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## Geography, Trade and Growth: Problems and Possibilities for the New Zealand Economy

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# Geography, Trade and Growth: Problems and Possibilities for the New Zealand Economy

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view to inform and stimulate wider debate.

# Abstract

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This paper discusses the latest thinking in the relationships between the economics of trade, geography and industrial clusters. The aim of the paper is to explain the relevance of these various arguments for the economy of New Zealand and to suggest a possible public policy role for overcoming the growth problems associated with geographic periphery. As we will see, much of the current thinking on the relationships between geography, trade and clusters implies that New Zealand's long-term growth prospects are rather weak. However, it will be argued here that a detailed consideration of these relationships, plus some evidence from the UK, also provides some guidance as to possible strategies which New Zealand can employ to promote growth. In particular, the development of public policies which are specifically aimed at reducing the spatial market-area constraints of the New Zealand small-firm sector may be worthwhile.

**JEL CLASSIFICATION** R110; F120; L140

**KEYWORDS** trade; geography; clusters, exports, public policy

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# 1. Introduction

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The intention of this paper is to highlight some of the potential impacts of the geographical location of New Zealand and its low population levels on the future trade patterns and growth performance of the New Zealand economy. The approach of this paper is slightly different to some of the existing literature on the subject (Skilling 2001 a,b; Hansen 2002) in that we adopt a transactions-costs perspective in order to unpick many of the complex interrelationships which exist between these issues. This approach then allows us to identify which particular aspects of this debate are relevant to the New Zealand economy and New Zealand public policy.

Over the last two decades there have been various analytical breakthroughs within the fields of economic growth, trade and economic geography which have forced analysts to reconsider how these phenomena are related. Within the growth literature, the work of Romer (1986, 1987) and Lucas (1988) has re-focused our attention on the role which the effects of 'learning-by-doing' (Arrow 1962) and human capital acquisition can play in improving the productivity of factor inputs. It is argued that differences in these learning effects can allow for differential shifts in the relative long-term equilibrium growth rates of different economies. For example, between any two economies with equivalent factor stocks, the economy which benefits from strong learning effects will be expected to exhibit a relatively higher equilibrium growth rate than the economy without such strong learning effects. On the basis of this argument, it would appear on face value that countries with a highly educated labour force, such as New Zealand, ought to be expected to maintain a high equilibrium growth rate over a long period. However, the argument implicit in these models is rather more subtle than this. This is because many technological changes are seen to embody certain features (Arthur 1989) which may (Lewin 2002) have implications for not only the levels, but also the patterns and characteristics, of long-term investment. There may be differences in the extent to which such learning processes take place even between advanced OECD economies, and understanding the reasons for these differences across countries brings us to the question of the relationships between growth, trade and geography. What is it about geography and geographical trade patterns which determines the extent to which growth processes take place locally?

Since the late 1980s there has been a widespread revival of both academic and public policy interest in the links between geography, trade and economic growth. This interest is not confined to any particular part of the world, although the major emphasis of these discussions has tended to take place among OECD countries. There are several reasons for the recent renewed interest in the role which geography plays in determining economic growth; one reason is technological, a second reason is institutional, and a third reason is analytical.

The primary technological development which has contributed to the renewed interest in the economic impacts of geography, has been the rapid improvement in information, communications and transportation technologies. These technological advances have improved the ability of corporate and government decision-makers to coordinate either market or organizational activities across progressively larger geographical areas. This is because the new technologies provide for the better planning and control of activities across multiple locations, resulting in an improved ability to exploit intra-marginal differences in international and interregional rates of return. It is not clear, however, whether these developments will alter the spatial distribution of economic benefits on a global basis, in comparison with the existing patterns determined by previous technological regimes. Yet, where any such changes do actually occur, these changes will be generated by changes in the geographical patterns of trade and growth.

At the same time as these technological changes have taken place, there have also been widespread institutional changes within the global and regional trade frameworks. The movements towards free-trade and integrated market areas such as EU, NAFTA, ASEAN and MERCOSUR, have meant that the tariff structures associated with national borders may be becoming progressively less important in terms of their effects in shaping a nation's economic performance (Clement et al. 1999; Yeung 1999). These issues tend to be more relevant to the secondary manufacturing and tertiary service sectors rather than the primary agricultural and extraction sectors, many of which are still highly protected. In particular, reduced trade barriers may lead to both quantitative and qualitative changes in the spatial patterns of investment both within and between countries. Any such changes may lead to differential growth impacts between different geographical areas, and once again, such issues require us to ask questions about the relationship between geography, trade and growth.

The combination of these technological changes and institutional changes has encouraged widespread discussions about the supposed economic and social impacts of globalisation on the gap between rich and poor countries. Of particular interest to the case of New Zealand, however, is whether any changes in the spatial patterns of trade and growth, associated with either changes in communications technology or trade barriers, will tend to favour geographically central or peripheral countries, irrespective of their levels of development.

In these discussions, the question of whether or not there are any adverse consequences associated with geographical peripherality, depends primarily on whether or not economic integration is seen as a universal equilibrating growth mechanism. Evidence from common trade areas suggests that lower tariffs, trade barriers and communication tend to favour low wage peripheral economies, primarily via inflows of capital. The results of this equilibrating process imply a convergence in incomes across spatially differentiated markets (Barro and Sala-i-Martin 1992), and this process may benefit peripheral economies such as New Zealand. Yet the robustness of these convergence observations appears to be very dependent both on the time scales of analysis (Fingleton and McCombie 1998; Armstrong 1995) and also on the individual spatial units chosen for the analysis (Cheshire and Carbonaro 1995).

On the other hand, there is much analytical evidence to suggest that the growth effects of continuing economic integration may be quite different between different areas. In particular the work of two key commentators, Paul Krugman (1991) and Michael Porter (1990), has opened up discussions of the role which geography plays in economics and business matters, to a much wider academic and policy-making audience than was previously the case. The work of Krugman (1991) has led to the development of the so-called 'new economic geography' literature, which argues that the uneven distribution of industrial activities across space is a natural result of market processes. Meanwhile the work of Porter (1990) has fostered the literature promoting the importance of industrial 'clusters'. The primary lessons from these two literatures are that geography really does matter in determining economic performance, and geographic peripherality can have adverse consequences. In particular, there are strong reasons to expect systematic growth advantages accruing to central areas in which there are concentrations or 'clusters' of industrial activity (Porter 1990) over geographically peripheral regions (Krugman and Venables 1990; Overman et al. 2001).

Such 'new economic geography' and 'clustering' arguments may be of real concern to countries such as New Zealand, because they imply that many of the previous advantages of New Zealand may become continuously eroded relative to other areas. This has given rise to a debate within New Zealand concerning the consequences of geography and scale for New Zealand's long-run growth prospects (Skilling 2001a,b; Hansen 2002). However, the validity of these various arguments and conclusions, not only in the case of New Zealand but also more generally, depends largely on the specific

assumptions we make concerning the characteristics which are ascribed to geographical transactions costs.

Information communications costs, transportation costs and institutional tariff barriers, can all be considered to be just different forms of market transactions costs. Yet, each of these various types of transactions costs are explicitly geographical both in nature and impact. Any changes in the levels or structure of these spatial transactions in any particular geographical region, will have profound impacts for the patterns of international and interregional trade in that region, and also between that region and any other region. Therefore, in order to understand the possible economic growth impacts of possible changes in the international and interregional transactions costs faced by New Zealand firms, it is necessary to consider both the nature of these transactions costs and also the nature of the New Zealand economy.

As we will see in this paper, interpreting the lessons and possible implications of these debates for the economy of New Zealand economy is rather complex because of the rather unusual geographical and structural characteristics of the New Zealand economy. From the perspective of economic geography the two dominant features of New Zealand are firstly, extreme geographical peripherality with respect to its major OECD trading partners, and secondly, very low absolute levels of urban concentration. Both of these features will have significant implications for the performance of the New Zealand economy in the newly-emerging institutional, technological and global trading environment.

In order to explain how each of these geographical economic characteristics of New Zealand may influence New Zealand's future growth and performance, we will initially deal with each of these issues separately. Firstly, we will discuss changes in the nature and structure of international transactions costs faced by New Zealand firms, and then secondly we will discuss the transactions costs issues associated with intra-national urban population levels. Subsequently we will attempt to provide an integrated approach to the discussion of these inter- and intra-national transactions costs phenomena in the context of the New Zealand economy. Finally, we will consider possible New Zealand government policy options associated with these various institutional and technological developments.

