be consumed when negotiating a contract as perfect as possible.<sup>46</sup> Yet, the other two safeguards mentioned, rational and social trust, can create co-operation, and at the same time reduce costs. There are different ways that trust can reduce transaction costs:

1. *Search costs* will to some extent be influenced by trust. When screening to find a potential business partner, confidence in capacity and trustworthiness is of utmost importance. A time-consuming search process can hence be drastically shortened if a company has a network of trusting relationships. These networks can contain business opportunities or give trustworthy references about other companies. These recommendations can substitute the need for costly personal experience with every potential business partner. A good reputation created through a brand name can also bring about sufficient trust to interact without personal experience. Furthermore, societies with a high level of macro-level trust will generate lower search risk because there is a general assurance that other companies will act trustworthy. Macro-level

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<sup>44</sup> Rauch (1999) discusses transactions involving differentiated goods.

<sup>45</sup> Partnering agreements as discussed in textbox 1 are also the theme in Lorenz's (1999) article. He studied 'moral contracts' in France.

<sup>46</sup> Tyler and Kramer (1996) discuss the costs needed to prevent opportunism.

trust is a general notion emerging from a higher order belief in human behaviour. Search costs will be essential in the discussion about trade and distance.

2. *Negotiation costs* will be reduced by trust due to the decreased need for detailed specifications about quality, price, delivery time and penalty set-ups. Less time is needed to specify formalities, due to the confidence about the other party's honesty and capabilities.
3. *Control costs* that involve monitoring the quality and sustainability of the contract in the long run are most definitely reduced by a higher level of trust. This is in particular the case when there are asset-specific investments that make one part more dependent, or when quality is very difficult to monitor. Siamwalla (1983) researched the structures in Thailand's markets and found great differences in the trade patterns between rice and rubber. Rice is a product where quality is easily observed at the moment of purchase. This made it easier to buy from any salesman and make an efficient impersonal market. The quality of raw rubber is not possible to determine when bought. Only after further elaboration of the raw material will the true quality of the rubber materialise. This makes it very important to establish a trust relationship with the seller so as to be guaranteed a quality product. Hence, trust at any level can function as an informal control mechanism, which enhances the efficiency of transactions.

Consequently, we can conclude that trust reduces transaction costs. Yet, to create micro-level trust, investments need to be made.<sup>47</sup> This earned type of trust can only exist if there has been an initial 'leap of confidence'. Maybe a gift without obligations is needed, or a small project to test the other company. This first step involves a risk, maybe not great, but some costs are involved. Therefore, it is imperative to look at the net benefit of trust in transactions.<sup>48</sup>

Transaction cost economics does not originally define trust as a type of safeguard. Williamson (1993) argues that trust in the rational sense adds nothing to analysis, and that if a wider definition were used, trust would be a blind concept. He writes that blind trust will not survive in competition. However, other authors argue that trust is a real concept and will not be blind because there are limits to trustworthiness. In a trusting relationship, one is not permanently on alert regarding opportunities and risks of opportunism. However, when conditions arise that exceed the perceived limits to temptations of opportunism, or when unexpected behaviour is observed, attention to the hazards of opportunism is triggered and shifted from subsidiary to focal awareness.<sup>49</sup> Consequently, trust will not be blind, as Williamson claims (1993). It will be restricted.

Before we move on to trade transactions over borders, and the importance of trust in this context, I think it is important to understand that trust might play an important role in development, working as a factor through growth. This connection is vital for grasping the importance of trust in the world economy.

#### *2.1.4. Trust and economic performance*

In the debate on developing countries, the question of trust has received increased attention. In 1996, the World Bank set up a group to study the relevance of social capital, of which trust is a central component. Trust is emerging as the new 'missing factor' that explains why some countries or regions develop more rapidly. Thus, what are the mechanisms concealed behind

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<sup>47</sup> Mookherjee (1999) gives an example from the Indian software industry, where they find empirical significance that there is a steep cost in building up reputational capital for new firms.

<sup>48</sup> Sako (1998) also mention the costs of creating trust.

<sup>49</sup> These arguments are also elaborated in Woolthuis, Hillebrand and Nooteboom (2002), Klos and Nooteboom (2001).

the assumption that countries will develop faster due to trust? This is not obvious, and several tentative explanations are given. A great problem is causality, which to some extent can seem circular. I will try to clarify some of the arguments, and indicate an answer to causality. In the following section I will focus on developing countries to see how these countries are influenced by trust.

Firstly, we can observe the situation of the micro level of trust. In these interpersonal relations there is assumed to be a potential learning process beneficial for innovation.<sup>50</sup> If trust is present, new ideas and helpful comments will more easily be volunteered in a relationship. This information flow can stimulate new concepts and create growth in society. Another channel to growth through trust is assumed to be through the reduction of transaction costs. This has been mentioned in earlier sections, and is one of the main explanations behind growth through trust. Individuals who co-operate without conflict or opportunistic behaviour create the basis for a well functioning and growing economy.<sup>51</sup> Trust can be essential to creating any economic interaction at all. Highly trusting societies use fewer resources on enforcement of contracts and property rights, hence liberating resources to innovation and growth.

Secondly, the other common explanation is on a higher trust level. Governments are assumed to perform better and more efficiently if they are trusted by the people in their country. In addition, high-trust societies have presumably more confidence in politicians and their economic policy, creating a better allocation of resources.<sup>52</sup> Consequently, macro-level trust in a country's institutions creates better institutions and improves government policies. Macro-level trust per se is considered by some authors to be the essential component for development. Hence, the predisposition to co-operate due to a general morality or a higher order belief creates a population endowed with social capital in the same sense as labour or capital.<sup>53</sup>

Empirical studies have been conducted on the connection between trust and growth.<sup>54</sup> However, all these studies measure micro-level interpersonal trust, aggregating this to a societal level. As we have explored in this report, the concept of trust has several levels and it is not obvious that such an aggregation creates the right results. Yet, a possible explanation legitimating an aggregation is the connection through networks. Micro- and meso-level trust can be the basis for networks creating economically efficient transactions within themselves. If this network is closed and based on strong family ties the economic effect is not necessarily positive in relation to growth. However, if the network is open for new contact through referral, it can be an important factor in creating organisations and better economic activity. This connection between interpersonal micro-level trust and aggregate economic activity can legitimate an investigation at the micro level. Knack and Keefer (1997) develop such an investigation, using the World Values Surveys data from thousands of respondents in 29 market economies. Their observations come from two different periods. 21 countries are represented in the 1981 survey and 28 countries are represented in the 1990 and 1991 surveys.

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<sup>50</sup> For further discussion of the learning process, see Sako (1998).

<sup>51</sup> Trust as a central factor to creating co-operation is emphasised by Fukuyama (1995) and Coleman (1988).

<sup>52</sup> Putnam (1993) emphasises that trust can better the character of political participation.

<sup>53</sup> Information about social capital can be found in Glaeser, Laibson and Sacerdote (2000).

<sup>54</sup> Putnam (1993), La Porta, Lopez-De-Silanes, Shleifer, and Vishny (1997), Knack and Keefer (1997), Zak and Knak (2001) have conducted empirical studies on trust and performance.

**Table 5: Trust in different countries**

Country	Trust	Confidence in government	Ethnic homogeneity
1. Norway	61.2	0.72	98
2. Finland	57.2	0.66	90
3. Sweden	57.1	0.65	88
4. Denmark	56.0	0.76	95
5. Canada	49.6	0.70	70
6. Australia	38.27	0.64	98
7. Netherlands	46.2	0.63	99
8. US	45.4	0.61	81
9. UK	44.4	0.54	82
10. Switzerland	43.2	...	72
11. Iceland	41.6	0.73	100
12. Japan	40.8	0.46	99
13. Ireland	40.2	0.73	94
14. Korea, South	38.0	0.61	100
15. Spain	34.5	0.55	75
16. India	34.3	0.67	72
17. Austria	31.8	0.60	99
18. South Africa	30.5	0.70	73
19. Belgium	30.2	0.60	57
20. Germany	29.8	0.54	99
21. Argentina	27.0	0.28	91
22. Italy	26.3	0.44	99
23. France	24.8	0.62	94
24. Nigeria	22.9	0.73	32
25. Chile	22.7	0.64	78
26. Portugal	21.4	0.45	99
27. Mexico	17.7	0.53	58
28. Turkey	10.0	0.61	82
29. Brazil	6.7	0.55	88

The question asked in the survey to measure the level of trust is: ‘Generally speaking, would you say most people can be trusted, or that you cannot be too careful in dealing with people?’ Trust is measured as the percentage of respondents in each country that reply ‘most people can be trusted’. Their results can be found in table 5.

Knack and Keefer (1997) find correlation between trust and growth, stating that ‘the coefficient for trust (...) indicates that a ten percentage point in that variable is associated with an increase in growth of four-fifths of a percentage point’ (Knack and Keefer, 1997, p.1260). Nevertheless, when checking for robustness in this analysis, Beugelsdijk, Groot and Schaik (2002) find that a 10% point increase in trust has an effect on growth ranging between 0.4% points and 0.8% points, depending on the set of conditioning variables. According to this analysis, the impact of trust on growth evinced by Knack and Keefer is not evident. Yet, Zak and Knack (2001) use a bigger data set, and find significant correlation between trust and growth. More empirical studies should be conducted to verify this hypothesis; however, the studies already conducted substantiate this connection between trust and growth. It is difficult to know if it is really trust that is being measured and not some other variable influencing growth. And if trust is being measured, what comes first? Could it also be probable that richer countries have better institutions that stimulate an environment of trust? Knack and Keefer

(1997) find the causality by observing that trust correlates more with the 1990 growth data than the 1970 growth data, implying that trust comes before higher income. Consequently, there seems to be a correlation between trust and better economic performance.<sup>55</sup>

### 2.1.5. Trust and developing countries

Weak economic activity, poverty, fragile infrastructure and a low education level characterise developing countries. The governments in several developing countries are influenced by a high degree of corruption and nepotism. The capital market is in many countries unstable and income inequality is extensive. However, it is important to emphasise that the term developing countries (if defined as low- and middle-income countries) is a group of 90 countries. These countries are not equal geographically, resource-wise or population-wise, so when generalisations are made they should be interpreted with some caution. Tables 6 and 7 indicate some of the characteristics low-income countries experience compared to the high-income groups:

**Table 6: Some characteristics of developing countries<sup>56</sup>**

ECONOMY	POPULATION MILLIONS IN 2000	GROSS NATIONAL INCOME \$ BILLION = 2000	GNI PER CAPITA \$ = 2000
World	6,057	31,315	5,170
Low-income	2,460	997	410
Middle-income	2,695	5,319	1,970
High-income	903	24,994	27,680

**Table 7: World education data<sup>57</sup>**

Net enrolment ratio % of relevant age group	Primary		Secondary	
	1980	1997	1980	1997
	World	81	90	60
Low-income	66	76	38	51
Middle-income	86	97	63	71
High income	97	100	87	96

The empirical research presented in table 5 indicates that low-income countries have a lower level of micro-level trust. However, there are only 29 countries represented in the table, a number not sufficiently large to say something accurate about the general world situation. Yet, there is an observable tendency towards lower levels of trust in poor countries. To understand this phenomenon I think it is important to focus on poverty. When two individuals who are very different at the level of material goods interact, it is hard to imagine equal motives behind an interaction. If one person has strong needs because of poverty, the temptation to forsake an agreement to obtain a benefit in the short run may be greater. If both

<sup>55</sup> Linders, Groot and Nijkamp (2002) give an interesting overview of the literature involving trust and growth.

