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# Context-specific Economic Policy

This edition of the Monitor is loosely themed around trade policy in support of the breakthrough in World Trade Organisation (WTO) 'negotiations on negotiations'. Whilst some have hailed this as an 'historic' breakthrough – partly because for the first time all member states have agreed to the (eventual) abolition of all forms of agricultural subsidies – not all trade watchers are as optimistic. The Institute for Agriculture and Trade Policy, for example, has argued that the 'success' was achieved only because the bar was set exceedingly low.

Whilst we agree that WTO negotiations are seldom the place for undue optimism, we do believe that the Agreement is a positive development. Nonetheless, the prospect of movement in WTO negotiations makes it increasingly difficult to follow South Africa's (SA's) multi-track trade negotiations.

It is therefore particularly timely that we carry an article by Xavier Carim, SA's chief trade negotiator at the Department of Trade and Industry (**the dti**), in which he presents a detailed discussion of the rationale for SA's approach to trade policy over the last decade. Of principal interest, given that SA's trade negotiators have all too often been accused of negotiating 'too many' agreements, is Carim's discussion of the need to negotiate new agreements simply to maintain preferences in a world of growing bilateral and regional trade agreements.

Furthermore, the article highlights SA's multi-track approach in negotiations to attempt to win better preferences for SA exporters. Carim also makes the point that trade policy remains just one, albeit a very important, element of a national development strategy.

In the second article, Professor Dani Rodrik of Harvard University proposes some important new policy directions for developed and developing countries to think about in the context of WTO negotiations.

One of these – temporary labour flows – Rodrik argues could eclipse the income gains for developing countries of all the Doha proposals put together. Crucially, the gains from increased labour flows from developing

countries are not only income gains but also gains in expertise and experience. Of course, there are also dangers to such a policy because the first temporary workers to leave developing countries are often the most skilled, such as doctors and teachers, who are often already in desperately short supply in these countries.

Nonetheless, the gains from such a policy proposition are likely to be so high that it clearly deserves serious consideration. Rodrik goes on to argue that economic growth arises from institutional innovations that are country specific and that come out of local knowledge and experimentation, not the strictures of WTO disciplines.

In the third contribution, this time by Professor Sanjaya Lall of Oxford University, the new dimensions of industrial competitiveness are discussed and a 're-invented' role for government in industrial policy suggested. Lall, too, highlights the effect trade liberalisation has had on the 'rules of the game' and goes on to argue that, contrary to orthodox views that the need for industrial policy has declined, the case for policy interventions remains strong and is in fact becoming stronger. However, Lall does go on to caution us that this should not be interpreted as *carte blanche* to try to replicate the selective policies used by the well-known East Asian Tigers. Rather, Lall, like Rodrik, cautions us to draw lessons from these and local experiences and to adapt them to local needs and circumstances.

Our fourth article, by Nimrod Zalk and Simon Roberts, explores this theme on a practical level. Their article describes the problems experienced in the SA iron and steel industry and provides a discussion of the potential context-specific policy options available to policy-makers.

In our final article, Dagmara Stoerring and Jesper Lindgaard Christensen discuss the feasibility of fostering high-tech clusters in low-tech regions in Denmark and come to similar conclusions around the need for an assessment and understanding of local conditions.

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# SA's Trade Policy – Ten Years On

Xavier Carim, Chief Director: Multilateral Trade Negotiations at the International Trade and Economic Development Division of **the dti**, reviews the last decade of SA's trade policy, outlining government's multi-track response to policy challenges in this sphere since 1994.

## Introduction

SA's first free elections in April 1994 established the political prerequisites to define, through a broad-based consultative process, the key challenges, objectives and strategies for revitalising the economy. The Reconstruction and Development Programme (RDP) – the policy framework for socio-economic transformation in SA – was the outcome of this process that established a broad social pact to create an appropriate environment for growth, investment and accelerated delivery of public services.

The momentous political transition to democracy in 1994 has undoubtedly impacted on all spheres of SA's economy and society. The Presidency recently issued a comprehensive assessment of the impact of the government's policy interventions over the last decade in *Towards Ten Years of Freedom: Progress in the First Decade – Challenges of the Second Decade*.

This article reviews developments in SA's trade policy over the last 10 years by outlining the key features of:

- SA's policy challenge;
- The new government's broad policy response; and
- The emerging trade strategy that has been pursued at multilateral, regional and bilateral levels.