## 2. Spatial Transactions Costs

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Apart from institutional tariff barriers, the international spatial transactions costs faced by firms are primarily of two types: international transportation costs and international information transmission costs. In this section we will review the developments and changes in each of these two types of transactions costs in order to understand the transactions costs environment faced by New Zealand firms which competing in international markets.

### 2.1 Information costs

Since the 1980s we have seen dramatic improvements in the ability of decision-makers and planners coordinate activities across space. The primary reasons for these improvements have been the enormous technological developments in information technology, and also the advent of widespread usage of these technologies. These developments have meant that complex operations can now be managed both more efficiently and effectively than was previously possible. There are two aspects to these developments.

Firstly, the new information technologies have reduced the real costs of communicating across distance, allowing us to more efficiently control existing spatial arrangements of activities (*The Economist* 1999a). This is a common observation in industrial sectors and



activities where physical commodities are being moved across large distances, such as in the management of international importing and exporting supply chains (*Financial Times* 1999b) or the coordination of multinational manufacturing activities (*The Economist* 1999a). Analogous arguments also exist for the case of the service sectors, in situations where information rather than physical goods is being transferred across space. In many situations, information technologies employing satellite and fibre-optical technology allow for greater quantities of information to be transmitted at a much lower costs than was previously possible.

Secondly, the existence of these new information technologies also allows decision-makers to undertake the coordination of spatial arrangements of activities which were previously not possible. This is evident in examples such as international accounting, where New York banks transfer their book-keeping requirements overnight to firms in Dublin, in order to have them updated in time for the opening of the money markets the next day. Other examples include Silicon Valley firms which subcontract software development activities to firms in Bangalore India, while still maintaining daily contact and control of the Indian software development process from California. Meanwhile, for service industries such as finance and marketing, the new possibilities provided by information technologies for the supply of information-based services across global space appear almost unlimited (*The Economist* 1999a).

The reductions in the real costs of transmitting information across space, which are associated with these new information and communications technologies, would suggest that geographical peripherality is becoming relatively less of a handicap to accessing international markets. From the perspective of New Zealand, such observations would appear to be beneficial, as they imply that any adverse competitive effects associated with geographical peripherality will have fallen over time.

On the other hand, however, there are some other arguments which suggest that over time the development of these information technologies is actually leading to increases in the costs of transmitting information across space, thereby increasing the relative importance of geographical centrality. The argument here is that an increase in the quantity, variety and complexity of information produced, itself increases the costs associated with transmitting this information across space. This is because much of the information will be of a non-standardized tacit nature, and the transmission of this type of information essentially requires face-to-face contact. Examples of this phenomenon are common in industries such as international merchant banking, where the complexity of many new financial products requires highly complex negotiations to be undertaken in order to guarantee their provision (Cohen 1998). The opportunity costs involved in not having face-to-face contact will consequently increase with the quantity, variety and complexity of the information produced. The effects of this will be to increase the costs of doing business across large geographical distances. As such, these arguments would suggest that geographical peripherality may become progressively more of a handicap to business growth due to the increased relative costs of distance. These latter arguments do not favour New Zealand.

## 2.2 Transportation costs

As we suggested at the beginning of this paper, transportation technologies have improved dramatically over recent years. Obvious examples of this include the growth in roll-on roll-off trucking, containerisation, rapid-turnaround shipping, and the increased efficiency and frequency of airline services. As with information transmission, the reductions in the real costs of transporting goods associated with these new technologies would suggest that geographical peripherality is becoming relatively less of a handicap to accessing international markets. Once again, from the perspective of New Zealand, such observations would appear to be beneficial, as they imply that any adverse competitive effects associated with geographical peripherality will have fallen over time.

On the other hand, the quantity, variety and complexity of market information generated in the modern economy is increasing. This also implies that in many industries which involve the production or shipping of goods across space, the variety and complexity of the logistics operations being undertaken will also increase. The reason for this is that as modern consumer demand requirements become more sophisticated, there is an increasing preference for goods shipments characterized by speed, reliability and timeliness. In other words, the consumer's opportunity costs of time have also increased for goods shipments.

Modern household and industrial consumers now require a level of service customisation and delivery speed, which previously was not considered either so important or even possible. As the demand for delivery speed increases, the associated opportunity costs of lead-times also increase, and the average inventory levels maintained will fall. The effects of this on distance costs can be explained by adopting a similar argument to that employed above. For any two agents at a given distance apart, the optimised delivery frequency increases as the opportunity costs of time increase.<sup>1</sup> Analytically, the effect of this is to increase the transactions costs associated with shipping goods over any given distance. The spatial outcome of this argument is that potential customers and suppliers will tend to move closer to each other as the variety and complexity of market information increases.

The most extreme example of this trend towards more frequent shipments, is the application of Just-In-Time (JIT) manufacturing and distribution techniques, the influence of which has pervaded all areas of modern production, distribution and retailing. New information technologies allow firms to coordinate logistics activities across huge geographical areas in a very sophisticated and timely manner. In the new JIT production and distribution arrangements (Nishiguchi 1994; Schonberger 1996), it is necessary to control the flows of goods between firms to a very high degree, in order to ensure the timeliness of deliveries. The ability to track and monitor the speed of movements of goods therefore becomes essential, particularly if the goods are being shipped over significant distances.

Similar arguments also hold for the case of customized high-speed mail services. Yet, these technological developments have also lead to a change in consumer behaviour. Both household and industrial consumers now expect goods to be delivered JIT. As such, the nature of demand for transactions across space has changed dramatically. Customers now require much shorter lead-times than was previously possible, and the spatial effect of this is to encourage potential suppliers and customers to move closer to each other.

There is a range of empirical evidence which suggests that the spatial transaction costs involved in shipping of goods have indeed increased over the last two decades, because of this demand for more frequent deliveries. Firstly, the average inventory levels for almost all manufacturing and distribution sectors in the developed world have fallen dramatically since the 1980s, relative to the value of output (Shonberger 1996; *Financial Times* 1998). This implies that the average lead times of goods-shipments have fallen over recent years, with a concomitant increase in goods-shipment frequencies. Secondly, by carefully disentangling the various components of transport costs it becomes clear that the proportion of global output which is accounted for by logistics and transportation activities in the economy has not fallen over recent decades (Hummels 1999; *Financial Times* 1997). Thirdly, while the transportation cost component of bulk materials has indeed generally fallen, in the case of manufactured goods, there is evidence that this proportion has actually increased over the recent decades, in spite of the improvement in transportation and logistics technologies (Hummels 1999). Fourthly, industries which are very dependent on JIT shipments have tended to reorganise their trade patterns in favour of geographically close suppliers and customers (Reid 1995; McCann 1998). Moreover,

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<sup>1</sup> As with the case above, the envelope result (McCann 1993, 1995, 1998, 2001b) turns out to be a non-linear square root function of all cost variables.

this behaviour is even evident in industries in which the product value-weight ratios are extremely high (McCann and Fingleton 1996). In other words, such localization behaviour is present in the very industries which traditional Ricardian trade theories would have ruled out.

## 2.3 Changes in international transactions costs

Glaeser (1998) argues that taking a broad view of all the empirical evidence indicates that the aggregate share of total output accounted for by transportation costs has fallen markedly over time. If we follow the straightforward technological arguments outlined above which suggest that information transmission costs and international transportation costs have both fallen over time, we could also conclude that geographical peripherality is becoming much less of a competitive disadvantage for accessing international markets than it might have been previously. This is because the supply of activities, goods or services will become progressively cheaper and easier over greater spatial scales, due to better management and delivery possibilities provided by the new transport and communications technologies.

These reduced costs of doing business over large geographical distances also imply that the range of activities supplied across all spatial areas will tend to converge. The reason for this is that a general reduction in spatial transactions costs will reduce any missing markets associated with transactions costs inefficiencies. As such, the advent of these new transport and communication technologies suggests that international differences in geographical location would appear to become successively less important over time in determining the range of products and activities available to any particular country. Some authors have even assumed that eventually this would lead to the death of geography as an issue in its own right (Toffler 1980; Naisbitt 1995).