<sup>56</sup> The table is based on data from World Bank Development Report (2002). The different income groups are ranked from 206 countries. Low-income economies are those with a GDP per capita of \$765 or less in 1995, middle-income, \$766-\$9,385, high-income, \$9,386 or more.

<sup>57</sup> Table based on data from World Bank Development Report (2000/2001), p.285. The income groups are defined in the same way as in table 6.

individuals are poor, this temptation might be present for both agents. Table 8 (1) is a reminder of the ‘prisoner’s dilemma’ situation, creating a scenario with non-co-operation. However, as mentioned before, if we expand this situation to an infinitive time perspective the existence of rationally based trust can be explained. Following the line of reasoning from this argument, it is plausible that a poor individual has a lower discount factor,  $d$ , because he is more impatient.

**Table 8 (1): Common public goods game**

A\B	Co-operation	Divergence
Co-operation	3, 3	-3, 5
Divergence	5, -3	-1, -1

Poor people have lower life expectancy than rich individuals, due to worse nutrition conditions. This will give fewer periods to discount for, and hence a lower discount factor. Also, the marginal utility of income tends to be reduced when individuals increase their income. Consequently, a poor person increasing his income by, for example, \$1 will get a higher increase in utility than a rich person from the same dollar. The long run benefits of being honest and trustworthy can be so far in the future that the poor person will be tempted to act dishonestly. It may be easier to trust someone that is well off.<sup>58</sup> However, this is not always the case. There are poor and trustworthy people. This is no surprise since trust not only originates from the rational definition but can originate from moral obligations, identity formation, sanctions etc. Yet, poverty should not be forgotten as a factor influencing trust.

Meso-level trust, based on identity formation, can have better conditions in developing countries. Many studies indicate that networks in developing countries are based on strong family and kinship ties. It is striking that business success stories from developing countries are characterised by family-controlled conglomerates or close-knit ethnic networks. These networks do not always create economic prosperity, owing to their closed character.<sup>59</sup> Nepotism and rent-seeking can dominate them, creating ineffective solutions for society in general. A reason why this family-based trust is important in developing countries may originate in malfunctioning formal institutions. Due to an ineffective legal system, corruption and delays, contracts are more expensive to enforce.<sup>60</sup> Murphy (2002) studies the influence of innovation and trust among small and large-scale manufacturing firms in Mwanza, Tanzania. He finds that open networks are more restrained by rent-seeking corrupt officials than closed networks. We will discuss the importance of open and closed networks in section 3.4.3. Governments are also seldom strong enough in developing countries to build the national identity necessary to create altruism towards an extended group.<sup>61</sup> Family and ethnic belonging are often more prevalent as identity creators, substituting for these institutions.

Trust seems less abundant in poor countries due to poverty, fragile institutions, ethnic heterogeneity and lower levels of education. However, more important for understanding the question posed in the introduction – why we find less trade over distance – is looking at the level of trust *towards* developing countries. Traders from rich countries may find the institutions in developing countries so unstable that they do not trust that their interests will be protected. An inefficient bureaucracy and malfunctioning infrastructure can create delays in delivery, making wholesalers from developed countries more distrustful towards their trading

<sup>58</sup> Alesina and La Ferrara (2000) find income to be one of the main determinants of trust; however, this investigation is not from a developing country but from the US.

<sup>59</sup> Fafchamps and Minten (2000) emphasise that family networks are not necessarily productive in ‘Returns to Social Network Capital among Traders’. Murphy (2002) also mentions this phenomenon in Tanzania.

<sup>60</sup> This is discussed in Mookherjee (1999).

<sup>61</sup> This is not always the case; president Nkrumah in Ghana was early in establishing a Ghanaian identity.

partners. Consumers in developed countries may show scepticism towards certain products delivered from developing countries. This can especially be observed in the market for ecologically produced food. The consumers of these types of products prefer to shop locally when this is possible. If the demanded product is off-season, products from neighbouring countries are preferred. However, products from far-away locations are met with distrust. It is important to separate different types of product. Standardised products have a fixed market price and quality is easily observed. These products are not so much influenced by trust. However, for differentiated products, where quality can be variable and prices are negotiated, trust becomes a factor of greater importance. Since developing countries are to a large extent producers of standardised goods (see appendix 4), trust may seem less important for these countries' products. However, recent developments in the global commodity chains show that supermarkets are increasing control of the production process. Wholesalers in developed countries are demanding certain standards of packing, quality, variety, processing, labour conditions and price. A carrot may seem like a standardised product, but today one can find carrot batons, mini-carrots in tray, mini-crunch carrots, peeled and sliced carrots or basic carrots with or without a bag. Consequently, there is an increasing degree of diversification of products from developing countries. Producers in these countries need to establish that they are able to adapt reliably to the demanding requirements set by the major customers.<sup>62</sup>

### *2.1.6. Summary*

This first section has focused on the concept of trust and transaction cost economics. Trust has been claimed to originate from two main sources, the rational and the social. Trust is furthermore separated into three different levels (micro, meso and macro) to obtain a finer distinction of the concept. All these definitions were applied to analysing trust in the context of economic interaction and growth, and will be used in the following sections. Transaction cost economics was introduced in relation to neoclassical theory to create a framework for analysing trust in economics. Key concepts in transaction cost economics were explored, like asset specificity and opportunism. These concepts gave insight into a discussion on how trust can function as a safeguard against opportunism and reduce transaction costs. We started this report with the question: is distance dead? This is not yet answered; however, knowledge about trust will create a background to understanding the further discussion of distance and trade.

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<sup>62</sup> More information about commodity chains can be found in Dolan and Humphrey (2000).

### 3. International trade

Transactions across country borders are especially exposed to transaction costs. Many have tried to explain international trade and the observed trade patterns. Trade models have existed since the pre-classical theories of the Mercantilists (16<sup>th</sup> and 17<sup>th</sup> centuries). However, it is the classical theories that created the roots of today's thinking. This tradition started with Adam Smith (1776) and his writings on absolute advantages, inspiring David Ricardo, who in 1816 presented his famous argument on comparative advantage. The theory predicts that a country can have an advantage in the production of some product relative to another country. This has influenced trade theory ever since. Especially the neoclassical theorists have developed their models on this principle; one example is the Heckscher-Ohlin model, focusing on factor differences as the basis for trade. The post-neoclassical theories of trade that have dominated more recent research are moving away from the perfect competition of the neoclassical world. These theories incorporate monopolistic behaviour, differentiation of products and economies of scale to explain intra-industry trade.<sup>63</sup>

The trade theorist Gene Grossman (1999) proclaimed that something is fundamentally wrong with the trade models. He is convinced that a more realistic trade model is necessary to incorporate common policy, language and culture, making increasing distance an important factor. This surge for increased realism might be based on the fact that the best established empirical regularity in trade, the gravity equation, predicts that less trade will occur over longer distances.<sup>64</sup> Consequently, the orthodox trade models can be claimed to be fundamentally wrong when they cannot predict the trade patterns that have been common knowledge for many years. However, since Anderson (1979), it has been increasingly recognised that the gravity equation can be derived from several established trade models, giving theoretical underpinning. Perhaps Grossman's criticism is not valid, maybe the trade models are realistic. Yet although common language, culture and policy are still not customary readings in economic textbooks on trade, I find them essential and interesting factors. I will come back to such factors at the end of this section, but first some further introduction to the gravity equation.

#### 3.1. The gravity equation

In the 17<sup>th</sup> century the mathematician Sir Isaac Newton defined the laws of motion and gravitation using calculus. From these laws, he estimated that the attraction between objects (planets) is proportional to their mass and inversely proportional to their respective distance.<sup>65</sup> The theory of gravity that explains the forces between planets was first applied in social science by Carey in 1858 to explain the sociological phenomenon of group behaviour. Today, the gravity model is used in many different fields of study: transportation, physical planning, environmental studies, regional economics and geographical analysis. In geography, the model has become the most common framework in geographer's spatial interaction analysis. However, economists, starting with Beckerman (1956), have also applied this method, using the model to study intra-European trade. In this early period no theoretical foundation was discovered.<sup>66</sup>

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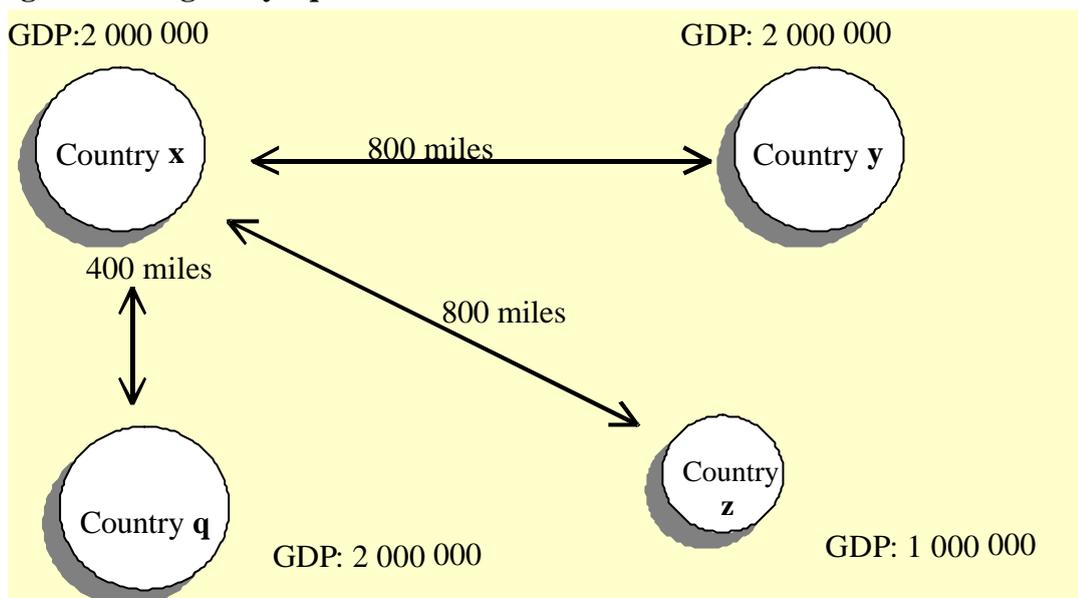
<sup>63</sup> See Grimwade (2000), Norman (2001) and Bhagwati, Panagariya and Srinivasan (1998) for general information on trade theories.

<sup>64</sup> Nevertheless, distance is important when models use 'iceberg costs'. This is quite common in 'new geography models'. Some 'new theories of trade' use transportation costs to determine the location of firms, see Markusen and Venables (1998)

<sup>65</sup> Adams (1991), for further information on Sir Isaac Newton, and the laws of motion.

<sup>66</sup> See Gitlesen and Jörnsten (2000), Ubøe (2001), Leamer and Storper (2001) for further overview.