## The Policy Challenges

In framing a trade policy in the post-1994 era, the government had to respond to SA's developmental imperatives in the context of rapid changes in the global economy. Nationally, the government had inherited

an economy in which real gross domestic product (GDP) had been declining since 1965. Declining employment co-existed with a sharp divergence of *per capita* incomes across racial groups, making inequality in SA amongst the highest in the world.

As SA has long been a trading nation and with trade accounting for over 50% of GDP, it was clear that trade and trade policy could make an essential contribution to economic growth and development. However, SA's isolation under *apartheid* due to trade boycotts and sanctions reinforced an inward-looking, high cost and uncompetitive manufacturing production base where exports were dominated by primary products.

*While enhancing security and predictability in international trade, WTO rules are unbalanced in ways that prejudice the interests of developing countries and constrain national efforts to promote industrial development. Global rules should be defined – and re-defined – in ways that promote development in developing countries.*

To realise SA's full trade potential, it was necessary to initiate a process of structural reforms to enhance the competitiveness of the SA economy and its capacity to compete in an increasingly integrated global economy in value-added production and export. The basic motivation for a trade strategy, therefore, was and is the imperative of achieving sustained economic growth on the basis of export and investment expansion.

The global economy is increasingly characterised by a massive extension and deepening of markets for goods, finance, investment, services and technology – including through



the integration of production by transnational corporations. These processes intensified interdependence and linkages between economies and have been underpinned both by national economic policies that are more open and outward-oriented, and by rapid advances in global communication and transport. This means that national economic destinies have become more deeply intertwined.

As a result of these processes, the basis for effectively competing in the global economy has changed. Economies can no longer afford to sustain into the future competitiveness on the basis of traditional comparative advantage in cheap labour or primary exports. The ability to compete increasingly turns on technological

and innovation capacity. Furthermore, competitiveness can no longer be premised indefinitely on preferences, as these are being steadily eroded by multilateral liberalisation and the proliferation of free trade areas.

While globalisation has precipitated massive growth in the global economy, the process masks a complex balance sheet of winners and losers. As trade and investment flows have accelerated, the paradoxical trend is that many countries are being marginalised. This experience is particularly acute for least developed countries (LDCs) and countries in Sub-Saharan-Africa (SSA).

In international trade, the emergence of the WTO at the end of the Uruguay Round has established an extensive set of global rules for trade. While enhancing security and predictability in international trade, the rules are, in many respects, unbalanced in ways that prejudice the interests of developing countries and constrain national efforts to promote industrial development. In this light, the WTO is a site for engagement and effort to ensure that global rules be defined – and re-defined – in ways that promote development in developing countries.

Another feature of the global environment has been the proliferation of regional and bilateral trading arrangements. This has meant that countries must engage in such negotiations if only to retain their competitive position *vis-a-vis* other countries in vital external markets.

### SA's Trade Policy Framework Post-1994

Against this background, the new government began to formulate its new trade policy along several key dimensions and levels. Trade policy was understood as only one element of a wider development strategy.

In this respect, trade policy was to be framed within a broad national development strategy that encompasses, amongst others, policies to stabilise the macroeconomy, promote industrialisation, strengthen domestic regulatory frameworks, promote education and skills development, and establish social policies.

The key objective of trade policy is understood as a means to advance economic reform and restructuring, as well as to enhance the competitiveness of firms to compete in international markets. It was understood that sustainable trade policy reform requires a political and institutional framework that ensures key constituencies affected by adjustment actively participate in the evolution of policy. In this sense, trade policy reform is a political process that needs to be managed carefully and in SA, this process has been institutionalised in the National Economic Development and Labour Council (Nedlac).

Having set out its broad framework, the government made a series of strategically courageous policy decisions in the mid-1990s. The emerging policy contained two interlinked aspects. First, it required deliberate efforts to promote structural reform domestically by opening up the economy to international competition through a programme of tariff reduction aimed at enhancing the competitiveness of the economy and its industries.

Practical implementation involved a commitment to comprehensive trade policy reform through the offer made to the WTO in 1994.

This included the commitment to:

- Reduce industrial tariffs by one-third over the next five years (by 2000);
- Bind 98% of tariff lines;
- Rationalise the number of tariff lines;
- Convert quantitative restrictions and formula duties to *ad valorem* tariffs; and
- Terminate all export subsidies by 1997.