On the other hand, however, as we have seen here, there are also arguments which suggest that the development of the information technologies themselves is actually leading to increases in the costs of doing business across space. Information technology alone obviously reduces the costs associated with transmitting particular quantities and types of information across space. However, an additional aspect of these technologies is that they also lead tend to lead to an increase in the quantity, the variety, and the complexity of the information and goods being transported across space.

As the quantity, variety and complexity of the information being produced increases, the question arises as to the nature of the costs involved in transmitting this increasingly complex and varied information across space. At issue here, is the question of exactly how we define geographical transactions costs. When considering the costs of conducting business over large geographical distance, it is essential to consider both the costs involved in transporting both goods and information across space, as well as the opportunity costs involved with lower frequency business interactions.

The preceding sections provide a range of arguments and evidence which suggest that the real costs involved in transacting information and goods across space have both decreased and increased over recent decades. However, these apparently conflicting conclusions can be reconciled in that the different types of changes in transactions costs described above have tended to take place in different types of sectors and activities. Taking a broad view of the issues, it appears that most of the evidence points to falling international and geographical transactions costs for existing types of activities.

The sectors in which spatial transactions costs have indeed fallen significantly over recent decades, are generally the sectors in which the nature of the spatial transactions undertaken have not changed fundamentally over time, in terms of the required frequency of interaction. This is typically the case in many raw material, agricultural or extraction industries, and in industries producing manufactured products at a mature stage within

their product cycles (Vernon 1966). This is also the case in service sector industries in which the nature of the information being transacted is rather standardized, such as retail banking. In other words, where the nature and characteristics of the transactions have not changed, then international transport and transactions costs have fallen steadily over time. In these cases, geographical peripherality would appear to be less of a disadvantage than it might have been previously.

On the other hand, in production sectors in which the demand lead-times have fallen dramatically, or in industries in which the variety and complexity of information generated has increased significantly, spatial transactions costs would appear not to have fallen over recent decades, and in some cases will actually have increased. Where such costs may have risen over time, it appears that this is a result of the fact that the nature and characteristics of such transactions have changed, thereby violating the *ceteris paribus* criterion. In these cases, the requirement for geographic proximity would appear to have increased, and the potential disadvantages of geographical peripherality would appear to have increased.

In the following sections we will distinguish explicitly between these two types of effects; one which acknowledges falls in existing standardised types of international transactions costs, and one which allows for cost increases associated new types of spatial transactions costs. As we will see in the remaining sections of this paper, it turns out that transactions costs have tended to decrease for most international transactions, while transactions costs have tended to increase for transactions which are primarily contained within the geographic area of an individual country.

### 3. International Geographical Peripherality and Competitive Advantage

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From the perspectives of both trade and growth, the arguments implying falling international transactions costs broadly provide encouraging lessons for the New Zealand economy. The reason for this is that falling international transactions costs reduce the wedge between export origin (f.o.b.)<sup>2</sup> and destination (c.i.f.)<sup>3</sup> prices, thereby allowing geographically peripheral economies more efficient access to international markets, both in terms of production and consumption. New Zealand businesses will be better able to compete internationally because lower transactions costs will allow them to benefit to a greater extent from the comparative advantage provided by the relatively low domestic factor prices.

This could be manifest in either of two ways. Firstly, New Zealand businesses could charge significantly higher f.o.b. export prices, while still ensuring internationally competitive c.i.f. prices. Under this scenario, although New Zealand's export demand will remain largely unchanged, the returns to all domestic production factors will increase, thereby increasing New Zealand's GDP per capita for a given total c.i.f. export revenues. Alternatively, New Zealand firms could limit the growth of f.o.b. export prices in the face of falling international transactions costs, thereby allowing for lower c.i.f. prices in all export locations. The effect here will be a general increase in New Zealand's f.o.b. export revenues, for given domestic factor costs. Under this scenario, New Zealand businesses will also generate greater returns to all of the domestic factors. In both of these cases, therefore, the returns to the domestic capital employed, the levels of domestic wages, and GDP per head levels in New Zealand will all increase. From the perspective of New Zealand, the only real difference between these two scenarios is that the export trade creation effects are rather differ, and these differences depend on the global price sensitivity of New Zealand's exports.

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<sup>2</sup> Free on board

<sup>3</sup> Cost, insurance, freight

In terms of economic growth, the effects of any reductions in international transactions costs depend firstly, on whether such reductions are stepwise or continuous, and secondly on the existence of economies of scale. If any reductions in international transactions costs are simply a stepwise, once-and-for-all phenomenon, geographically peripheral economies will not be expected to experience growth effects which are consistently different from more centrally located areas.

On the other hand, if reductions in international transactions costs are broadly a continuous phenomenon, as would be expected with steady technological progress, geographically peripheral areas would be expected to consistently generate economic growth levels which above those of geographically central economies. This resulting strong growth performance would then encourage in the inflow of production factors into New Zealand seeking higher factor rewards, which itself will encourage further growth. This argument is the basis of the Borts and Stein (1964) and Barro and Sala-i-Martin (1992) convergence models, which were initially applied to the processes of economic integration across the large geographical areas of the USA and EU, respectively.

However, orthodox neo-classical models of economic growth, factor allocation and trade, assume that these convergence processes are more generally applicable to an ever-increasingly integrated world. Consequently, these arguments imply that geographically peripheral economies such as New Zealand will experience a relatively high growth performance as we face steady reductions in international transaction costs. Obviously, the converse arguments also hold in situations where we face steadily increasing international transactions costs. However, given that most evidence tends to suggest that international transactions costs are falling steadily over time, these arguments provide countries such as New Zealand with reasons to be optimistic.

These generally optimistic observations associated with falls in international transactions costs hold as long as the aggregate production functions of New Zealand and its major competing economies experience largely constant returns to scale. However, the 'new international trade' (Helpman and Krugman 1985; Krugman and Venables 1990) and 'new economic geography' literature (Fujita et al. 1999) suggests that the spatial patterns of economic growth will be quite different, depending on the extent to which varying levels of economies of scale are operative in different locations.

The new international trade and new economic geography literature suggests that if individual economies experience economies of scale, falling international transactions costs will benefit the larger and more centrally-located economies, at the expense of the geographically peripheral economies. The primary reason for this is that these models assume that market size and centrality provides for a greater level of industry diversity within a local area. This local diversity leads to a greater variety of products which are affordable to both local household and industrial consumers, in comparison with other areas.

In microeconomic terms, within the new economic geography schema, the hypothesised outcomes of this phenomenon are that local firms are able to exploit economies of scale and local consumers are able to achieve higher levels of satisfaction than is the case with other less diversified areas. Under these conditions, the new international trade and new economic geography literature therefore implies that high international transactions costs act in manner which is analogous to that of high trade tariffs, in which the peripheral economies are protected from the external competitive pressures of the larger more central economies. In such protected situations, domestic producers are allowed to continue in business, because the high transactions costs and trade barriers rule out the competitive advantages of the larger or more centrally-located external producers.

On this type of argument, generally falling international transactions costs will not be advantageous to New Zealand, because domestic New Zealand businesses will become

progressively more open to competition for overseas competitors (Krugman 1996). As such, although the global trading system as a whole will benefit from such falls, the relative distribution of such benefits will not favour New Zealand, unless New Zealand can itself generate significant exhibit economies of scale. These arguments provide countries such as New Zealand with reasons to be rather pessimistic.

In the face of generally falling international transactions costs, the key question therefore raised by these new international trade and new economic geography arguments is, are the major competitor economies of New Zealand more or less likely to exhibit economies of scale than New Zealand? Alternatively, in situations where international transactions costs have increased, is New Zealand in a position to take advantage of the natural geographical concentration effects of such cost increases? To answer these questions it is necessary to discuss economic growth behaviour at much smaller geographical scales and dimensions than are implied by the international trading system; namely that of the scale of the individual country and more particularly, at the scale of the individual metropolitan urban area within the individual country economy.

## 4. Agglomeration Economies and Economic Growth

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To what extent will New Zealand be able to generate sufficient domestic economies of scale in order to compensate for the reduced domestic trade protection effects associated with falling international transactions costs? In attempting to answer this question, it is first necessary to consider the underlying factors which determine the not only the generation of economies of scale, but also the uneven spatial distribution of such scale economies. Then we can apply these analytical and empirical arguments to the particular case of New Zealand.