**Figure 5: The gravity equation**



### 3.1.1. The framework

The essence of the spatial interaction model is simple: it is a function that emphasises the attributes of location and the friction of distance between the two. Figure 5 illustrates the principles of the gravity model,<sup>67</sup> where there are two basic impacts:<sup>68</sup>

1. Scale impact: Countries with large economies tend to attract more economic activity than small countries. Large economies have numerous businesses that can create more connections with each other. Search is facilitated by more business opportunities. Hence, trade flows between **x-y** will be greater than **x-z**.
2. Distance impact: The greater the separation between places, people or activities, the less likely they are to interact. Therefore, trade flows between **x-q** will be greater than **x-y** even if they are equally large in economic size.

To summarise the facts, we can multiply the scale of each country, the GDPs, by each other. The gravity model measures bilateral trade flows; consequently, we look at two countries at the same time, designated by the subscript  $i$  and  $j$ . Interaction between any pair of countries is specified as  $Exports_{ij}$ . The interaction can be expressed as a ratio of the multiplied GDPs over the kilometres ( $DIST_{ij}$ ) measured between any pair of countries.

$$(1) Exports_{ij} = \frac{(GDP_i GDP_j)^a}{(DIST_{ij})^b}$$

$$(2) \ln Exports_{ij} = a(\ln GDP_i + \ln GDP_j) - b \ln DIST_{ij} \text{ (log-linear form)}$$

The parameter  $a$  is the elasticity of exports with respect to GDP. The variable  $b$  represents frictions in relation to distance, a parameter that will be discussed later in this report.

<sup>67</sup> The gravity figure is inspired by Gattrell (1983).

<sup>68</sup> The impacts of scale and distance are also stated in Haynes and Fotheringham (1984).

### 3.1.2. Trade models and the gravity equation

Anderson (1979) was the first to recognise the connection between trade models and the empirical gravity equation. He created a theoretical foundation that has been developed in different directions by several authors up to the present time.<sup>69</sup> Although different perspectives are discussed, they all agree that product specialisation is a crucial determinant in explaining the gravity model. I have chosen to base my explanation on a model by Deardorff (1995), since he focuses on both scale and distance impacts of the gravity equation. Deardorff uses a Heckscher-Ohlin model with certain assumptions to explain product differentiation and the deduction of the gravity equation. Firstly, an important assumption is that each good is only exported and produced by one country, giving the same implications as the Armington Assumption.<sup>70</sup>

Secondly, the Heckscher-Ohlin model used by Deardorff (1995) has trade in both goods and factors. The inclusion of factor trade normally creates a situation of equalised factor prices.<sup>71</sup> However, given positive transportation costs, the factor prices do not need to be the same (that is the case in this model). The transportation costs are assumed to be of the 'iceberg' type. This implies that a fraction  $(t_{ij}-1)$  of the goods shipped from  $i$  is used in transport to country  $j$ .<sup>72</sup> The exporting country will not discriminate between markets, and country  $i$  will receive a single price,  $p_i$ , for its products in all markets. The importer's price will be  $t_{ij}p_i$ , because the buyers pay the transport cost.

Finally, to say anything about the patterns of bilateral trade, it is necessary to specify preferences. Preferences are assumed to be identical in both countries. Deardorff (1995) uses Cobb-Douglas preferences in his model, creating a situation where consumers in both country  $i$  and  $j$  spend a fixed share,  $q_i$ , of their income on the product of country  $i$ . The output of country  $i$  is denoted  $x_i$ , while country  $i$ 's nominal<sup>73</sup> income is  $Y_i$ . Then,

$$(3) Y_i = p_i x_i = \sum_j q_i Y_j = q_i Y^w$$

The world income is denoted  $Y^w$ . Equation (3) can be rewritten as  $q_i = Y_i/Y^w$ . If transportation costs are not included, we obtain the simple frictionless gravity equation, where  $T_{ij}$  represents the nominal value of exports from country  $i$  to  $j$ :

$$(4) T_{ij} = q_i Y_j = \frac{Y_i Y_j}{Y^w}$$

---

<sup>69</sup> Helpman and Krugman (1985), Bergstrand (1990), Hummels and Levinsohn (1995), Evenett and Keller (1998), Deardorff (1995) and Deardorff (2001) are examples of authors that all discuss the theoretical foundation for the gravity equation.

<sup>70</sup> This assumption proclaims that consumers view goods as differentiated by country of origin, as in Anderson (1979) Markusen and Wagle (1990), Hummels and Levinsohn (1995) and Baier and Bergstrand (1999). The Armington assumption is commonly used to explain product differentiation in models of imperfect competition, as the post-neoclassical models. However, in the example by Deardorff (1995) goods *are* really different.

<sup>71</sup> Especially when there is perfect competition and zero transportation costs.

<sup>72</sup> Formally, there is a part of the traded product that does not reach the destination. It 'melts away' on the journey. Paul Samuelson (1954) was the first to describe transportation costs in this way, making it unnecessary to model 'transportation' as a good in itself. This way of modelling transportation costs has been especially prevalent in 'new trade theory' models and 'new geography models'. Krugman (1998) elaborates further on 'iceberg costs'.

<sup>73</sup> All nominal values are denominated in the same currency unit (e.g. US \$).

However, when transportation costs are present, the trade flows have to be reduced proportionally. The nominal value of exports is then:

$$(5) T_{ij} = \frac{Y_i Y_j}{t_{ij} Y^W}$$

Equation (5) is similar to the gravity equation represented in equation (1). However, the equation by Deardorff (1995) implements transportation costs instead of the variable called distance in equation (1). The alpha, representing the elasticity of exports with respect to GDP in equation (1), is not present in equation (5). This is due the assumption that preferences are Cobb-Douglas. The friction variable, beta, is also not mentioned due to the assumption of 'iceberg costs' to explain distance. It is possible to obtain a more realistic model by incorporating CES preferences, instead of Cobb-Douglas preferences. This makes bilateral expenditure on international trade decline with distance, creating the friction variable as represented in (1). Other authors, such as Evenett and Keller (1998), argue that a combination between Heckscher-Ohlin theory and increasing returns of scale models, are the best adapted to explaining observed trade flows. I will not discuss which model is the best to account for the gravity equation, but rather emphasise that classical,<sup>74</sup> neoclassical,<sup>75</sup> and post-neoclassical models<sup>76</sup> can *all* predict product specialisation and therefore *all* explain the gravity equation (under certain assumptions). Consequently, the gravity equation cannot be used to test trade models (as has been tried before), because it can be deduced from several models.

### 3.2. Distance and border effects

In the gravity model, we apply distance in a physical sense, measuring the quantity of kilometres in a straight line between capitals of countries and using it as a proxy for transportation costs. McCallum (1995) studied trade flows between 10 Canadian provinces and 30 US states for 1988. To investigate this matter he used the gravity equation. Equation (6) represents the regression he obtained, in a log linear form:

$$(6) \log(x_{ij}) = 1.21 \log(y_i) + 1.06 \log(y_j) - 1.42 \log(d_{ij}) + 3.09 \text{border}$$

(0.03)                      (0.03)                      (0.06)                      (0.13)

Standard errors are the numbers reported under the coefficient estimates. The rest of the parameters are similar to the parameters in equation (2). However, equation (6) has a specific variable to represent adjacent borders. The distance variable  $-1.42$  equals a situation where two regions separated by 500 miles trade 2.67 times as much as two regions separated by 1000 miles, everything else being the same.<sup>77</sup> Nevertheless, an even more striking result is the importance of the border, called the 'border effect' or 'home bias effect' in the literature.<sup>78</sup> McCallum (1995) find that trade between two provinces is more than 20 times larger than

<sup>74</sup> The Ricardian model (technology differences) can predict full specialisation.

<sup>75</sup> Versions of the Heckscher-Ohlin model (where factor proportions are very different). Bergstrand (1990) and Deardorff (1995) focus on these models.

<sup>76</sup> Evnett and Keller (1998) focus on increasing returns to scale models, Hummels and Levinsohn (1995) emphasise monopolistic competition models.

<sup>77</sup> This estimate is calculated by making the distance variable (1.42) the exponent to relative distance between the regions (1000/500), hence  $\left(\frac{1000}{500}\right)^{1.42} = 2.67$ .

<sup>78</sup> The 'border effect' is defined as less trade conducted over country borders than within the country border.

trade between a province and a similar sized state, each pair having the same distance. Since minimal tariffs existed between the US and Canada at the time of the research, some important unobserved transaction costs seem present in international trade.<sup>79</sup>

Furthermore, another interesting empirical study by Frankel, Stein and Wei (1997) estimates the gravity equation over major countries between 1970-90, with dummies for language in common, regional grouping and common border.<sup>80</sup> Their research produced the estimates in table 9:

**Table 9: Gravity Estimates of Trade, 1970-1990 - Frankel, Stein and Wei (1997)**

	Dependent variable: log (Trade)	
Intercept	-9.70*	-9.78*
	(0.27)	(0.27)
1980 dummy	-1.01*	-1.06
	(0.05)	(0.05)
1990 dummy	-1.29*	1.37*
	(0.06)	(0.05)
GNP product	0.72*	0.73*
	(0.01)	(0.01)
Per capita GNP product	0.23*	0.23*
Distance	-0.51*	-0.51*
	(0.02)	(0.02)
Adjacency	0.72*	0.72*
	(0.10)	(0.09)
Common language	0.47*	0.47*
	(0.05)	(0.05)
EC bloc	0.31*	0.24*
	(0.06)	(0.09)
East Asia bloc	2.12*	2.26*
	(0.09)	(0.18)
Western hemisphere bloc	0.31*	-0.32*
	(0.08)	(0.10)
EC*trend		0.006
		(0.006)
East Asia*trend		-0.013
		(0.012)
Western Hemisphere*trend		0.063*
		(0.009)

Note: Standard errors in parentheses. Trend=Year-1970.  
\* Denotes significance at 1% level.  $R^2 = 0.72$

This study does not come out with the same importance of distance as in McCallum's (1995) research. However, countries at 500 miles apart conducted 1.42 times as much trade as countries at 1000 miles apart.<sup>81</sup> The reason why the estimate is so different from McCallum (1995) may originate from the use of dummies in Frankel, Stein and Wei (1997), absorbing some of the earlier effect measured by distance. This may, for example, be the language

<sup>79</sup> Wei (1996) studied the OECD countries in the same way as McCallum (1995) and Helliwell (1996) and confirms the home bias present also in these countries.

<sup>80</sup> They also use year dummies and an interactive time trend with regional dummies.

<sup>81</sup> This is calculated in the same way as earlier:  $\left(\frac{1000}{500}\right)^{0.51} = 1.42$ .

variable that increases trade by 60 %, <sup>82</sup> the adjacent country variable, doubling trade, <sup>83</sup> and the regional bias variables, increasing trade. <sup>84</sup>

The last investigation I will refer to is a study conducted by Crafts and Venables (2001). Table 10 summarises their results on trade flows, together with other gravity studies on different topics. Crafts and Venables (2001) claim that the elasticity of trade flows with respect to distance is normally estimated at between  $-0.9$  and  $-1.5$ . The first column in table 10 shows the results of their estimation, expressing trade volumes at different distances relative to their value at 1000 km (with an elasticity of  $-1.25$ ). When distance is 4000 km, trade flows are down to 0.18. This is a total fall of 82% from the trade at 1000 km. At 8000 km trade flows have sunk to 0.07. This is a 93% downward fall from initial trade. <sup>85</sup> The other columns show similar estimates by Portes and Rey (1999) on cross-border equity transactions, Di Mario (2000) on FDI, and Keller (2000) on technology flows.