Underlying SA's trade strategy has been industrial policy that aims to shift the dependence on raw material exports to increasingly higher value-added manufacturing exports. Reduction of tariffs and phasing out WTO-inconsistent subsidies to enhance competitiveness has been accompanied by a shift towards market-led supply-side support measures. A wide range of measures has been

*SA's industrial policy has a sectoral focus aimed at encouraging the exports of – and attracting investment and technology to – those sectors that will drive industrial development in SA.*

put in place to promote: industrial restructuring, technology upgrading, investment and export promotion, small, medium and micro enterprise development, and black economic empowerment (BEE). SA's industrial policy has a sectoral focus aimed at encouraging the exports of – and attracting investment and technology to – those sectors that will drive industrial development in SA.

*While strengthened economic relations with key countries of the North is imperative to 'lock in' access to markets for goods, services, capital, technology and finance, South-South arrangements – particularly with emerging poles of economic growth – offer vast export opportunities as outlets for value-added exports.*

The Integrated Manufacturing Strategy (IMS) announced in 2002 confirms these elements of SA's industrial policy. However, it goes on to stress the importance for SA producers to increase the knowledge intensity of production to generate greater income growth from participation in the global economy. Knowledge intensity, or the intangible component in products and services, is becoming increasingly important in all industries. In medium- and high-tech manufacture, it is embodied in research and design. For labour-intensive industries such as clothing, it is embodied in branding, distribution and marketing activities.

The second dimension to the emerging trade policy involved ongoing efforts to integrate the economy into the global economy in a strategic manner. These would aim to shift the terms and conditions of SA's external trade links in a manner that would facilitate growth and development. In the context of the dynamic global economic environment and the complex, tiered trading system, SA's trade strategy was necessarily multi-tracked, with concurrent participation in a range of negotiating initiatives at multilateral, regional and bilateral levels.

### Multilateral Arrangements

The SA government has articulated a view that multilateral governance represents the most appropriate institutional policy response to globalisation and interdependence – key features of the current global environment. In making this argument, the government has outlined an understanding that development and industrialisation in developing countries are prerequisites for future global prosperity and stability of the world economy.

In respect to the international trade system, we have argued consistently that the WTO, in marking the establishment of a strengthened rules-based trading system, has enhanced security and predictability in market access, reduced the scope for unilateral trade measures and made progress to ensuring that economic interactions, including the resolution of disputes, are governed by rules and not solely by economic power. However, at the same time, we have argued that WTO agreements exhibit a range of imbalances and inequities that are prejudicial to the trade and development interests of developing countries.

In our view, global economic development requires developed countries to undergo far-reaching structural adjustment by reducing a range of protective and support measures to inefficient industries and sectors. WTO agreements should facilitate – not discourage – processes of structural adjustment in the North.

It is for these reasons that SA supported the launch of a new round of negotiations. Multilateral negotiations open up the possibility that issues of development will be addressed in a decisive manner. The Doha Agenda is balanced and provides for a developmental outcome, reflecting a great achievement by developing countries.

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SA has participated actively in the WTO since 1994. Our membership in coalitions in the WTO, such as the Africa Group and the Cairns Group of agricultural exporters, has been important to advancing our views. The emergence of the G20 alliance at the fifth WTO Ministerial Conference in Cancún, Mexico, in September 2003 – in which SA played a central role – has become an essential platform to achieving the developmental objectives of the Doha round.

### Regional and Bilateral Arrangements

SA's integration has also been pursued, in a complementary manner, at bilateral and regional levels. While strengthened economic relations with key countries of the North is imperative to 'lock in' access to markets for goods, services, capital, technology and finance, South-South arrangements – particularly with emerging poles of economic growth – also offer vast export opportunities as outlets for value-added exports.

SA has thus engaged in a series of trade negotiations with countries in Africa, other developing countries in the South and key countries of the North.

#### *The Southern African Customs Union (SACU)<sup>1</sup>*

The New SACU Agreement, concluded in October 2002, opens a fresh chapter in regional integration and co-operation. It follows a seven-year negotiation that began in 1994 and establishes a new institutional base for democratic decision-making and closer consultations among the SACU members. The Agreement calls for the development of common policies in industry, and co-operation in agricultural policy, competition policy and anti-competitive practices. It also calls for development of harmonised procedures and regulations to govern all aspects of the common trade regime.

As it aims to deepen economic integration and co-operation, the Agreement will provide real substance to the continental vision and will provide impetus to wider regional integration efforts in Africa. The new institutions will strengthen a rules-based arrangement on the

Southern tip of the continent and advance the integration efforts of one of the oldest customs unions in the world.