The current thinking on these issues generally revolves around the notion of industrial clustering and the associated potential benefits of external agglomeration economies. The existence of domestic agglomeration economies within a country may allow for a more rapid economic growth on the part of the country as a whole. Here the arguments tend to focus on the role which geographical proximity can play in the fostering, facilitating and nurturing of flows of inter-firm information which then allow for the local generation of mutually beneficial information externalities. This kind of logic underlies each of Alfred Marshall's (1920) three explanations for the existence of positive agglomeration externalities in situations of urban industrial clustering.

Marshall's first observation concerned the existence of 'informal' information spillovers, where informal refers to the fact that they are non-traded information spillovers between agents, primarily of a tacit nature. Such informal and tacit information spillovers can take place between geographically proximate agents, in cases where all the agents are firms, or where some of the agents are units of labour. Marshall's assumption is that information spillovers operate specifically at the level of the individual urban area, and it is over this spatial extent that transactions costs are assumed to become critical. In other words, from the point of view of information transactions, it is the geographical scale of the individual urban area which is critical in terms of determining economic performance. This is also the particular spatial logic which has been adopted by the 'new economic geography' models of Krugman (1991) and Fujita et al. (1999).

Marshall's second explanation for local external economies arises due to the presence of non-traded specialist local input providers, who find the investment in such input provisions profitable in situation where they are servicing locations of clustered producers of a similar sector. Once again, the validity of this argument depends on the availability of

local information allowing for not only the provision, but also the efficient consumption of these specialist inputs.

The third argument of Marshall in favour of the existence of local external economies is based on the fact industrial clustering permits the rise of specialist pools of skilled labour. Here, geographical proximity allows not only for a more efficient search and matching process within the labour market, but also an easier adjustment to adverse shocks within the local labour market, as long as the shocks are not correlated across sectors (Mills 1970). As such, Marshall's observations suggest that industrial clustering better allows both firms and workers to reduce the downside risk costs associated with investment in any particular capital technology, whether physical or human. Both net returns and profit growth will be maximised because the industrial clustering itself provides a mechanism for firm-employee matching within the local labour-matching process which requires a much reduced need for third-party intermediaries to undertake search activities. This appears to be particularly so for complex inter-firm production arrangements involving many small firms.

The Marshallian arguments outlined here provide possible explanations for the scale economy and efficiency benefits of industrial clustering. In the case of New Zealand, an economy with very small urban concentrations both with respect to OECD and global standards, these arguments may be a cause for concern because they imply that New Zealand may not benefit greatly from such agglomeration externalities. However, it is still not entirely clear why New Zealand should be concerned by these arguments. Just because there has been a recent increase in the perceived importance of these agglomeration phenomena as potential determinants of economic growth does not necessarily mean that there is any substantive change to the competitive conditions faced by the New Zealand economy. As we have already seen, there have been widespread technological and institutional changes which appear to have largely reduced many aspects of spatial transactions costs, thereby potentially benefiting peripheral economies. Similarly, large cities and industrial clusters have been a longstanding feature of our economic system, so why should there be a recent focus of interest on these questions?

In response to these arguments, Glaeser (1998) argues that if we consider the changes in the transactions costs of goods-shipments alone, then the rationale for industrial clustering and the existence of modern cities disappears. On the other hand, he argues that the transportation costs involved in ensuring that people have both widespread and frequent face-to-face contact across a range of individuals in order to facilitate the transfer of tacit information, is the crucial driving force behind the generation of modern cities and industrial clusters. In other words, the overcoming of increased modern information transactions costs is the primary rationale underlying the existence of modern cities.

Yet, although in principle we can accept the various arguments suggesting that geographical proximity is highly advantageous in many cases where information is varied and complex, empirically identifying the critical spatial extent which defines whether a location is advantageous or not is very difficult (Glaeser et al. 1992; Henderson et al. 1995). This problem is typical of the types of empirical problems encountered when dealing with externality issues. Indirect methods therefore have to be employed, such as observing the spatial patterns of patent citations (Jaffe et al. 1993; Acs 2002), joint-ventures (Arita and McCann 2000), joint-lobbying activities (Bennett 1998) or real-estate price movements (Gordon and McCann 2000). These empirical techniques tend to confirm the argument that many aspects of information spillovers are constrained primarily within the individual urban area, thereby implying that the urban area is often the critical geographical range of advantage for localised economies of scale.

In addition, there are two other sources of evidence which support the argument that spatial information transactions costs have increased over recent decades, thereby increasing the importance of the urban area as the potential source of economies of scale. The first source of evidence comes from observations of telephone usage patterns

(Gaspar and Glaeser 1998). Using data from Japan and the US they observe the relationship between the density and frequency of telephone usage and the location of the users.

Firstly, they find that users who are geographically closer together, and for whom greater face-to-face contact is therefore easier, spend more time talking to each other on the telephone, than do users who are at greater distances from each other. Secondly, the same result also holds for urban size, in that users in larger urban areas generally talk to each other more by telephone than users in smaller urban centres. Thirdly, the frequency of airline business travel has also increased more or less in line with the growth in telecommunications usage, after controlling for the effects of cost reductions. While this indirect evidence is not conclusive the point here is that the evidence suggests that communications technology and face-to-face communication tend to be complements rather than substitutes.

The second source of evidence suggesting that the individual urban area has become progressively more important as a source of economies of scale involves an assessment of the rates of global urbanization. Over the last three decades, the proportion of people living in urban areas has increased in all parts of both the developed and developing world (United Nations 1997). While the reasons for this are complex, and particularly in relation to the out-migration of labour from rural areas in developing economies, the ubiquitous urbanization phenomenon in the developed parts of the world where information technologies are mostly applied, also suggests that the geographical proximity of firms and people within individual urban areas is becoming relatively more important over time.

The implication of these empirical observations is that the individual urban industrial area is, if anything, becoming even more important nowadays as a determinant of domestic scale economies of than it was previously. The reason for this is that while international transactions costs are generally decreasing, the (opportunity) costs of the spatial transactions contained within individual countries are actually increasing. This is because information and communications technologies and face-to-face contact, are not necessarily substitutes for each other, but are often complements for each other.

In other words, a general increased usage of information and communications technologies often leads to an increase in the quantity, variety and complexity of the information produced, which itself leads to an increase in spatial information transactions costs, and an associated increased need for spatial proximity to facilitate face-to-face contact. At the same time, an increase in the levels of spatial proximity encourages a greater usage of information and communications technologies, and the production of more varied and complex information, such that the process becomes cumulative. Glaeser's arguments (Glaeser 1998; Gaspar and Glaeser 1998) therefore suggest that in the modern world, the Marshallian foundations of agglomeration externalities are becoming an ever-more significant determinant of domestic economies of scale.

Although in relative terms New Zealand is one of the most highly urbanised countries in the world (United Nations 1997), the low national population level means that all of the major cities of New Zealand are very small by international standards. Therefore, the Glaeser and Krugman arguments together appear to pose serious problems for the long-term growth prospects of New Zealand. The is because in a world of generally falling international transactions costs, the small urban scales of New Zealand's major cities will not sustain localised agglomeration economies which are sufficient to compensate the national New Zealand economy for the increased exposure to international market competition. The reason for this is that the New Zealand cities are not large enough to generate the sufficiently varied and complex tacit information transactions and input linkages required in order to sustain significant localised agglomeration externalities. The local input markets, where 'inputs' here are assumed to include all the qualitative varieties of factor and information inputs, are too 'thin' to provide string micro-foundations for local economies of scale.



According to these arguments even Auckland, with a total metropolitan population of the order of one million, will still suffer from this problem of input market weakness, because the other potential urban sources of market variety within New Zealand are all too far away to provide the required quality and quantity of inputs on a sufficiently frequent basis. The implication is that New Zealand firms in all domestic locations will therefore become successively more vulnerable to the vagaries of international markets, relative to similar firms in larger, more highly-urbanised economies. In other words, an inherent geographical-structural weakness within the New Zealand economy itself will limit New Zealand's ability as a geographically peripheral economy, to respond to the new international competitive pressures afforded by falling international transactions costs.