**Table 10: Economic interactions and distance** <sup>86</sup>

	Trade	Equity flows	FDI	Technology
1000km	1	1	1	1
2000km	0.42	0.55	0.75	0.65
4000km	0.18	0.31	0.56	0.28
8000km	0.07	0.17	0.42	0.05

Consequently, the studies confirm that trade flows are influenced by borders and distance. The two phenomena are displayed as separate effects in the investigations referred to in this section. Yet, there may well be similar underlying causes of these phenomena. This will be discussed further in section 3.3, but first, we need to see if these effects can be explained by the most frequently applied reasoning, transportation costs.

### 3.2.1. Transportation costs

The most logical and obvious explanation of why there is less trade over distance is the transportation costs needed to move goods between locations. Yet, Hummels (1999) estimates that average freight costs of US imports in 1994 were only 2.8% of import value. These rates do not vary considerably over different products and it is not a large enough cost to be an important consideration for most long-distance trade. Furthermore, table 11 illustrates how ocean shipping costs have been reduced over the last two hundred years. <sup>87</sup> This table and appendix 2 indicate that if the distance effect is created by transportation costs, then the significance of distance should be reduced over time. However, this is not the case. Rose (1999) has made estimates of the distance elasticity showing that over the last 20 years, the impact of distance has remained unchanged and not significantly affected by communication and transportation improvements. Moreover, Grossman (1998) comments that the distance

<sup>82</sup> ( $1.6=\exp(0.47)$ )

<sup>83</sup> ( $2.05=\exp(0.72)$ ). This dummy was presented as a parameter in McCallum (1995).

<sup>84</sup> EC trade increases 36% ( $1.36=\exp(0.31)$ ); Western Hemisphere trade increases 36% and East Asia bloc increases trade 733% ( $\exp(2.12)=8.33$ ).

<sup>85</sup> These calculations are conducted in relation to 1000, being the point of departure. When the elasticity of distance is  $-1.25$ , we find the result using:  $Factor=\left(\frac{1000}{Dist}\right)^{1.25}$ . This will yield different results over increasing

distance:  $\left(\frac{1000}{2000}\right)^{1.25}=0.42$ ,  $\left(\frac{1000}{4000}\right)^{1.25}=0.18$ ,  $\left(\frac{1000}{8000}\right)^{1.25}=0.07$ .

<sup>86</sup> Table from Crafts and Venables (2001), p.8.

<sup>87</sup> Shipping costs are just one of the factors involved in global transportation, but they represent an example of the continuing communication revolution in the world.

and border effect observed by McCallum (1995) is far too large to be explained by transportation costs or formal barriers to trade. This implies that there are other explanations of the ‘distance effect’.

**Table 11: Real Costs of Ocean Shipping**<sup>88</sup>

Years between 1750-1990	Real Shipping Costs (1910=100)
1750	298
1790	376
1830	287
1870	196
1910	100
1930	107
1960	47
1990	51

Several studies, more than have been referred to in this report, confirm that distance and border effects reduce trade flows. These studies are most frequently based on the gravity equation. However, Trefler (1995) wrote an article called ‘The case of the Missing Trade and Other Mysteries’, using the Heckscher-Ohlin-Vanek framework.<sup>89</sup> He concluded that trade between developed countries is far too large compared to their factor endowments. Countries in the North should trade more with the countries in the South, given the objective differences in factor endowments. Hence, there is a ‘lack of trade’ compared to what can be expected from the factor endowment models and compared to what can be explained by transportation costs.

Deardorff (1995) modelled transportation costs as a proxy for distance. This is a common way to understand the distance variable ( $DIST_{ij}$ ) found in equation (1). Yet, when transportation costs are not sufficiently high to explain the ‘distance effect’, we should explore other dimensions of the concept of distance.

### 3.2.2. Distance as a multidimensional concept

The geographer Gatrell (1983) classified distance in four categories (apart from mere kilometres), where transportation costs only represent one category:

1. Time distance: The travel time from one node to the other.
2. Economic distance: The costs of travelling from one node to the other.
3. Cognitive distance: Distance people feel subjectively.
4. Social distance: Distance in social classes and networks.

The cognitive distance is a dimension I find especially interesting. It is defined as the space an individual feels subjectively between two nodes. Downs and Stea (1977) create a clearer distinction between ‘perceived’ and ‘cognitive’ distance. Perceived distance is the observed physical space between two nodes. The cognitive distance is the subjective feeling of this same space. This feeling of distance can occur because of cultural, language, ethnic, institutional or historical differences. In Norway, one can observe a much larger trade flow towards Denmark and Germany than towards Finland and Russia. The fact that the two latter countries share physical borders with Norway does not hinder the cognitive sentiments that these countries are further away than Denmark and Germany (where there is no land border).

<sup>88</sup> Table from Crafts and Venables (2001), p.6.

<sup>89</sup> He identifies the theoretical prediction of factor-proportion models of international trade, put forward by Eli Heckscher (1991), Bertil Ohlin (1991) and Jaroslav Vanek (1968).

This feeling of distance may have its origin from the lack of cultural, linguistic and historical bonds towards Finland and Russia, in comparison to Denmark and Germany. Furthermore, the 'time distance' may also be a factor for some types of products. Norway can hardly be challenged by Chile on the European fresh fish market, due to the time consumed to transport fish from Chile to Europe. However, in the frozen fish market, where time is less important, we may expect Chilean fish to become very competitive. Looking at distance as a multidimensional concept can be fruitful, and may contribute to an explanation of the 'mystery of the missing trade'. With this thought in mind, I start to explore different explanations of the 'mystery'.

### **3.3. Some plausible explanations**

Parsley and Wei (1999) titled an article 'Border, Border, Wide and Far, How We Wonder What You Are',<sup>90</sup> giving a humorous twist to the lack of definitive answers to the 'border effect'. Tentative answers are offered: the influence of equal currencies,<sup>91</sup> differing institutions,<sup>92</sup> and preferences for goods from the home market.<sup>93</sup> James Rauch has developed an explanation that focuses on trust, networks and information asymmetries. I find this argument convincing and interesting and I want to elaborate further on his view.

#### *3.3.1. Consumer preferences*

Why do French drink wine and Germans beer? These stereotypes illustrate the point that individuals grow up in a culture with certain habits and traditions. Such traditions may originate from local access to products, yet Spain has for centuries imported dried fish from Norway to produce the traditional Bacalao. So, if not always the case, taste and availability can influence the local market. Can this be the origin of the 'border effect'? That each country's citizens have certain preferences constructed by local access to products and resources? Or that consumers want to support local industry to maintain activity in the home region? Such patterns have been observed in the ecological food industry. Denmark is an example of a country where consumers prefer to buy local products when they are shopping for ecological food, and they are sceptical about imports. Do consumers have distrust towards foreign products in general? Today it is mandatory to label every product with its country of origin. Several studies have been conducted to understand consumer behaviour in relation to such labelling. One study conducted by Arne Wiig (1995) emphasises the fact that labelling of origin has an emotional effect, but does not have a signal effect. Consequently, origin is not a signal of quality in itself when a consumer is evaluating a product. Price on the other hand is grasped as an indicator of quality. Furthermore, where consumers have predetermined stereotypes or attitudes towards certain countries of origin, such attitudes have proved to discriminate against products from developing countries. However, it is important to emphasise that the effect of country of origin labelling is very dependent on the product type, the price and changes over time. International branding and certification may create trust towards a product no matter where it is produced, and may even increase the reputation of a country. If the brand 'Nike', which is normally associated with quality, is produced in China,

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<sup>90</sup> This specific article does not emphasise traded goods directly, but focuses on price differences across borders.

<sup>91</sup> For arguments on common currency and currency volatility, look up Parsley and Wei (2000) on price differences, Rose (1999) and Frankel and Rose (2002) on trade flows.

<sup>92</sup> See Linders, Groot and Nijkamp (2002), Anderson (2001), Groot, Linders, Rietveld and Subramanian (2002), Anderson and Wincoop (2001), Anderson (1999), Anderson and Marcouiller (2000) for arguments by authors emphasising an institutional perspective.

<sup>93</sup> For the 'border effect' explained by preferences (among other factors), see Hillberry and Hummels (2002), and Wei (1996).

the 'made in China' label in combination with 'Nike' might increase the reputation of Chinese-produced products.<sup>94</sup>

If consumer preferences are a main source of the 'border effect' then one might observe a decline in the effect due to an increased amount of multinational companies that spread advertisements for similar products at an international level. The film and music industry may also homogenise preferences and erase the 'border effect'.

Not only individuals may prefer products from their home country, local governments are also known to prefer local products to stimulate the national economy. Trionfetti (2000) has investigated the home bias in government procurement, and he finds that imports from private consumers are always higher than governmental imports; yet the divide varies markedly between countries. This implies that government spending is biased towards the home market. He estimates that the average governmental procurement in industrialised countries is 10-12% of GDP. However, it is important to emphasise that the significance of such interventions in relation to international specialisation is very dependent on the sector in question. Sectors with constant returns to scale and perfect competition are not so much influenced by governmental procurement. Yet, companies that are characterised by increasing returns to scale and monopolistic competition may again distort international specialisation. The WTO and the EU have since 1977 tried to prevent local governments from exercising bias in favour of their home producers and to open avenues for competitors.

The 'border effect' has to originate either from the perspective that local preferences, demand and availability are important factors, or that there is some barrier to trade in the transactions between countries. Evans (2001) finds that consumer preferences are not a strong enough factor to explain the 'border effect'. She emphasises the importance of the 'barrier' factor, that there is some sort of hindrance between countries. The following explanations of the border effect are mainly such 'barrier effects'.

### 3.3.2. *Currency unions*

International trade involves exchange of currencies. Countries have their particular money, creating transaction costs when converting to other currencies. Prices are less transparent when stated in different money units. However, some countries remove this cost by entering currency unions.<sup>95</sup> Estimations conducted by Frankel and Rose (2002) and Rose (1999) indicate that trade is over three times higher between common-currency countries, and that exchange rate volatility reduces trade, but to a much smaller degree. Consequently, the stabilising effect produced by equal currencies is not the main reason why monetary unions increase trade. If this were the case, exchange rate volatility would come out as a much more important variable. It is reasonable that volatility is a less important factor, since future payments can be contracted to a fixed currency, taking away the risk involved in currency volatility (forward contracts). However, hedging does not function in all countries, because some nations have malfunctioning credit markets.

Rose (1999) argues that the 'home bias' effect can to a large extent be explained by the fact that there is only one currency inside country borders. This might be true; however, currency unions are normally created between countries that are natural trading partners, linked to each other through historical ties, personal bonds and connected borders. Frankel and Rose (2002) and Rose (1999) have tested for some of these variables. However, they do admit that historical links were not assessed and may be of importance.