#### *The Southern African Development Community (SADC)<sup>2</sup>*

Southern Africa is important to SA's economy. Our growing trade surplus with SADC contributes to offsetting trade deficits with other regions. The structural trade imbalance between SA and its SADC partners is, however, economically unsustainable over the longer term. SA therefore sought to restructure regional arrangements by pursuing policies to promote industrialisation in the SADC. This entails using Southern Africa as an integral part of supply chains for globally competitive manufacturing processes. Through a combination of sectoral co-operation, policy co-ordination and trade integration, SA's

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regional policy aims to achieve a dynamic regional economy capable of competing effectively in the global economy.

#### *The New Economic Partnership for African Development (Nepad)<sup>3</sup>*

In Africa, our trade and economic strategy aims to provide economic content to the vision of an 'African Renaissance'. Africa's developmental challenges are well known, and pose serious challenges for SA, whose destiny is inextricably intertwined with that of Africa. Economic growth on the continent will provide markets for our products and provide the impetus for creating the integrated manufacturing economy that we seek to build. Conversely, economic deterioration in Africa will limit our markets and produce processes of 'negative' interdependence.

The development challenges facing Africa require multi-faceted strategies which include a common vision to trade and development to enhance competitiveness of African economies, their regional integration and integration into the global economy. In this context, Nepad constitutes the framework for conceiving SACU's trade strategy on the continent. In particular, the SADC Free Trade Agreement (FTA), of which SACU is a part, is important not only for offering preferential market access to SACU's exports, but as a key vehicle for economic development in the SADC region, and an important pillar for Nepad.

Strengthening and formalising trade and economic links with countries in Africa are critical imperatives in view of the trade and investment opportunities it holds for SACU as an integral part of the continent. As the leading economic entity in Africa, SACU also faces the challenge of contributing systematically to the continent's economic revival and development.

#### *Trade Arrangements with Other Countries in the South*

Beyond this, key countries in Latin America and Asia with large, fast-growing markets present themselves as possible FTA partners. These economies offer vast export opportunities and the potential to absorb a higher proportion of value-added exports. In light of the complementarities that emerge from comparable levels of industrial development, they also offer unique opportunities in terms of investment, joint ventures and technology transfer. It is on this rationale that FTA negotiations with Mercosur<sup>3</sup>, India and China, among others, have been posited.

#### *The North*

Because of major trading nations and groups' ongoing and intensified vying for global market access advantage and the resulting segmentation of the world trade system into a hierarchy of preferences, it is critical that SA seeks more secure long-term preferential access to key global markets. So the US and the EU remain important as the traditional major poles of global economic growth, leading markets and sources of investment and technology. Deepening links with these economies is imperative to lock in markets and supplies of capital, technology and finance.

This consideration informed the TDCA<sup>4</sup> between SA and the EU, which represents a long-term framework for securing and deepening market presence in the EU and for attracting investment. This is also the rationale for the FTA negotiations initiated by SA with the European Free Trade Association (EFTA<sup>5</sup>). In our opinion, negotiations with EFTA will complement the SA/EU TDCA, as it will enable SA/SACU to harmonise its trade relations with all countries in Western Europe.

The decision by SACU to enter into negotiations with the US was similarly based on the view that constructing a stable, long-term and predictable trade and investment relationship with the US is important for SACU long-term economic development. The FTA would build on the successes of the Africa Growth and Opportunity Act (Agoa) and provide additional impetus to growing exports to the US market.

<sup>1</sup> SACU comprises Botswana, Lesotho, Namibia, SA and Swaziland.

<sup>2</sup> SADC comprises the SACU countries plus Zimbabwe, Mozambique, Angola, Malawi, Zambia, Tanzania, Mauritius and DRC.

<sup>3</sup> Mercado Común del Cono Sur (Southern Cone Common Market)

<sup>4</sup> The Trade, Development and Co-operation Agreement (TDCA)

<sup>5</sup> EFTA comprises Switzerland, Norway, Iceland and Liechtenstein

## Summary

In reviewing the last decade of trade policy, two salient points emerge. First, a deliberate policy decision was taken in the early days of the new government to enhance the competitiveness of the SA economy through a process of adjustment. Enhanced competitiveness would be the prerequisite for the SA economy and its firms' sustainable integration into the rapidly integrating world economy.

Secondly, and closely linked, was the decision to pursue an active trade diplomacy and negotiating agenda at multilateral, regional and bilateral levels.

Through these, SA has sought to enhance market access for its exports and shape trading rules – at global and bilateral levels – to favour developmental aspirations.

In part, this has been accomplished by closer collaboration within the contexts of SACU,

SADC, Nepal and other arrangements with developing countries (G20).