The agglomeration arguments of Glaeser and Krugman therefore provide grounds for serious concern on the part of New Zealand's policy-makers, because current changes in spatial transactions costs appear to lead to a process which does not favour New Zealand's long-term trade and growth prospects. Moreover, from this perspective the New Zealand government would appear to be very limited in its ability to influence the country's long-term trade and growth performance via intervention. On the other hand, a simple reliance on the market mechanism alone to correct for inefficiencies in the domestic economy, as a means of bolstering trade and domestic growth, would also appear to be entirely ineffective in the face of such long-term global economic changes.

## 5. Alternative Models of Industrial Clusters

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While the agglomeration arguments of Glaeser and Krugman imply that there is an inherent geographical-structural weakness within the New Zealand economy, there are other models of industrial clustering and growth, which are rather more circumspect in terms of their perception of the critical spatial extent of information transactions, externalities and growth. While the new economic geography models of Krugman (1991) and the urban agglomeration models of Glaeser (1998) are based on the assumption that the individual urban area is the critical spatial extent which defines geographic advantage or disadvantage in growth performances, two other types of clustering-interaction models suggest that growth mechanisms may take place over rather different spatial and population scales. As such, these two other types of models may provide some opportunities for optimism on the part of New Zealand's policy-makers, because they imply that the relationship between geography, trade and economic growth is rather more subtle than the simple Marshallian agglomeration model suggests.

These two other models are the '*industrial complex model*' and the '*social network model*', and they suggest that simple observations of the scale of urban population levels and industrial clustering will not necessarily be instructive as to the nature of localised growth mechanisms. In order to understand how the insights of these two additional models of clustering may be interpreted in the New Zealand context, we will first explain their particular foundations and transactions-costs characteristics in direct comparison to the agglomeration model outlined above.

In order to do this, we can adopt a transactions costs approach to present three stylised sets of geography-firm-industry organizational relationships (McCann and Gordon 2000; McCann 2001a; Simmie and Sennet 1999). The three stylised characterizations of industrial clusters are distinguished in terms of the nature of firms in the clusters, the nature of their relations, and transactions undertaken within the clusters. These three distinct types of industrial clusters can be termed the *pure agglomeration*, the *industrial complex*, and the *social network*. In reality, all spatial clusters or industrial concentrations will contain characteristics of one or more of these ideal types, although one type will tend to be dominant in each cluster. The characteristics of each of the cluster types are listed in Table 1, and as we see, the three ideal types of clusters are all quite different.

**Table 1 – Industrial Clusters**

<b>Characteristics</b>	<b>Pure agglomeration</b>	<b>Industrial complex</b>	<b>Social network</b>
<b>firm size</b>	atomistic	some firms are large	variable
<b>characteristics of relations</b>	non-identifiable	identifiable	trust
	fragmented	stable and frequent trading	loyalty
	unstable frequent trading		joint lobbying joint ventures non-opportunistic
<b>membership</b>	open	closed	partially open
<b>access to cluster</b>	rental payments	internal investment	history
	location necessary	location necessary	experience location necessary but not sufficient
<b>space outcomes</b>	rent appreciation	no effect on rents	partial rental capitalisation
<b>example of cluster</b>	competitive urban economy	steel or chemicals production complex	new industrial areas
<b>analytical approaches</b>	models of pure agglomeration	location-production theory	social network theory (Granovetter)
		input-output analysis	
<b>notion of space</b>	urban	local or regional but not urban	local or regional but not urban

## 5.1 The pure agglomeration model

Firstly, in the model of pure agglomeration, inter-firm relations are inherently transient. Firms are essentially atomistic, in the sense of having no market power, and they will continuously change their relations with other firms and customers in response to market arbitrage opportunities, thereby leading to intense local competition. As such, there is no loyalty between firms, nor are any particular relations long-term. The external benefits of clustering accrue to all local firms simply by reason of their local presence. The cost of membership of this cluster is simply the local real estate market rent. There are no free riders, access to the cluster is open, and consequently it is the growth in the local real estate rents which is the indicator of the cluster's performance. This idealised type is best represented by the Marshall (1920) model of agglomeration, as adopted by the new economic geography models (Krugman 1991; Fujita et al. 1999). The notion of space in these models is essentially urban space, in that this type of clustering only exists within individual cities.

## 5.2 The industrial complex model

Secondly, the industrial complex is characterised primarily by long-term stable and predictable relations between the firms in the cluster, involving frequent transactions. This type of cluster is most commonly observed in industries such as steel and chemicals, and is the type of spatial cluster typically discussed by classical (Weber 1909) and neo-classical (Moses 1958) location-production models, representing a fusion of locational analysis with input-output analysis (Isard and Kuenne 1953). Component firms within the spatial grouping each undertake significant long term investments, particularly in terms of physical capital and local real estate, in order to become part of the grouping. Access to the group is therefore severely restricted both by high entry and exit costs, and the rationale for spatial clustering in these types of industries is that proximity is required primarily in order to minimise inter-firm transport transactions costs. Rental appreciation is not a feature of the cluster, because the land which has already been purchased by the firms is not for sale. The notion of space in the industrial complex is local, but not necessarily urban, and may extend across a sub-national regional level. In other words, these types of complexes can exist either within or far beyond the boundaries of an individual city, and depend crucially on transportation costs.

## 5.3 The social network model

The third type of spatial industrial cluster is the social network model. This is associated primarily with the work of Granovetter (1973), and is a response to the hierarchies model of Williamson (1975). The social network model argues that mutual trust relations between key decision making agents in different organisations may be at least as important as decision-making hierarchies within individual organisations. These trust relations will be manifested by a variety of features, such as joint lobbying, joint ventures, informal alliances, and reciprocal arrangements regarding trading relationships. However, the central feature of such trust relations is an absence of opportunism, in that individual firms will not fear reprisals after any reorganisation of inter-firm relations.

Trust relations between key decision-makers in different firms are assumed to reduce inter-firm transactions costs, because when such trust-based relations exist, firms do not face the problems of opportunism. As such, these trust relations circumvent many of the information issues raised by the markets and hierarchies dichotomy (Williamson 1975). Where such relations exist, the predictability associated with mutual non-opportunistic trust relations, can therefore partially substitute for the disadvantages associated with geographic peripherality. Inter-firm cooperative relations may therefore differ significantly from the organisational boundaries associated with individual firms, and these relations may be continually reconstituted. All of these behavioural features rely on a common culture of mutual trust, the development of which depends largely on a shared history and experience of the decision-making agents.

This social network model is essentially aspatial, but from the point of view of geography, it can be argued that spatial proximity will tend to foster such trust relations over a long time-period, thereby leading to a local business environment of confidence, risk-taking and cooperation. Spatial proximity is thus necessary, but not sufficient to acquire access to the network. As such, membership of the network is only partially open, in that local rental payments will not guarantee access, although they will improve the chances of access. In this social network model space is therefore once again local, as with the industrial complex, but not necessarily urban, and often extends over a sub-national regional level. Once again, in this case, both information transactions costs and transportation costs may play a role in determining the importance of geographical peripherality.

The major geographical manifestation of the social network is the so-called 'new industrial areas' model (Scott 1988), which has been used to describe the characteristics and long-

term growth performance of areas such as the Emilia-Romagna region of Italy (Piore and Sabel 1984; Scott 1988), or to a lesser extent Silicon Valley in California. The Emilia-Romagna region has large networks of primarily small firms which are tied together by close personal ties. The trust networks evident between the firms allow the firms to arrange cooperative syndicates for certain types of activities, such that longer-term and more comprehensive investment programmes can be undertaken by the small firms than would be the case in an orthodox market mechanism. The result has been a continuous upgrading in the technology of the firms from traditional craft-based leather-goods activities to currently very high levels of technological inputs. There has also been some evidence of similar trust networks developing in the case of Silicon valley in California (Saxenian 1994), although this particular cluster appears to be primarily something akin to a pure agglomeration model (Arita and McCann 2000).

Meanwhile, the clustering model of Porter (1990, 1998) can also be argued to fit into this social network category. Although Porter assumes that the dominant competitive effects of clustering are mediated by information flows between firms and individuals within the urban sphere, the primary effect of which is to stimulate local competition by increasing the transparency associated with competitive improvements, he also acknowledges that such information flows may also extend well beyond the urban scale in situations where trust exists.