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<sup>94</sup> Arne Wiig (1995) has an interesting overview of the literature on country of origin.

<sup>95</sup> See Vårdal (1994) that elaborate on the effects of currency unions.

### 3.3.3. Contract enforcement and institutions

Insecurity in international exchange has been the focus for many authors attempting to explain the patterns of trade.<sup>96</sup> Asset specificity can increase the risk and cost of opportunism. Specific investments are to some extent larger over country borders and longer distances. *Site-specific investments* involve adjustments to the location of economic activity. If a company signs a contract with an agent in a foreign location, some investments need to be made. This can involve the translation of user manuals because of language differences, new design because of taste differences, or other dimensions/standards due to measurement differences. *Physical asset-specific* investments are also more predominant in international trade; larger adjustments to machinery are needed when the location has a different character. When Norwegian Seafood Exporters launched a fresh fish campaign in Moscow this year, new storage locations outside the capital were needed. Investments were made because the distance was too large to keep the products fresh. *Human asset-specific* investments are, following the same reasoning, more important in long-distance trade. An international trading company has to hire a workforce that, for example, has cultural knowledge, language skills or political knowledge about the trading region to make the most profitable transactions.

This increased asset specificity renders business contracts more exposed to opportunism and the 'hold-up' problem. However, as discussed in section 2.1.3 institutions are needed to enforce contracts and/or trust so partners will co-operate. An argument put forward by Anderson and Marcouiller (2000) is that institutional quality can create a barrier to trade. If institutions are of poor quality, they may not be able to enforce contracts in a stable and efficient manner. Anecdotal evidence of this phenomenon is found in table 12. This table shows how 3,685 firms in 69 countries ranked 'the obstacles for doing business' in a survey conducted by the World Bank in 1996.

**Table 12: Ranking of 'Obstacles for Doing Business'<sup>97</sup>**

	Worldwide Sample
Tax Regulations or High Taxes	1
Corruption	2
Financing	3
Inadequate Infrastructure	4
Crime and Theft	5
Inflation	6
Uncertainty of Costs of Regulation	7
Policy Instability	8
Labour Regulations	9
Regulations of Foreign Trade	10
Safety or Environmental Regulations	11
Start-up Regulations	12
Foreign Currency Regulations	13
Price Controls	14
Terrorism	15

It is not that odd that businesses complain about taxes; however, that they put corruption in second place, with inadequate institutions, theft and crime not far behind, is more surprising. Anderson and Marcouiller (2000) do not use this table as evidence, but rather construct a

<sup>96</sup> This view can be observed in Anderson (2001), Groot, Linders, Rietveld and Subramanian (2002), Anderson and Marcouiller (2000).

<sup>97</sup> From Anderson and Marcouiller (2000), p.28.

structural model of import demand in an insecure world. The model derives data from the World Economic Forum, finding that a 10% rise in a country's index of transparency and impartiality leads to a 5% increase in its import volume. Furthermore, Groot, Linders, Rietveld and Subramanian's (2002) study of the effect of institutions on trade flows, using a gravity model approach, finds a 20% to 24% increase in bilateral trade due to institutional quality. Why is the quality of institutions so important?

Contract enforceability is an important factor, as mentioned above. Institutions that exercise bias in favour of their own country's citizens, demand bribes or undertake outright theft increase the risk in transactions. Institutions need to be transparent, efficient and predictable to enforce contracts in a proper manner. Moreover, functioning formal institutions can create better informal institutions. Micro-level trust has better possibilities with predictable laws and stable governments. Macro-level trust can also be influenced by functioning institutions, creating good business norms. However, even more important is the possibility that foreign importers increase their confidence towards suppliers from countries that have good governance and well-functioning institutions. This macro-level trust *towards* a country can give benefits to the whole economy, due to the increased security given by predictable institutions that can enforce contracts.

International institutions can create enforcement of cross-border contracts; however, these institutions are either non-existent or not strong enough. Yet, some institutions are present in this arena. International commercial arbitration offers private means of dispute resolution. The London Court of International Arbitration (in London), the International Chamber of Commerce (ICC, in Paris) and the American Arbitration Association (in London) are for the most part used in this context. These institutions guarantee neutrality. However, a lawsuit can be so expensive that this solution will not be an alternative for smaller companies. *Letters of credit* are bank guarantees making it possible for the trading parties to shift some of their commercial credit risk to the issuing bank and allowing the buyer to postpone the payment until the shipment passes through quality inspection.<sup>98</sup> This is a good option for preventing some of the risk induced by trade. However, this assumes a functioning financial market and businesses that the banks are willing to guarantee. Homogenisation of international trade laws can create better conditions for contract enforcement. Many countries follow the international rules called 'lex mercatoria',<sup>99</sup> and the World Trade Organisation (WTO) is expanding in size. However, these international organisations are not strong enough; local institutions still play an important role in dispute resolution. I am not claiming one should abolish local governments, and many benefits arise from smaller governmental regions. However, this discussion is beyond the scope of this report.

Another aspect of institutions investigated by Groot, Linders, Rietveld and Subramanian (2002) is based on the similarity of institutions, not the quality. When countries have similar laws, legal procedures and levels of transparency, it might be easier to interact with each other. The transaction is less prone to cultural misunderstandings and fewer resources are needed to interpret contracts due to similarities. Familiarity may also increase bilateral trust when the co-partners' signals are easier to interpret. Empirically, the significance of similar institutions is not as strong as we find attributable to the quality of institutions, yet the authors find a 12% to 18% increase in bilateral trade with similar institutions.

The problem of contract enforcement on an international level may explain some of the border effect, where borders create a limit between institutional regions. However, contract enforcement does not need to materialise through strong institutions. Trust can

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<sup>98</sup> Letters of credit are discussed in Rauch (2001)

<sup>99</sup> <http://www.jus.uio.no/lm/index.html>

enforce contracts. This is a cornerstone for another explanation of the trade mystery, the network/search view.

### **3.4. Network/search view of trade**

A line of reasoning that is especially interesting is the network hypothesis emphasised in recent articles by James Rauch. I believe that this view is essential to understanding why less trade is observed over longer distances and over country borders. However, the arguments mentioned earlier may still be valid and function at the same time as the network/search view.

#### *3.4.1. Search*

As mentioned in section 2.1.1, transactions involve search costs. This is the cost necessary to find a potential trading partner. Rauch (2001) argues that differentiated goods are especially exposed to search costs. Differentiated goods are not found in an organised market (as standardised goods) and do not have reference prices. The price is negotiated through knowledge about the quality of the product, delivery time and the qualifications of the producers. Differentiated products are consequently more dependent on personal interaction than standardised goods (such as steel and oil) that can be bought in an organised market. The search/network approach towards trade is predominantly adapted to differentiated goods.<sup>100</sup> Trust is assumed to be more important when differentiated products are traded. Since contacts often last over longer periods, and quality is not standardised, the hazard of opportunism is larger. Consequently, with higher risk the need for assurance about the other party's trustworthiness (the deliberation problem) is essential to doing business with these products.

Search costs can increase under international conditions.<sup>101</sup> The reason for this is that potential trading partners are harder to find owing to little information, cultural differences and language barriers. It is also assumed that international trade involves a higher degree of asset specificity, something that may increase risk in transactions. On a national basis institutions are more frequently present to help businesses in a search process, through business organisations, and governmental advisory boards. Directories such as the 'yellow pages' are also predominantly based on national sectors. Product fairs are usually national or regional.<sup>102</sup> These locations create durable business contacts and networks. Institutions that help to reduce search costs are scarcer on an international level, although found to some extent on a regional level (as in the EU).

A solution to this search cost and deliberation problem is to trade in a pre-existing network. Networks consist of trusting relationships where the hazard of opportunism is minimised. These networks may function as search engines, giving personal information about market conditions and business opportunities in their respective locations. However, such pre-existing ties are more commonly local due to the fact that most people grow up in one location, creating relationships at school, in their neighbourhood, through sports, clubs, and religious activity. Lorenzen (1998) investigated the Danish industrial district in West Jutland in Denmark and found that proximity created the possibility for the most information-intensive type of trust, micro-level trust. Consequently, the problem of search when potential business contacts are far away in geographical distance is that there is less information about these agents. This lack of information can occur due to a home bias in news and television coverage, and fewer personal ties creating fewer rumours and reputational effects.<sup>103</sup>

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<sup>100</sup> Rauch (2001), Rauch (1996), Rauch (1999) and Rangan and Lawrence (1999) focus on differentiated goods.

<sup>101</sup> For more information on search costs internationally see Rauch (1999) and Rangan and Lawrence (1999).

<sup>102</sup> Product fairs are markets where suppliers and producers present their products and profiles.

<sup>103</sup> Porters, Rey and Oh (2001) elaborated a hypothesis saying that distance is a proxy for informational frictions. They emphasise that countries situated close to each other have more on each other. This is either due to direct

However, we should not forget the development in information and communication technology (ICT), as mentioned in the introduction. The Internet gives access to search engines, making it possible to see business alternatives in destinations all over the world. The costs of information are reduced and the time needed to process huge amounts of data is minimised. Producers that need standardised inputs should benefit greatly from such technological advances, where search engines can find the cheapest product. Some companies choose to differentiate their products, so that consumers have more trouble comparing the prices. However, modern technology does not yet monitor whether someone is trustworthy. Products that are dependent on specifications and quality inspection are still exposed to a costly search process. Leamer and Storper (2001) argue that the Internet allows for long-distance ‘conversations’, not ‘handshakes’, indicating that ICT is not adapted to starting relationships or networks, but can maintain such relationships. We might see a diminishing ‘distance effect’ in the future due to the ongoing initiatives to create ‘trust guarantees’ and electronic signatures over the Internet, a type of branding of a promise of trustworthy transfer. An investigation of ICT’s influence on distance could be an interesting approach for further research. A possible scope could be to look at the friction variable,  $\mathbf{b}$ , found in equation (1). This variable represents the friction in distance, capturing other factors than the mere geographical distance. This parameter could be gathered from all the available gravity studies, creating a meta-analysis. This could indicate if the beta value has changed over time, thus pointing to the possible trends. If frictions are diminishing, this could imply that ICT is reducing search costs.<sup>104</sup>

Developments in modern technology are not equal around the world: poor countries are not endowed with the same frequency of computers, telephones and other communication equipment, a frequency that is simply not affordable. Physical access is only one aspect of how ICT permeates a society. The consumers need the knowledge and right language skills to use the technology efficiently. One should consequently not expect that long-distance trade is severely altered by ICT at the present stage of development. Maybe the communication revolution has strengthened already developed relationships, creating a development towards greater local bias? This is in part the conclusion made by Brun, Carrere, Guillaumont and Melo (2002) in their investigation of distance and trade. They have conducted a similar analysis to the one I have suggested in the last paragraph. Observations were gathered over a long period of time from 1962-96 from 130 countries and analysed in a panel gravity model. This is consequently not a meta analysis, yet it captures the development of  $\mathbf{b}$  (the elasticity of bilateral trade to distance) over a longer period of time. In their analyses they use a standard and augmented trade-barrier function. The standard function is similar to other trade barrier specifications discussed earlier in this analysis. However, the augmented function considered other factors such as the real price of oil, an index of quality of infrastructure and the share of primary exports in total trade. An interesting conclusion from their study was that when they divided their sample between rich and poor countries (R-R, P-P) there was evidence of an increasing importance of distance between poor countries in both the standard and augmented function. However, between rich countries the elasticity of bilateral trade to distance was constant in the standard function and decreasing in the augmented function. This may imply that globalisation is marginalizing poor countries and reducing the importance of

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interaction between their citizens, because of media coverage, or because they tend to learn each other’s languages.