Finally, the SA government has sought to strengthen its national machinery for trade policy and strategy-making through enhanced consultation focused in Nedlac. This is an area in which further efforts will be required.



# How to Make the Trade Regime Work for Development<sup>1</sup>

Dani Rodrik<sup>2</sup>, Professor of International Political Economy, John F. Kennedy School of Government, Harvard University, points out why the goals of promoting development and maximising trade are not synonymous, and identifies the gains to be generated from trading rules that focus on maximising development potential rather than trade and market access for developing countries.

The purpose of the WTO is, or should be, to raise living standards around the world through the establishment of a fair set of rules for world trade.

This point is widely recognised, not least in the agreement establishing the WTO. Increasingly, however, the WTO and multilateral lending agencies have come to view the goals of promoting development and maximising trade as synonymous, to the point where the latter now easily substitutes for the former. The net result is a confounding of ends and means. Trade has become the lens through which development is perceived, rather than the other way around.

Imagine a trading regime in which trade rules are determined so as to maximise development potential, particularly of the poorest nations in the world. Instead of asking, "how do we maximise trade and market access?" negotiators would ask, "how do we enable countries to grow out of poverty?" Would such a regime look different than the one that exists currently? And how would such a regime compare to the agenda of the so-called Doha 'Development' Round?

## Where the gains are not

One of the mysteries of the current round of trade negotiations is that developing nations have let themselves be bamboozled into

accepting an agricultural-liberalisation-centred agenda as a Development Round. In fact, the developing countries' interest in agricultural liberalisation has always been ambiguous. Aside from a few middle-income members of the Cairns group, such as Argentina, Brazil, Chile and Thailand – which are important agricultural exporters – few developing countries have traditionally looked at this area as a major source of gain. Research done at the World Bank during the Uruguay Round has highlighted the possibility that most SSA nations could actually end up worse off as a result of the rise in world food prices produced by the reduction in European export subsidies. More

recently, a range of careful, microeconomic studies have shown that the poverty impact of increases in relative agricultural prices tends to be heterogeneous and uncertain, even for the producers themselves.

Moreover, most global trade models predict very modest increases in agricultural prices – increases that are likely to be swamped by the sheer volatility in commodity prices. Consider cotton, for example. The largest estimate of the price impact of the eventual and complete

removal of US cotton subsidies is around 15%. Compare this to the impact of the devaluation of the CFA Franc in 1994 by 50%, which in principle should have raised agricultural incomes in countries such as Burkina Faso and Benin by a full 50%. There is little evidence that such a boost in incomes actually took place, however, since the most direct beneficiaries of increases in border prices tend to be traders and intermediaries, rather than farmers. In all likelihood, poor farmers will reap very few of the gains generated by agricultural liberalisation in the North. The real winners will be taxpayers and consumers in the North and traders and intermediaries in the South.

Indeed, the reason that agriculture figures so heavily on the negotiating agenda has little to do with development. Agriculture got transformed into a development issue thanks to the skilful manoeuvring of the US Trade Representative and

then WTO director general Mike Moore, as a way to bring Europe to the negotiating table by capturing the high moral ground. Europe, in turn, asked for the Singapore issues to be included on the agenda as a *quid pro quo*, adding insult to injury where developing countries are concerned.

## Where the gains really are

If trade negotiators were genuinely interested in devising market-access rules that benefit developing countries, they would focus not on agriculture but on something else entirely: temporary labour mobility. The greatest

*The greatest demonstrable gains to developing nations from relaxing restrictions in the world economy today lie in the liberalisation of temporary labour flows.*

<sup>1</sup> This article was first published online in February 2004 at <http://ksghome.harvard.edu/~drodrik/shortpieces.html>

<sup>2</sup> Rodrik has published widely in the areas of international economics, economic development, and political economy. His research focuses on what constitutes good economic policy and why some governments are better than others in adopting it.

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demonstrable gains to developing nations from relaxing restrictions in the world economy today lie in the liberalisation of temporary labour flows. It is hard to identify any other issue in the global economy with comparable potential for raising income levels in poor countries while enhancing the efficiency of global resource allocation. Even a relatively small programme of temporary work visas in the rich countries could generate income gains for workers from poor countries that exceed the predictions for all of the Doha proposals put together.