Both the industrial clustering model of Porter (1990, 1998) and the 'new industrial areas' model of Scott (1988), are therefore much less specific than the urban agglomeration about the particular spatial dimension which is critical in terms of information transactions costs. In cases where there are small-firm industrial structures, the spatial extent over which such trust relations operate will tend to be over small sub-national regional scales (Scott 1988; Porter 1990). On the other hand, in industrial structures characterized by large vertically-integrated firms, such trust relations may operate over much larger regional spatial scales, and in the case of contiguous small-area nations, these regional scales may extend beyond the individual country boundaries (Casson and McCann 1999). Where industrial structures are characterised by both small and large firm networks, such long-term trust relations can exist over national spatial scales.

There is some empirical evidence which supports these various arguments. Observations of the formal inter-firm outcomes of informal information exchanges (Arita and McCann 2000; Audresch and Feldman 1996; Suarez-Villa and Walrod 1997), technology spillovers (Cantwell and Iammarino 2000) or the spatial patterns of joint-lobbying activities (Bennett 1998), suggest that the spatial extent of such long-term inter-firm networks may be much greater than that of a single city, and may extend across whole national or sub-national regional areas. These various arguments suggest that the critical spatial areas which define geographic growth advantage or disadvantage, may be far larger than any of the Marshall, Glaeser or Krugman arguments imply.

## 6. New Zealand, Economic Geography and Public Policy

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The orthodox agglomeration arguments (Marshall 1920; Krugman 1991; Glaeser 1998) outlined in sections 4 and 5 appeared to raise serious point of concern for the long-term growth performance of New Zealand. According to these arguments, New Zealand cannot expect to compete internationally on the basis of orthodox urban agglomeration economies across a range of urban sectors, known as urbanisation economies, because the three major urban centres of New Zealand are so small by OECD standards. Although the fact that Auckland in particular is still growing may lead to some urbanisation productivity gains, by international standards the overall national efficiency effects of this will be rather limited. However, the relationship between urban scale and agglomeration

economies is rather heterogeneous than this implies, in that it may be possible for the three major urban centres of New Zealand to generate some local agglomeration economies in a small number of specific specialist sectors, usually described as 'localisation' economies. Therefore, although the small urban scales of New Zealand will not permit widespread urbanisation economies of agglomeration, a limited number of sectors in which such localisation economies of agglomeration can be sustained does provide the possibility for New Zealand to specialise even further in these sectors and to export competitively. As such, a combination of domestic factor prices which are relatively low by OECD levels, plus some limited localisation economies in the three major urban centres, may provide a small level of protection from international competition for some New Zealand sectors. However, this cannot be expected to be a widespread phenomenon, because the relative 'thinness' of New Zealand's local input markets means that any such localisation effects will only be confined to a small number of sectors. For most other sectors which do not exhibit these localisation effects, New Zealand's relatively low factor prices will not be able to compensate for geographical peripherality.

The current thinking concerning economic growth and geography therefore largely rules out the benefits of modern agglomeration economies as providing a major source of growth for New Zealand over future decades, in comparison with its major OECD competitors. On the other hand, the alternative models of economic geography and industrial clustering, outlined in section 5, suggest that there may be some ways in which New Zealand may be able to exploit its geographical and cultural characteristics in order to foster its long-term economic growth, even in the face of falling international transactions costs and deregulating markets.

The first alternative argument here relates to that of the industrial complex model. In the case of New Zealand, the extraction and agricultural industries which produce mainly exported outputs most closely correspond to this particular geography-transactions model. The relationships between the producing, supplying and exporting elements of these sectors have been well established within New Zealand over a long period, and the geographical extent of these relationships extends across the whole country. As such, in this particular case, a relatively stable set of transactions and investment patterns are supported by a national, rather than a specifically urban or regional geographical scale. Obviously, the long-term performance of these industrial structures depends primarily on the global pricing trends for primary commodities, and as is well known, standardised primary commodities tend to be both relatively price elastic and income inelastic, the result of which leads to long-term downwards pricing trends. The development of products for niche markets, such as high quality wine for exports, is one way in which New Zealand has responded to these circumstances. However, as far as our discussion here is concerned, there is nothing inherent in this particular pattern and structure of transactions costs relationships which is suggestive of a strong future growth potential for New Zealand. The model is largely neutral on the matter.

It therefore appears that in terms of two out the three major geography-transactions sets of structural relationships outlined in section 5 of this paper, the long-term growth potential of New Zealand appears to be at best rather weak. The reasons for this appear to lie in the recent changes in the relationships between geography and information flows across space. As we have already seen, the nature of inter-firm and interpersonal business information flows appears to have changed substantially over recent years in response to both technological and institutional changes.

The improved ability to communicate has also increased the complexity and sophistication of the types of information which can be rapidly and frequently exchanged between parties in both a formal and informal manner. The result of this is that the geography of such transactions appears to somewhat polarising, in that complex transactions are being increasingly accommodated for by progressive industrial clustering, while standardised transactions are becoming ever easier to undertake over larger distances. For New Zealand, the central issue regarding geography and trade is therefore to understand and

promote mechanisms by which a geographically isolated economy with only small urban areas is able to undertake and maintain frequent complex transactions over space.

While the first two types of industry-geography relationships outlined here appear rather pessimistic regarding New Zealand's long-term performance, the third type, the 'social network model', is largely optimistic about New Zealand's prospects. Importantly, from the perspective of New Zealand, this model is not dependent on the existence of large-scale urban agglomeration economies. Moreover, the insights of the social network model also suggest a possible role for public policy in fostering such growth.

It will be recalled that the social network model is based on the idea that close 'trust' based interpersonal networks and ties can often compensate for many of the problems associated with geography. In order to understand how this model can be applied to the case of New Zealand, it is necessary to acknowledge that New Zealand exhibits rather peculiar geographical, economic and demographic characteristics. New Zealand is one of the most highly urbanised societies in the world (United Nations 1997). Yet the small absolute scale of both the national population and the major cities means that even though the major urban centres are relatively dispersed, it is relatively easy to develop and maintain strong personal networks both within and between the cities. This is because inter-personal accessibility built on informal personal networks, becomes relatively easy in small populations, thereby overcoming many of the insider-outsider (Lindbeck and Snower 1989) problems associated with labour markets in large organisation, cities and countries. From the perspective of public policy we must consider how these particular characteristics might be harnessed to the advantage of the New Zealand economy. It will be argued here that appropriate policies can be developed but only as long as they are focussed on the small-firm sector of New Zealand and not with respect to the interests of the large-firm sector.

In order to do this we must first distinguish between the market area and strategic objectives of New Zealand's large firm sector from that the small firm sector. In particular, we need to acknowledge is that the economic geography of the large-firm and multinational sector within New Zealand is largely beyond the remit or reach of New Zealand's domestic trade policy. The spatial developments within the multinational sector, in terms of corporate geographical restructuring and investment patterns, are determined by international market forces, which are increasingly growing in their importance. The multinational corporate organisational arrangements are maintained by information networks which extend well beyond national borders.

The result of this is that corporate investment and personnel decisions are undertaken as part of much larger corporate logic, which is generally determined by regional-global conditions, and not domestic regional-national conditions. In the case of New Zealand, such firms are generally part of much larger corporate supplier-customer and investment networks which extend well beyond the reach even of Australasia. Examples here include the major retail banking sector of New Zealand, none of which currently is domestically-owned. Increasingly, the major corporate decisions of these firms are made in much larger urban locations such as Sydney, Hong Kong or even London. These trends therefore imply that a greater spatial division of labour is emerging within much of the large-firm sector, whereby many higher-order activities are being relocated outside of New Zealand, leaving behind rather lower-order activities. This phenomenon is one of the key observations of the new economic geography literature.

From the perspective of New Zealand, such a phenomenon is growth-depressing, because higher value-adding and growth-inducing activities will tend to move elsewhere. Moreover, it is possible that these arguments will progressively apply to most of the firms within the NZSE index. Meanwhile, the relative thinness of New Zealand's existing markets provides further opportunities for overseas-owned firms to invest in New Zealand in order to service the domestic New Zealand markets. As such, the residual outcome of these various trends will be that an increasing proportion of the activities located in New

Zealand by the multinational corporate sector will tend to be located there specifically in order to service primarily the domestic New Zealand market rather than the international markets.