<sup>104</sup> A meta analysis could be interesting to compare the results found by Rose (1999), who estimated that the elasticity of distance had not changed over the last 20 years, and had not been significantly affected by communication and transportation improvements.

distance between rich countries. Whether this is due to the widespread use of ICT in developed countries can only be the subject of speculation, but should be studied further.<sup>105</sup>

In the following section I will explore further the concept of networks and look at the positive and negative effects of this phenomenon.

### 3.4.2. Networks

An *economic network* can be defined as a group of agents that pursue repeated and enduring exchange relations with one another.<sup>106</sup> Of the international networks, the most easily observed are the co-ethnic networks. Estimations by Rauch and Trindade (1999) show that trade has increased by 150% in differentiated products within the Chinese network.<sup>107</sup> Co-ethnic networks are most commonly spread through migration. Dunlevy and Hutchinson (2001) proclaim that there are three effects of migration on trade. Firstly, one can observe a taste effect. New residents lack the products from their home community and they start to import these products. Secondly, an information bridge may be created: immigrants establish new business opportunities through knowledge about price differences and qualities. Ultimately, there is the network effect based on trust and mutual understanding of another culture. These three factors contribute to increase trade. Furthermore, a study conducted by Gould (1994) on the 'immigrant effect' in the US shows that the export impact was larger than the import impact, indicating that the impact of business contacts is larger than the impact of taste. If the taste effect was predominant, the import impact would be larger. This underpins the conclusion that trade effects due to migration are created by their international networks. Two factors are especially important in the context of networks: information and trust.

Networks can create an information bridge through their participants. The information is personal and hence does not need to be interpreted or 'decoded'. Interpersonal relationships can function as information channels giving trustworthy information about the past conduct of other economic agents. It is not easy to verify whether a potential business partner has ever breached a contract. However, networks can easily convey such information, due to personal monitoring over long time periods.<sup>108</sup> Networks can also give information about markets in general, making it easier for faraway producers to pick up trends, new demand trends and price differences. Knowledge about price differences in distant locations can create profitable arbitrage. An example of this type of information bridge can be found in the Korean wig industry, where producers in Korea depend on their Korean participants in the American market, because the American market is in this case the most innovative and trend-setting.<sup>109</sup> Information about the new styles is rapidly conveyed back to the producers in Korea, making it possible to keep up with new demands.

Trust is another important component in networks. Micro-level trust can flourish in networks due to frequent interactions and knowledge transfer about each other's past conduct. Some also claim that this micro-level trust is created in networks due to the possibility of punishing group members that act inappropriately. Trust towards external traders can also arise because there is a mutual understanding that if the external trader acts opportunistically, there will be no future deals with the whole network. It is debatable whether we are really discussing trust in this case; one can argue that this is a power situation. However, positive expectations about future conduct can be created when there is a threat of punishment. Sanction mechanisms are not often observed in networks (however, are common in the

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<sup>105</sup> ICT in the context of transaction costs is discussed in Linders, Groot and Nijkamp (2002).

<sup>106</sup> Rauch (2001) uses this definition.

<sup>107</sup> The increase of 150% is trade within south-east Asia

<sup>108</sup> Fafchamps (1999) elaborates further on networks for transmitting information.

<sup>109</sup> This example can be found in Rauch (2001) and Hsing (1999).

Mafia).<sup>110</sup> Yet, historical evidence of such conduct is available. The Maghribi traders mentioned earlier in this report used a multilateral punishment mechanism to freeze out traders that acted opportunistically. The German Hansa network from 1200-1300 showed a similar type of conduct. They boycotted towns that maltreated participants of their network. However, creating such a boycott was not an easy process in the beginning of the Hansa epoch. They had problems convincing their trading partners that their sanctions were credible, but with time they managed to co-ordinate responses. The Hansa network was a mixture of self-enforced and state-enforced mechanisms.<sup>111</sup>

Micro-level trust is prevalent when we are discussing sanction mechanisms in networks, yet meso-level trust may also create the basis for networks. Meso-level trust is founded in similarity, stereotypes and ethnicity. An initial trust can be created in a Chinese network if an external trader of Chinese origin looks up a business opportunity in such a network. It might be more difficult to create the initial “leap of trust” if the external trader is of Indian or Italian origin. However, meso-level trust may, through frequent interaction, develop into micro-level trust. As discussed earlier, trust is not a static concept; it can change over time. Trust at all the different levels may reduce the problems of contract enforcement and opportunism, and make individuals in networks more prone to co-operate.

Does the ‘lack of trade’ originate from the phenomenon that we do not find trust over long distances? Trust *is* harder to create over longer distances, and meso-level trust will obviously be reduced by distance because the probability of finding people that are related, belong to the same social group or have the same ethnic background is reduced. Micro-level trust demands high information costs, and is cheaper to create in proximate regions. Macro-level trust can go both ways; it depends on the reputation of the social institution, the people in the faraway location, and the norms and values in the home country. The effect of trust and borders has been examined by Helliwell (1996), who studied the level of trust in Canada and the US in his article ‘Do borders matter for social capital?’ His conclusion indicated that national borders did have a significant effect on trust. The level of trust differed between the two countries, but also, to a lesser extent, internally in the different states and provinces. People may feel a stronger identity and altruism towards individuals of the same country. There can exist a sentiment of cognitive distance towards individuals living outside the frontiers. Yet, the author claims that a more finely masked investigation would clarify the variations of trust in smaller areas. He uses an example from Minnesota where the level of trust is higher than the national average. In this state one-third of the population has Norwegian ancestors, and Norway has, according to comparable WVS<sup>112</sup> data, trust levels among the highest in the world. Migrating groups can create regional differences in trust. This indicates that local networks are important when migrating groups with high levels of trust continue to maintain this level through generations.

Consequently, trust may directly explain some of the distance and border effect. Distance reduces the sentiment of trust owing to less interaction and poorer information. Borders limit trust because trusting networks are predominantly on a local level within national frontiers. Many countries have built up a national sentiment that can create a higher degree of altruism inside country borders.

### *3.4.3. The exclusionary effects of networks*

Networks have positive effects, facilitating trade through contract enforcement and information flows. Rangan and Lawrence (1999) tested the hypothesis that international

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<sup>110</sup> There is only weak empirical evidence that business networks conduct collective punishments for opportunistic renegees of contracts, see Fafchamps (1999)

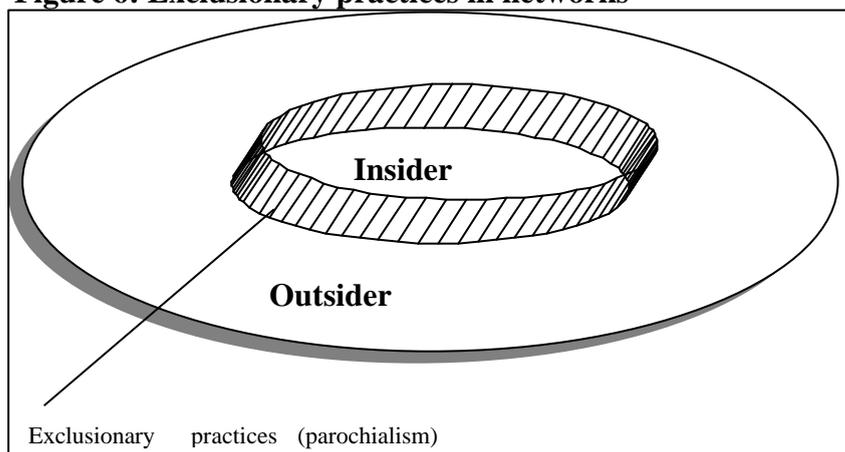
<sup>111</sup> Historical research about networks can be found in Greif (2000).

<sup>112</sup> World Values Survey of 1990-91.

networks are more responsive and adaptable than arms-length trade. They investigated US imports by MNCs<sup>113</sup> to see if they adapted more efficiently to changes in relative prices<sup>114</sup> due to their international network. Rangan and Lawrence (1999) assume that MNCs have more information available because they have firms in different countries in direct contact with local networks. Their estimations are based on a gravity equation and are represented in appendix 5. The results produced by this equation show that MNCs exhibited speedier and more vigorous responses to exchange rates. The international companies could use the changes to obtain economic benefits in a faster way by gaining first-hand trustworthy information from their networks. However, only members of the network will gain from these benefits. This reminds us of the negative effects of networks; they may be exclusionary.

This exclusionary character of networks was mentioned in section 2.1.5. However, some further comments will be made here. The degree of exclusion in networks depends on the type of network. Closed networks are often based on micro- or meso-level trust, originating from kinship and family bonds. These networks are more prone to exclude new opportunities and are less advantageous in a bigger context. Bowles and Gintis (2001) use a game theory framework to explain the dynamics of trust and exclusion in (closed) networks. They describe economic networks as illustrated in figure 6. The inner circle represents insiders that share common characteristics such as race, ethnic identity, political orientation,

**Figure 6: Exclusionary practices in networks**



religion or more trivial similarities. These insiders co-operate only with others in the network, and exclude others with certain characteristics, making a group of 'others' or outsiders. This filter of exclusionary practices is called *parochialism*. The exclusion of certain trading partners reduces the possibility of making profits, so there has to be a gain to this segregation. The advantage is increased trust inside the network, and consequently reduced transaction costs.<sup>115</sup>

An example of this exclusionary filter can be found in the Amish society<sup>116</sup> in the US. The Amish society draws a boundary between the church and the world through old-fashioned clothing, language, interiors and cultural codes. However, the boundaries around the Amish culture have not prevented it from achieving economic success and population growth. In this

<sup>113</sup> Multinational corporations.

<sup>114</sup> Exchange rate differences.

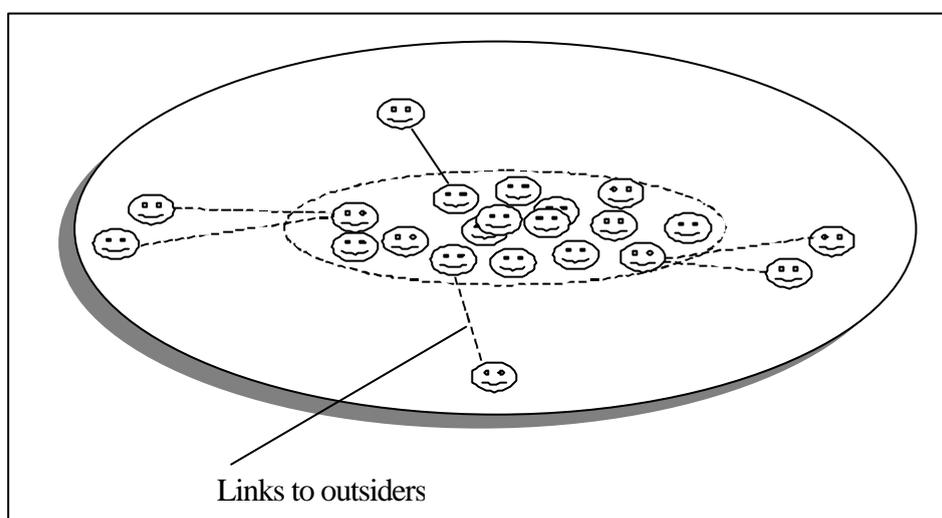
<sup>115</sup> Also mentioned by Woolthuis, Hillebrand and Nooteboom (2002).