Consider, for example, a temporary work visa scheme that amounts to no more than 3% of the rich countries' labour force. Under the scheme, skilled and unskilled workers from poor nations would be allowed employment in the rich countries for three to five years, to be replaced by a new wave of inflows upon return to their home countries. A back-of-the-envelope calculation indicates that such a system would easily yield US\$200-billion annually for the citizens of developing nations. The positive spill-overs that the returnees would generate for their home countries – the experience, entrepreneurship, investment and work ethic they would bring back with them and put to work – would add considerably to these gains. What is equally important, the economic benefits would accrue directly to workers from developing nations. We would not need to wait for trickle-down to do its job.

Is something like this politically feasible in the advanced countries? If substantial liberalisation of trade and investment has taken place in rich countries, it is not because it has been popular with voters at home, but largely because the beneficiaries have organised successfully and become politically effective. Multinational firms and financial enterprises have been quick to see the link between enhanced market access abroad and increased profits, and they have managed to put these issues on the negotiating agenda. Temporary labour flows, by contrast, have not had a well-defined constituency in the advanced countries. This is not because the benefits are smaller, but because the beneficiaries are not as clearly identifiable. But political constraints can be malleable with appropriate leadership. President Bush's recent speech proposing a temporary worker programme for the US is a very encouraging sign that the tide may be turning on this.

To ensure that labour mobility produces benefits for developing nations, it is imperative that the

regime be designed in a way that generates incentives for return to home countries. While remittances can be an important source of income support for poor families, they are generally unable to spark and sustain long-term economic development.

*The secret of economic growth lies in institutional innovations that are country-specific and come out of local knowledge and experimentation. Developing countries need to resist WTO disciplines' encroachment on their ability to undertake heterodox policies.*

Designing contract labour schemes that are truly temporary is tricky, but it can be done. Unlike previous schemes of this type, there need to be clear incentives for all parties – workers, employees, and home and host governments – to live up to their commitments. One possibility would be to withhold a portion of workers' earnings until return takes place. This forced saving scheme would also ensure that workers would come back home with a sizeable pool of resources to invest. In addition, there could be penalties for home governments whose nationals failed to comply with return requirements. For example, sending countries' quotas could be reduced in proportion to the

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numbers that fail to return. That would increase incentives for sending governments to do their utmost to create a hospitable economic and political climate at home and to encourage their nationals' return.

In the end, it is inevitable that the return rate will fall short of 100%. But even with less than full compliance, the gains from reorienting our priorities towards the labour mobility agenda remain significant.

### **The importance of policy space**

A second area of fundamental interest to developing countries is policy autonomy. WTO rules must recognise that poor countries need the space within which they can pursue developmental policies. In fact, policy space is good not only for development, it is also good for trade. When developing countries can

grow their economies, they can also expand their trade volumes.

Developing countries are currently short-changing themselves when they focus their complaints on specific asymmetries in market access (tariff peaks against developing country exports, industrial country protection in agriculture and textiles, etc.). They would be better served by pressing for changes that enshrine development at the top of the WTO agenda, and thereby provide them with a better mix of enhanced market access and room to pursue appropriate development strategies.

The secret of economic growth lies in institutional innovations that are country-specific, and that come out of local knowledge and experimentation. These innovations are typically targeted at domestic investors and are tailored to domestic realities. Accordingly, a development-friendly trading regime evaluates the demands of institutional reform not from the perspective of integration ("what do countries need to do to integrate?") but from that of development ("what do countries need to do to achieve broad-based, equitable economic growth?").

Almost all successful cases of development in the last 50 years have been based on creative and often heterodox policy innovations. Countries like South Korea and Taiwan had to abide by few international constraints during their formative growth experience in the 1960s and 1970s. At the time, General Agreement on Tariffs and Trade (GATT) rules were sparse and permissive. So these countries combined their outward orientation with unorthodox policies: high levels of tariff and non-tariff barriers, public ownership of large segments of banking and industry, export subsidies, domestic-content requirements, import-export linkages, patent and copyright infringements, directed credit, and restrictions on capital flows (including on foreign direct investment, or FDI). Since the late 1970s, China also followed a highly unorthodox two-track strategy, violating practically every rule in the guidebook (including, most notably, the requirement of private property rights). India, which significantly raised its economic growth rate in the early 1980s, remained a highly protected economy until the late 1990s.

Vietnam has followed a China-like strategy, and has achieved an impressive growth record without membership in the WTO. In all of these countries, trade liberalisation was a gradual process, drawn out over a period of

decades rather than years. Significant import liberalisation did not take place until after there had been a transition to high growth. And far from wiping the institutional slate clean, all of them managed to generate growth by creatively modifying existing institutions, imperfect as they may have been. That is why developing countries need to resist the encroachment of WTO disciplines on their ability to undertake divergent and heterodox policies.