The small-firm sector in New Zealand, on the other hand, faces a completely different set of problems and possibilities to the large-firm and multinational sector. The reasons are firstly, that small firms do not have the information-gathering assets and networks of the large firm sector, and secondly, that a lack of such assets means that they suffer from the problem of 'distance-deterrence' (Gordon 1978), whereby the level and quality of information available to them falls rapidly as the geographical distance between themselves and their markets increases. Although the internet has reduced some of the information acquisition costs it does not solve the problem of how to acquire the tacit information generated in other locations. Small firms therefore tend to be highly myopic in terms of their information assets because of the limited resources they have available to them for information gathering and processing. At the same time, this myopia has a direct equivalent in terms of economic geography. Small firms tend to be geographically myopic, in that the spatial extent of the markets of which they have good knowledge tends to be very limited.

Moreover, unless the small firms grow rapidly into medium-sized or large firms, the spatial extents of their markets tends to remain very local. Therefore, on the one hand, we observe the static phenomenon that small market areas generally give rise to small firms, because only small enterprises can be sustained by small markets. However, on the other hand, and even more importantly, we observe the alternative dynamic phenomenon that while firms remain small they tend to service only small markets, whereas as the size of the firm increases the size of the markets served also increases.

In the case of New Zealand, this latter observation can be argued to be crucial. The geographic isolation and small scale of both the national and urban economies of New Zealand, automatically imposes small-market growth constraints on domestic New Zealand firms. Given that the national growth performance in most OECD countries is now dominated by small firm growth (Hart and Oulton 2001), from the perspective of New Zealand policy-makers it is justifiable to consider ways in which these small-market constraints can be lifted from the domestic firms in order to promote exports.

Obviously, firm relocation outside of New Zealand in order to expand market areas, along the lines of the large-firm sector, is not an option for the majority of these small and medium-sized enterprises (SMEs), nor is it desirable from the point of view of the domestic economy. However, there may be alternative ways in which the government can play a role in helping to relax these geographical small-market constraints, as part of a policy of promoting domestic growth. The following discussion concentrated on UK policy, and does not consider the role of Trade New Zealand or related policy initiatives in New Zealand.

The small-firm sector of the UK economy shares some characteristics with New Zealand SME sector, in that the UK is geographically peripheral to its major EU export market areas. Obviously, the spatial extent of geographical peripherality in the UK is not nearly as marked as that of New Zealand, but the cultural and linguistic distance between the UK and its continental neighbours is not at all trivial. For UK SMEs, such cultural distance adds to the information-transactions costs of geography. Therefore, in order to help SMEs overcome the information-transactions costs associated with relative geographical peripherality, the UK government has set up a whole series of programmes, under the various titles of Export Explorer and Market Explorer<sup>4</sup>, which are designed specifically to help SME firms make contacts with potential customers in other geographical markets. The definition of an SME used for these programmes corresponds with the EU definition

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<sup>4</sup> <http://www.tradepartners.gov.uk>

of an SME which is a firm with less than 250 employees. In order to be eligible to take part in these programmes the SME must also export less than 15% of its total sales.

The express logic of these Explorer schemes is to lift the small-market constraints which are imposed on most SMEs, due to the costs involved in acquiring information on other less-peripheral markets export outside of the domestic economy. The Explorer policies are organised around trade visits, or missions, in which the managers of UK SMEs partake in specially organised trips to neighbouring EU markets. The missions are jointly organised by the UK Department of Trade and Industry and UK embassy and consular staff in the destination countries. The participating firms pay a small registration fee plus the costs of their travel and accommodation. As an incentive to the participating firms, these missions receive an indirect tax subsidy which covers the costs associated with arranging the meetings which take place during the visit. Yet, this is not the essential aspect of these visits.

The essential aspect is to ensure that participating UK firms meet the most important potential key overseas customers in their particular market segments. It is this unique level of export networking and information-sharing on the part of the SMEs which is the key set of externalities harnessed by the scheme. Potential customers are identified with the help of consultants in the destination markets, and the embassy and consular officials coordinate the timings and arrangements of the meetings. Importantly, the level of targeting is far more specific than simply the sectoral level, and is determined with respect to the individual firm's product or service. Prior to the missions, participating firms receive a specially-prepared market report which is tailored to their particular sector, and this provides the firms with most of the technical, legal and business-cultural information required in order to undertake commercial negotiations in the new market.

In addition to this, the firms undergo various briefing sessions about the destination market sectors and the customer firms they are to meet, in order to ensure that they are best prepared for the mission. At the same time, from the perspective of the potential customer firms in the destination markets, the fact that the scheme is backed by the UK government gives the participating firms a level of credibility in the destination economy, such that potential customers are generally very keen to participate in such meetings. Such specifically-targeted Explorer missions, are far more sophisticated in their structure, aims and logic than are the typical types of trade missions organised by either industry associations of chambers of commerce.

The performance of these Explorer programmes over the last four years has been extremely good with participating firms achieving expected returns of the order of twenty-five times their participation costs<sup>5</sup>. Large numbers of participating firms have been able to generate overseas orders for the first time, and in many cases, these orders have developed into long-term business relationships. In each case, these supplier-customer relationships are genuinely new, and as far as the participating firms themselves are concerned, would have been impossible to develop without the public policy assistance.

However, as well as new export orders, the outcomes of these Explorer programmes are threefold. Firstly, the new orders allow the indigenous firms to increase their rates of growth. Secondly, the visits allow the firms to overcome many of the problems of myopia and distance-deterrence which they face by developing long-term business relationships with customers in completely different geographical markets. Thirdly, the visits also provide for a greater level of information-sharing and networking between the participating UK firms themselves. This third aspect is very important, in that the very fact that the firms have chosen to participate in such missions, is itself an indicator of positive selection on their part. Many additional business contacts and contracts are generated between the UK firms, because the cohort of participants see themselves as not only highly

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<sup>5</sup> *Market Explorer Stage One: Review of the Third Year of the Programme*, 2002, Internal Report; Trade Partners UK



entrepreneurial, but also as firms which are keen to engage in what are the internationally-regarded best-practice techniques. As such, a determination to compete in external markets is also seen by the firms as a means of improving their own domestic competitiveness.

The lesson of the Explorer programme is that the expansion of the market areas of the small firms provides for both an expansion in the firms size and also a deepening of the firm's existing skill-base. These ideas are exactly in accordance with the international competitiveness arguments of Porter (1990), whereby the processes of both external market growth and domestic strengthening are seen to take place simultaneously. In Porter's arguments, any ways in which the mutual transparency of competitor firms is increased will itself encourage both mutual competition and also mutual cooperation, thereby increasing the overall level of domestic competitiveness.

The link here in the case of the Explorer programme, is the particular way in which the firms are made aware of the competitive ability of other domestic and overseas firms. In the Explorer programme, an acknowledgement of the fact that small firms face enormous information-acquisition difficulties is the spur to encouraging the development of such behaviour. Following the logic of the 'social network model' it is also to be expected that the development of such best-practice networks of mutual information exchange will slowly encourage the development of long-term stable business networks within the UK as well as with overseas customers.

To what extent would these particular forms of export promotion policies be successful in the case New Zealand? In New Zealand, while it can be argued that there are many parallels with the UK situation, there are also some differences which a New Zealand policy similar to the Explorer programme may be able to exploit to an even greater extent than the UK. The major issue here is the myopia imposed on New Zealand small businesses because of not only national geographic isolation, but also because of the inter-urban geographic isolation of most small New Zealand businesses.

A New Zealand Explorer-type of policy will help to promote both a national and international business awareness on the part of the NZ small-firm sector, thereby contributing to a relaxation of the severe geographical market area constraints faced by small New Zealand firms. At the same time, the small population scales of New Zealand also readily permit the development of the types of trust relations which become evident in the 'social network model'. This is because a greater level of mutual accessibility between firms in New Zealand is possible than in much larger countries. Following the arguments of Porter (1990) and Scott (1988) this reduced myopia and increased inter-firm transparency should contribute to a growth in the competitiveness of the domestic economy.