<sup>116</sup> Jacob Amman founded Amish Church, also called Pennsylvania Dutch in Switzerland in the 1690s. The Amish Church is a closed, fundamentalist religious society now only found in the United States. Characteristic because of the old-fashioned clothing and prohibitive behaviour towards all modern agricultural equipment Aschehoug and Gyldendal, (1990), p.284).

example, we find very little contact between insiders and outsiders, but there are networks that are less restrictive with their exclusionary practices. These networks are again characterised by a lower level of trust.

Open networks can be beneficial to society in general. More people may benefit from the advantages made by the network. Noorderhaven, Koen and Beugelsdijk (2002) summarise several empirical and theoretical studies of networks, and find that the organisational culture is important to determining the quality of ties between a firm and its transaction partners. The organisation culture of aggressiveness and action orientation could create expanding and open networks. Figure 7 gives an indication of how such a network works. However, this is not a common trait in networks. The definition of networks as a 'group of agents that pursue repeated enduring exchange relations with one another' explains some of the reasons why networks are more frequently closed. Repeated relations can establish a cumulative process of learning and micro-level trust, where dependencies are a

**Figure 7: Open networks**



natural consequence. The switching-in, switching-out of relations can be costly, hence creating 'sticky' relations. Dixit (2002) created a model of the world, showing that when the world increased in size, the promise of co-operation became less credible because there were more alternative partners. So, open networks can tend to be characterised by less trust and co-operation.

I argued that the 'lack of trade' internationally originates from the search problem. Information and knowledge about individuals' trustworthiness is harder to obtain in international trade. I assume there is a higher risk when trade is conducted over borders, which makes trust an even more important factor. Firms find their business opportunities in networks where information and trust are cheaper. However, due to the fact that networks are predominantly local and are frequently closed, trade will be reduced over longer distances.

On a theoretical basis, little has been developed in the search/network approach. However, Casella and Rauch (1997) have made a promising beginning.

#### *3.4.4. A theoretical approach*

Casella and Rauch (1997) have constructed a general equilibrium model for differentiated products, inspired by the trade networks found in East Asia. The model is not easily tractable and should be simplified in the future to make it more accessible for expansion. The model is a matching model where two separate pools of information are linked through general

equilibrium interdependence. One pool is the home market with information at nominal cost and with sellers well aware of how to reach the buyers that form their particular market niches. Consequently, information is complete. Nevertheless, an agent in the home market has more difficulty in discovering variety, capabilities and quality in the foreign market because of the lack of information. Casella and Rauch (1997) model this phenomenon, saying that matching is random when undertaken towards agents in foreign countries. However, when an agent has group ties, these information barriers are overcome. A member of a group has complete information about the foreign group members. The group is given exogenously, so others cannot enter into the group. Consequently, the endowment of information is exogenously given for all the agents. Consumers are held in the background in this model. If the match is successful in terms of the quality of the differentiated product, the agents split the generated surplus developed by the match. If the match is not that good, they revert to their next best opportunity. This next best opportunity is assumed to be at home. In this setup, clearly, the more people with group ties, the larger the volume of trade.

I find it plausible to assume that group ties are to a large extent local and regional, not spread randomly as assumed by Casella and Rauch (1997). The Chinese network represents an example of an international network, increasing long-distance trade. However, I find that these networks are more the exception than the rule. Consequently, trade is not increased internationally by networks. I find it reasonable that networks *reduce* international trade, because networks are predominantly local and closed. The increased trust and information level towards local economic agents freezes out other participants outside this sphere. This can be understood as a three-country world where networks exist between two countries. The third country does not overcome the information barriers and trade is diverted away from this country. I find this a plausible explanation of why we find less trade over longer distances, because trusted networks are more frequently local than international.

### **3.5. Policy discussion**

There seems to be present a trade barrier in international trade that cannot be measured by transportation costs and tariff barriers. It is of utmost importance to clarify the main reasons for this trade impediment, so as to find the best policy solution. In this report mistrust is considered to be the essential boundary in long-distance trade, and the policy discussion will assume that the search/network view is the most reasonable explanation. Clearly, one also has to consider the goals for a policy recommendation. A reduction of a hindrance to trade will generate a world with freer flows of goods and services. I will not discuss whether freer trade is most beneficial for the world population. This is an issue most economists take for granted, that freer trade will stimulate growth and reduce poverty. However, other opinions are present in this discussion. Given the objective that freer trade is positive, and that this 'invisible' trade barrier is caused by fewer trustworthy relations over distance, I will discuss some possible measures for reducing the barrier.

Firstly, an alternative means of creating trust could be an external implementation of a 'leap of confidence'. This is the small portion of risk that has to be taken from one of the parties in a transaction if there is no form of social trust present. To be credible, such risk reduction should be conducted by one of the participants in a transaction, so political measures may seem difficult. Yet, governments can help companies by organising export campaigns and using their networks through their embassies to promote their national products. This help through commercial activity can develop such a 'leap of confidence' needed to start a transaction with a foreign company. However, these types of intervention are not consistent with a fair competition policy, and are not favoured by the World Trade Organisation (WTO). International banks with a high reputation can also generate a 'leap of confidence' by issuing guarantees and warranties. A company will more easily interact with a

firm that has guarantees from a credible financial institution. The General Agreement on Trade in Services (GATS) has made it easier to provide financial services worldwide. This may benefit companies in developing countries that need guarantees, warranties or credits and are surrounded by a malfunctioning financial market. A stable, transparent and consistent world institution such as the WTO may function as a credible third party that can enforce international contracts and consequently create trust. This cannot be seen as a 'leap of confidence' since it does not originate from within the transaction, but it is nonetheless a factor that can promote trust in international trade.

Secondly, there are ways that the market participants can create trust without the help of external institutions such as the WTO and local governments. One solution is to fabricate a trustworthy brand name. 'Black&Decker' is an example of a brand name; every drill they produce is the same patent and quality. If a customer is satisfied with a specific drill, he will transfer these positive expectations to other products produced by 'Black&Decker'. Consequently, a good reputation manifested over time can be transmitted to a great variety of products. If one can prove that the product has survived for a long period of time, advertising that it has existed 'since 1850', there is a greater possibility of transmitting trust to the customer.

Another form of branding is the franchise system, where services are offered at different locations with different local owners. However, a fee is paid to the parent company owning the concept. 'Meineke' is an example of a franchise that offers the service of car repair. If we suppose a motorist is driving through Iowa and his car breaks down, what car repair company would he choose? Joe's Auto Repair or Meineke? Whom would he trust the most? The answer is most probably the franchise company. There is a possibility that the

**Textbox 2: Brand names: "Stressless"**

*Jens Petter Ekornes is leader of Norway's largest furniture industry, with 1700 employees. The company had great success in the 1980s with the brand name 'stressless' (leather chairs). He claimed in the Norwegian magazine 'økonomisk report' that he had a rule in life: 'one should not have more business than one has trust to manage, no more, no less. Trust, he said, was the biggest value to own, and it cannot be observed in the balance of payments. To build this trust, especially in the case of a brand name, the consumers have to know us personally, and have confidence in us. They have to trust our intentions, our dealings with people, how we think and how we work' (Haavik 2002, p.42). Hence, trust is especially important when a brand name is involved.*

motorist has had prior experiences with the same company, or there is trust due to the fact that the franchisee owning this particular outlet is pressured by the parent company to deliver a certain quality. In this case the franchise functions as a middleman between the customer and the franchisee.<sup>117</sup>

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<sup>117</sup> This example is also illustrated in Klein (1997).

This brings forward the final point that a market can develop middleman services that may reduce the problem of mistrust and consequently reduce transaction costs. Such middleman services are, for example, financial services, logistics firms such as FedEx and UPS or multinational retailers such as Hennes and Maurits and WalMart that have frequent dealings with consumers and suppliers, creating a bridge of trust in the market. Consumers know the products and the quality they can expect in these stores and the suppliers know the requirements that are expected of them. The GATS agreement has structured the international laws for financial, transportation, trading, telecommunications and professional services.

To summarise, if the 'lack of trade' over distance is caused by a lack of trust, then the market can to some extent create its own solutions through branding, franchising and middleman services. However, if an enormous number of brands are designed, they might not have a trust-creating effect because there is a lack of information. Institutions like the WTO can create a more stable and transparent system that may spur trust between trading partners. Yet, this would demand more resources for such an international system. If trade is not reduced by a barrier but is caused by preferences in the home countries, these measures would not have an impact, and one can do little to prevent the 'border' and 'distance effect'.

These sectors are growing in the developed world and are increasingly traded across borders. Some of these services can facilitate trade transactions in markets that have unstable financial markets and communication lines. Developing countries may earn from such a process by increasing the possibility of getting credible warranties, guarantees and stable telephone and communication lines. However, critics claim that developing countries will be landed with expensive systems from the North, creating an advantage only for the companies in the rich countries and the rich population in the poor world. The consequences of further trade in services are not clear, but one should not expect services to be greatly different from trade in goods. Economists generally agree that trade creates welfare benefits for all parties that are involved in a trade transaction.

## 4. Conclusion

In the introduction I asked the question 'Why do Norwegians trade more with Germans than Ecuadorians?' This is a phenomenon I have tried to address in this report. It seems like a very simple issue; still, it has many puzzling aspects. The intriguing part is that transportation costs and formal barriers cannot explain why we trade so much more with countries in near proximity.

Several reasons are emphasised in the literature, and some of them have been presented in this report. The main focus has been on trust and information, a source of explanation I find very plausible. This view focuses on the increased search costs that are induced under international transactions. The costs increase because potential traders tend to have less information about distant locations, and there is a diminishing probability of finding trustworthy trading partners.

Trust can function as a safeguard in transactions, creating co-operation between individuals in situations entailing risk. International trade can be assumed to be more risky than national trade, making safeguards more important. Yet, trust is difficult to create over longer distances owing to the reduced probability of finding individuals sharing the same characteristics e.g. the same language, ethnicity, religion and culture, factors that create a meso-level type of trust. An interpersonal type of trust is also more frequent in proximate regions, because this type of trust is dependent on frequent interactions, which are more probable in the local environment.

Networks can diminish search costs, because of trusting relationships and interpersonal information. This again reduces trade over distance, because networks are frequently local, and absorb some of the possible trade with foreign countries. International networks do exist, facilitating trade over national borders; yet, this is not a common phenomenon.