### **Reconciling the interests of rich and poor nations**

A trade regime that puts development first would accept institutional diversity and the right of countries to erect and protect their own institutional arrangements – so long as they do not seek to impose them on others. Once these principles are accepted and internalised in trade rules, priorities of poor nations and the industrial countries can be rendered compatible and mutually supportive. For example, a 'development box' or 'opt-out mechanism' could essentially extend the existing safeguard agreement to permit countries to restrict trade or suspend WTO obligations for reasons that include social and distributional goals as well as development priorities. This would require replacing the 'serious injury' test with the need to demonstrate broad domestic support for the proposed measure among all relevant parties – including exporters and importers as well as consumer and public interest groups – and

could be complemented by WTO monitoring as well as an 'automatic sunset' clause.

One result of a shift to a development focus would be that developing nations would articulate their needs not in terms of market access, but in terms of the policy autonomy needed to exercise institutional innovations. Another is that the WTO would function to manage the interface between different national systems rather than to reduce national institutional differences.

Viewing the WTO as an institution that manages institutional diversity gets developing countries out of a negotiating conundrum that arises from the inconsistency between their demands for flexibility to implement their development policies, on the one hand, and their complaints about Northern protectionism in agriculture, textiles, and labour and environmental standards, on the other. As long as the issues are viewed in market-access terms, developing countries will remain unable to defend their need for flexibility. And the only way they can gain enhanced market access is by restricting their own policy autonomy in exchange. Once the objective of the trade regime is viewed as letting different national economic systems prosper side by side, the debate can centre on each nation's institutional priorities and how they may be rendered compatible. This would also save developing countries precious political capital by obviating

the need to bargain for 'special and differential treatment', a principle that in any case is more form than substance at this point.

Finally, the shift in focus provides a way to reconcile the perspectives of developing country governments, which complain about asymmetry in trade rules, and civil society organisations, primarily in the North, which charge that the system pays inadequate attention to values such as transparency, accountability, human rights and environmental sustainability. The often conflicting demands of these two groups – over issues such as labour and environmental standards or the transparency of the dispute settlement process – have paralysed the multilateral trade negotiation process and allowed the advanced industrial countries and the WTO leadership to seize the 'middle' ground.

Tensions over these issues become manageable if the debate is couched in terms of development processes, broadly defined, instead of the requirements of market access. Viewing the trade regime – and the governance challenges it poses – from a development perspective, makes it clear that developing country governments and non-governmental organisation (NGO) critics share the same goals: policy autonomy, poverty alleviation and environmentally sustainable human development.

## **Strategic Market Analysis for International Business Development**

*4-5 November 2004, Johannesburg*

TIPS and the Market Analysis Section (MAS) of the International Trade Centre (ITC)\* invite you to a seminar on Strategic Market Analysis for International Business Development.

The seminar, which will focus on the use of the ITC's tools for market analysis in the development of international trade strategies, is of particular interest to businesses engaged in or planning to venture into international trade. The seminar is designed for professionals involved in international market research for SMEs, trade support bodies such as chambers of commerce, or industry associations.

### **Topics to be covered include:**

- How market research is conducted
- A framework for trade strategy formulation building on market analysis
- Market positioning tools, such as ITC's TradeMap
- Product-specific strategic research tools, such as ITC's Product Map

### **By the end of the seminar the participants will be able to:**

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- Contribute to the design of trade promotion strategies

For further details, please contact Matthew de Gale at [matthew@tips.org.za](mailto:matthew@tips.org.za) or (011) 645 6404, or visit <http://www.tips.org.za/events/>.

\* The ITC is the technical co-operation agency of UNCTAD and the WTO for operational, enterprise-oriented aspects of trade development.

<http://www.intracen.org/index.htm>

# Reinventing Industrial Strategy<sup>1</sup>

In this article, Professor Sanjaya Lall<sup>2</sup> shows that – contrary to orthodox views that the need for industrial policy has declined – the case for policy interventions remains strong and is in fact becoming stronger. However, Lall does go on to caution us that this should not be interpreted as *carte blanche* to try to replicate the selective policies used by the well-known East Asian Tigers. Rather, he cautions us to draw lessons from these and local experiences and to adapt them to local needs and circumstances.