It is important to be clear that this type of policy is not a policy which advocates simply 'picking winners' by championing either particular sectors or particular key firms. The firms which partake in these types of schemes are small and come from many different sectors. The only criteria for inclusion is that the firms are willing to undergo a short period of induction and education as to the export market environment and the types of cultural and business issues likely to be faced in entering new markets.

As such, this type of export promotion policy is built on a partnership between the participant firms and the government. Yet it is a policy which explicitly acknowledges the fact that missing markets are endemic in the small-firm sector. Of particular importance here are the limited brokerage or intermediary services available to small firms which are sufficiently targeted to their individual firm exporting needs. The limited availability of such services is primarily due to the coordination problems associated with product heterogeneity, distance deterrence and geographical myopia, which means that from the perspective of a potential intermediary, the costs of setting up such intermediary-network services tend to be inordinate. This is quite different to the case of the large-firm and

multinational sectors which are able to employ consultants and brokers to undertake such activities which are specifically tailored to the needs of the individual firm. Therefore, although such comprehensive firm-specific trade support schemes can be provided by the market for the large firm sector, for the SME sector they are generally not provided for by market mechanisms.

As such, this missing-intermediary market phenomenon can be viewed as being largely an externality problem. In the Explorer type of policy, the government institutions explicitly play the role of the market broker or intermediary, and provide both supplier-customer networking and information-provision services. In essence, therefore, the programme is set up specifically in order to facilitate the acquisition of informal and tacit information by the SMEs. These highly-focussed Explorer-type schemes are therefore aimed at expanding the geographical horizons of the small firms by internalising the externalities within the programme. As such, they are designed specifically to compensate for this particular aspect of market failure.

As we have seen, many features of economic geography are related to externalities, and any public policy relating to New Zealand's trade and economic geography must necessarily attempt to accommodate these issues. In the case of New Zealand's small firms in particular, we cannot simply assume that the market will provide a solution to their information problems (Stiglitz 2000), thereby precluding any role for public policy. The reason for this is that New Zealand's particular combination of both severe geographical peripherality and low population scale will progressively impose ever more severe international transactions costs (Rao 2003) on New Zealand's small firms, which cannot be compensated for by domestic agglomeration effects. Public policy, however, if aimed specifically at relieving the market-area constraints of the SME sector, may be able to help in overcoming some of these problems.

## 7. Conclusions

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In the post-war Bretton-Woods era, characterised by largely closed economies, restricted factor flows, and bilaterally-regulated trading arrangements, geography was regarded as being largely irrelevant by many economists, because Ricardian theories of comparative advantage appeared quite sufficient to explain observed trade behaviour. Even the extreme geographical peripherality and low population density of New Zealand was not regarded as being of any real significance because New Zealand was a very prosperous country with significant natural factor endowments. New Zealand's exports, based on cheap land inputs supported a high standard of living via imports.

Over the last two or three decades the international situation appears to have changed markedly. Changes in technology and institutional structures mean that global markets can be serviced more easily from a smaller number of locations. This is because for most sectors, the information and transportation (transactions) costs associated with coordinating the movements of goods and people across global geographical distances have generally fallen. In particular, the geographical distance costs associated with standardised goods and services have fallen over time.

On the other hand however, the increasing variety, quantity and complexity of information generated by modern markets means that the acquisition of non-standardised and tacit information becomes ever more important as a determinant of competitiveness (Porter 1990; Krugman 1991). The acquisition of these types of information is highly dependent on face-to-face contact, and is therefore based on the geographical proximity and accessibility afforded by industrial clustering in cities. If the relative importance of this non-standardised information is steadily increasing over time, this also implies that there is an increasing role played by agglomeration economies in determining long run economic growth. Krugman (1996) argues that this particular combination of localised

agglomeration economies of scale and falling distance transactions costs, benefits the highly urbanised locations at the expense of the more peripheral and less populated areas.

From the perspective of New Zealand's long run economic growth and competitiveness, these agglomeration and clustering arguments would appear to be rather pessimistic. New Zealand's urban areas are not large enough to generate widespread agglomeration economies on the scale required for international competition. One manifestation of this is that many corporate organisations will progressively shift higher-order value-adding activities away from New Zealand to Australia, leaving relatively lower-order activities behind in order to service the local economy. In the long run this tendency will be growth-depressing.

This is not the end of the story, however, because the development of new firms and industries is also essential for the long-run competitiveness of the economy (Hart and Oulton 1999). For the SME and new-firm sectors, the relationship between the geography of New Zealand and competitiveness is rather more complex than is the case of the multinational sector.

In most OECD countries the focus of industrial policy thinking has shifted towards promoting the growth of new SME firms in highly dynamic and innovative sectors. There are two reasons for this. Firstly, the new variety outputs of these sectors are regarded as generally being price inelastic and income elastic, and secondly, these sectors are also regarded as being somewhat responsive to policy measures. As we have discussed in this paper, however, innovation depends crucially on both the skills-base of the labour market and also on ability to access to tacit non-standardised information.

In terms of upgrading the domestic skills-base, the focus of New Zealand's industrial policy has been on further developing the education of the population at all skill levels, and also on fostering innovation in key growth potential sectors such as biotechnology, information and communications technology, and the creative industries.<sup>6</sup> This policy is largely in line with the policies adopted by other OECD countries such as the UK<sup>7</sup>.

Meanwhile, in order to overcome the problems of facilitating the transfer of tacit information, UK innovation policies are also structured within a framework which aims to promote competitiveness via the development of industrial clusters<sup>8</sup> within a tight land-use planning regime<sup>9</sup>. In the UK this type of policy is possible because the combination of existing large urban scales with short inter-urban travel times allows for agglomeration effects to be generated relatively easily (Gordon and McCann 2000). The role of UK central and regional government authorities therefore primarily concerns the provision of the types of industrial sites and locations which are deemed appropriate for new businesses in these innovative SME sectors.

In the case of New Zealand, however, the absence of either large urban scales or proximity between urban centres suggests that policies designed to encourage the transfer of tacit information across the geography of New Zealand industry cannot be implemented in quite the same way as in the UK. An alternative approach may be required. On this point, New Zealand has a rather unusual geographical and social structure which can be turned to its own competitive advantage. New Zealand has both a highly educated labour force and low population level. Potentially, this combination provides for a much higher level of inter-personal connectedness than is possible in high population societies where individuals are largely anonymous. This can allow local economic growth to be fostered via slightly different mechanisms than orthodox

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<sup>6</sup> *Growing an Innovative New Zealand*. <http://www.executive.govt.nz/minister/clark/innovate/>

<sup>7</sup> *Building the Knowledge Driven Economy*. [http://www.dti.gov.uk/comp/competitive/wh\\_int1.htm](http://www.dti.gov.uk/comp/competitive/wh_int1.htm)

<sup>8</sup> <http://www.dti.gov.uk/clusters/index.htm>

<sup>9</sup> *Planning Competitiveness and Productivity: Fourth Report of Session 2002-03* House of Commons HC114-1, The Stationary Office

agglomeration arguments would imply. In particular, as an analytical and policy framework, we have argued here that the social network model is more applicable to New Zealand's growth potential than is the agglomeration model.

In this social network framework, the development of strong inter-firm and inter-personal networks within New Zealand is essential in order to facilitate the transmission of tacit information across geographical space in conditions where agglomeration outcomes are largely ruled out. As such, a policy designed to foster such links would be aimed specifically at internalising many of the externalities associated with tacit information.

From the perspective of the geography of New Zealand, however, these networks must be developed not only across the whole country, but also beyond the borders of the country. This is essential in order to reduce the small-market constraints imposed on the SME sector because of the difficulties associated with acquiring tacit information. Policy measures of this type can play a significant role because a simple reliance on market mechanisms alone will not provide for many of these types of information networks in a geographically dispersed economy.

Here we have argued that a possible policy prototype which New Zealand could adopt and develop would be something along the lines of the UK's Export Explorer programme, which is designed specifically to circumvent information constraints. Yet, whatever the actual form of any policy adopted might be, the essential features of it must be the encouragement of long-term business relationships both within the New Zealand SME sector and also between the New Zealand SME sector and overseas customers. In the case of New Zealand, it is these relationships which will provide the link between the development of income elastic outputs, economies of scale and long-run growth, rather than straightforward agglomeration arguments.

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