Another interesting phenomenon discussed in this report is the ability of information and communication technology (ICT) to reduce search costs and the 'distance effect'. The differing consequences for standardised and differentiated goods are emphasised. Standardised goods have a fixed price and can be exchanged on an organised market. I argue that ICT will reduce the search costs for these products, due to the effective search engines and marketplaces that have been created through use of the Internet. Some scepticism is articulated when it comes to differentiated goods. These are dependent on quality inspection and contract specifications, and are not suitable for trade on a spot market. These transactions are more dependent on trust and will probably be less influenced by ICT. The reason for this is that modern communications at the present stage mostly convey objective information, not personal trustworthy information. ICT can function as a good way to maintain contacts, but is less capable of initiating trustworthy relationships. However, there are initiatives around the world to create systems of trust adapted to the Internet so as to reduce this problem.

Finally, to conclude: we trust our familiar network more than distant relations, reducing the possibility of long-distance trade. ICT has not yet created a possibility of transmitting 'handshakes', hence, distance is not yet dead.

## 5. References

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## 6. Appendices

### A1) Communication and Computer Costs, 1960-2000<sup>118</sup>

Year	Cost of a 3-minute Telephone Call, New York to London (in 2000 US\$)	Price of Computers and Peripheral Equipment Relative to GDP deflator (2000 = 1000)
1960	60.42	1,869,004
1970	41.61	199,983
1980	6.32	27,983
1990	4.37	7,275
2000	0.40	1,000

### A2) Transport costs, 1830-1990<sup>119</sup>

Year	Ocean Transport		Average Air Transportation Revenue per Passenger Mile (in 1990 US\$)
	Wheat, Percent of Production Costs	Ocean Freight 1920 = 100	
1830	79		
1850	76		
1880	41		
1910	27.5		
1920		100	
1930		65	0.68
1940		67	0.46
1950		38	0.30
1960		28	0.24
1970		29	0.16
1980		25	0.10
1990		30	0.11

### A3) The 'rational model' of trust

With trigger strategies and assuming the other player co-operates, the pay-off to a player if he

co-operates, is  $\sum_{t=1}^{\infty} 3d^t$ . Similarly, if he deviates, the pay-off is  $5 + \sum_{t=1}^{\infty} (-1)d^t$ . For co-

operation to be at equilibrium, we then need:

$$\sum_{t=0}^{\infty} 3d^t \geq 5 + \sum_{t=1}^{\infty} (-1)d^t$$

Solving yields:

<sup>118</sup> World Economic Outlook, May 1997, table 11, updated to 2000; U.S. Commerce Department, Bureau of Economic Analysis, cited from Masson (2001), p.6.

<sup>119</sup> Table from World Economic Outlook, May 1997, table 11, supplemented with some data from Baldwin and Martin (1999), cited in Masson (2001), p. 5. The first column represents the share of costs used on ocean transport when producing wheat. The second column shows the price reduction in ocean freight in relation to 1920. The third column indicates the average air transportation revenue per passenger mile.

$$\frac{3}{1-d} \geq 5 - \frac{d}{1-d}$$

Or equivalently:

$$d \geq \frac{1}{3}$$

#### A4) Commodity Export Dependence Greater than 50% for Developing Countries, 1997<sup>120</sup>

Countries	Commodities as % of Merchandise Exports		Leading Commodities
	1980	1997 unless otherwise stated	
Africa (39)			
Mauritania	99.6	99.9	Iron ore, fishery
Chad	85.4	99.9	Cotton, meat
Sao Tome and Principe	...	99.9	Cocoa, copra, coffee
Gabon	95.2	98.1	Fuels, manganese ore, wood
Angola	87.1	97.7	Fuels
Rwanda	99.6	97.7	Coffee, tea, tin ore
Niger	98.0	97.6 (1996)	Uranium, livestock
Nigeria	99.7	97.4	Fuels
Congo, Rep.	93.3	97.3	Fuels, wood, sugar
Algeria	99.7	97.2	Fuels
Sudan	99.2	97.2	Cotton, animals, sesame seeds
Libya	99.6	96.1 (1991)	Fuels
Guinea-Bissau	91.8	95.8	Nuts, fishery
Burundi	96.3	95.7	Coffee, tea
Somalia	...	95.5	Live animals, fishery, bananas
Benin	96.6	95.4 (1996)	Cotton, fuels
Gambia	93.2	92.8	Peanuts, fish, cotton lint, palm kernels
Malawi	93.6	92.7	Tobacco, tea, sugar
Ghana	99.1	92.3 (1992)	Cocoa, aluminium, wood
Cameroon	96.2	92.0	Fuels, wood, coffee
Ethiopia	99.8	88.8	Coffee
Zambia	84.0	88.5	Copper, zinc
Mali	98.7	83.9	Cotton, gold
Mozambique	81.8	83.3	Fishery, nuts, cotton
Guinea	99.3	82.5 (1996)	Bauxite, aluminium
Togo	89.4	80.5	Phosphate rock, cotton, coffee
Tanzania	85.9	78.2 (1996)	Coffee, cotton, cashew nuts, minerals, tobacco, sisal
Kenya	87.9	74.4	Tea, coffee, fuels
Burkina Faso	89.2	73.7	Cotton
Madagascar	93.7	72.1	Coffee, vanilla, cloves, shellfish, sugar
Uganda	99.3	70.7	Coffee, cotton
Zimbabwe	64.2	70.4	Tobacco, nickel, cotton

<sup>120</sup> From World Bank, Statistical Information Management and Analysis (1999).

Countries	Commodities as % of Merchandise Exports		Leading Commodities
	1980	1997 unless otherwise stated	
Côte d'Ivoire	95.3	70.0	Cocoa, fuels, wood
Namibia	...	69.2	Diamonds, metals, uranium, cattle, fish, skins
Egypt, Arab Rep.	89.1	59.7	Fuels, cotton, aluminium
Sierra Leone	60.1	57.8 (1996)	Diamonds, futility, cocoa, coffee, fish
Central African Republic	73.8	57.4	Wood, live animals, cotton
Morocco	76.0	50.6	Food, beverages, phosphates
Senegal	84.9	50.2	Fish, nuts, petroleum, phosphates, cotton
Asia (15)			
Yemen, Rep.	53.0	99.4	Fuels
Papua New Guinea	96.8	96.0 (1993)	Gold, copper ore, oil, logs, coffee, palm oil, cocoa
Saudi Arabia	99.4	90.6	Fuels
Mongolia	...	89.8	Copper ore, live animals, wood
Myanmar	92.8	89.6 (1991)	Wood, pulses, rice
Kuwait	89.6	85.5	Fuels
Oman	97.1	83.4	Petroleum, fish
Iran, Islamic Rep.	95.2	83.2	Fuels
Syrian Arab Republic	93.4	82.6	Fuels
Laos	65.5	71.3 (1996)	Wood, live animals, coffee
Cambodia	35.8	65.8	Wood, rubber, soybeans
Vietnam	86.5	63.7 (1996)	Crude oil, marine products, rice, coffee, rubber, tea
Indonesia	98.0	57.7	Fuel, rubber
Philippines	79.0	55.4	Coconut oil, sugar
Jordan	66.2	51.3	Phosphates, fertilisers, potash, agricultural products
Latin America and Caribbean regions (17)			
Ecuador	97.0	91.2	Fuels, banana, fishery
Venezuela	98.3	88.0	Fuels, aluminium, iron ore
Paraguay	88.2	84.8	Cotton, soybeans
Chile	90.9	84.4	Copper, fishery
Bolivia	97.1	84.1	Metals, natural gas, soybeans, wood
Peru	83.2	83.5	Metals, fishmeal, petroleum, coffee, cotton
Panama	91.1	82.6	Bananas, shrimps, sugar, coffee
Nicaragua	86.2	75.4	Coffee, seafood, meat, sugar, gold, bananas
Costa Rica	71.1	74.6	Coffee, bananas, textiles, sugar
Honduras	87.5	72.5	Banana, coffee, fishery
Guatemala	75.8	69.8	Coffee, sugar, bananas, cardamom, petroleum

Countries	Commodities as % of Merchandise Exports		Leading Commodities
	1980	1997 unless otherwise stated	
Colombia	80.4	69.1	Fuels, coffee, banana
Argentina	76.8	65.8	Meat, wheat, corn, oilseeds, fuels
Uruguay	62.1	63.1	Wool, meats, rice, fish and shellfish
El Salvador	69.6	61.2	Coffee, sugar, shrimps
Guyana	...	61.0	Sugar, rice, bauxite
Trinidad and Tobago	95.0	56.2	Fuels, sugar
Europe & Central Asia (12)			
Armenia	...	87.0	Gold, aluminium
Kazakhstan	...	82.2 (1996)	Oil, metals, grain, meat, coal, wool
Turkmenistan	...	78.1 (1996)	Natural gas, cotton, petroleum
Moldova	...	77.3	Foodstuffs, wine, tobacco
Russian Federation	...	76.8	Petroleum, natural gas, wood and metals
Ukraine	...	73.3	Metals, food
Tajikistan	...	73.2	Cotton, aluminium, fruits, vegetable oil
Azerbaijan	...	73.2 (1996)	Oil and gas, cotton
Bulgaria	...	64.5 (1996)	Agriculture and food, metals, minerals, fuels
Kyrgyz Republic	...	61.6	Wool, cotton, meat, gold, uranium, tobacco, mercury
Georgia	...	57.8	Citrus fruits, tea wine and other agricultural products, metals
Macedonia, FYR	...	54.2	Food, beverages, tobacco

#### A5) Estimation in the investigation by Rangan and Lawrence (1999)<sup>121</sup>:

$$(7) \quad U.S.Im\ ports_{ijt} = \mathbf{a}_{ij} + \mathbf{b} * U.S.GDP_{it} + \mathbf{g} * ExchRate_{ijt} + \mathbf{d} * Im\ porterFirmSize_{it} * ExchRate_{ijt} + \mathbf{e} * Time_t + \mathbf{z} * LaggedForeignR\&D/Sales_{ijt} + \mathbf{h} * MNE_{ijt} * ExchRate_{ijt} + \mathbf{q}_{ijt}.$$

The subscript i, j and t, represent industry, country and year. All variables are entered in natural logs, except the time trend and the R&D/Sales ratios. The coefficients of the time trend and the R&D/Sales ratios represent the elasticity of US imports to a one percent increase in the respective independent variables.

<sup>121</sup> For specifications of the equation see Rangan and Lawrence (1999) p. 21.

# Summary

This report explores the facts behind the buzzwords 'globalisation' and 'the new economy'. In general we associate these concepts with a borderless world where economic transactions are managed through rapid electronic communication. This notion is questioned in this report, which presents an overview of investigations that have been conducted on trade flows. They conclude that trade is drastically reduced by distance and borders, contradicting the notion of a borderless world. The report emphasises, furthermore, that this phenomenon cannot be explained only by transportation costs. Another barrier to trade has to exist. The report outlines different possible explanations of this phenomenon, but focuses strongly on the significance of trust in transactions. It concludes that there is a range of explanations working together to explain why there is less trade over longer distances. However, the reduced possibility of finding trusting relations at distant locations is presented as a strong argument and a possible solution to the 'mystery of the missing trade'.

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