## Introduction

As liberalisation and globalisation gather pace, concern with industrial competitiveness is growing, not just in developing countries but also in mature industrial ones. But it is the former that face the most intense competitive pressures. Many find that their enterprises are unable to cope with the rigours of open markets – in exporting and in competing with imports – as they open their economies. Some countries are doing very well; the problem is that many are not. Diverging industrial competitiveness in the developing world is one of the basic causes of the growing disparities in income that are now a pervasive feature of the world scene.

The Millennium Development Goals of the United Nations were conceived to deal with just such concerns. However, there is little consensus yet on what can be done to deal with them, particularly in the industrial sphere. What can poor countries do to strengthen their industrial competitiveness in the international economic setting? Should they persist with liberalisation and hope that free market forces will stimulate growth and bring about greater convergence? Or is there a need to look again at national and international policy? What, in sum, is the correct role of government in stimulating industrialisation and using it as an engine for growth and structural transformation?

There are essentially two approaches to the issue of policy: *neo-liberal* and *structuralist*.

The *neo-liberal* approach is that the best strategy for all countries and in all situations is to liberalise – and not do much else. Integration into the international economy, with resource allocation driven by free markets, will let them realise their 'natural' comparative advantage. This will in turn optimise dynamic advantage and so yield sustainable growth – no government intervention can improve upon this but will only serve to reduce welfare. In this approach, the only legitimate role for the State is to provide a stable macroeconomy with

clear rules of the game, open the economy fully to international product and factor flows, give a lead role to private enterprise, and furnish essential public goods like basic human capital and infrastructure.

This approach has the backing of the industrialised countries and the Bretton Woods institutions, and has become enshrined in the new 'rules of the game' being formulated and implemented by the WTO.

The *structuralist* view puts less faith in free markets as the driver of dynamic competitiveness and more in the ability of governments to mount interventions effectively. It questions the theoretical and empirical basis for the argument that untrammelled market forces account for industrial success of the East Asian Tigers (or, indeed, of the earlier industrialisation of the presently rich countries).

Accepting the mistakes of past industrialisation strategies and the need for greater openness, it argues that greater reliance on markets does not pre-empt a proactive role for the government. Markets are powerful forces but

they are not perfect; the institutions needed to make them work efficiently are often weak or absent. Government interventions are needed to improve on market outcomes.

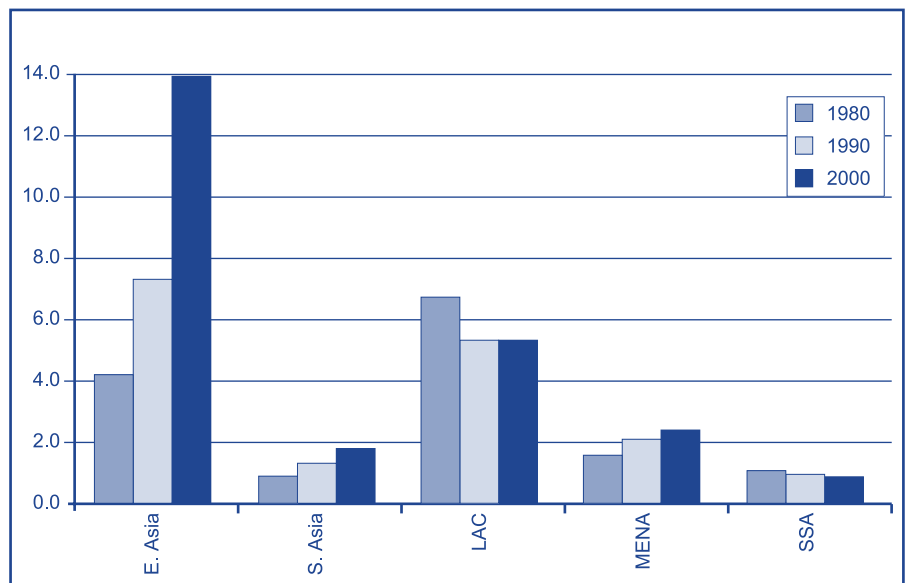
The controversy on industrial policy, of course, is not new. Despite the frequent assertion one hears that the debate is now dead and the efficacy of free markets established beyond doubt, this is not the case. This article suggests that the case for policy remains strong, and is in fact becoming stronger with technical change and globalisation. However, the kinds of intervention needed are changing; as a structural force, globalisation reduces the feasibility of some strategies while increasing that of others.

Structural changes are supported by new 'rules of the game' on participation in the international system. Some rules are necessary to facilitate the changes, but they must take account of the fact that the field has players of very different strengths. Imposing a level field can lead to an uneven distribution of benefits between the strong and the weak. They can constrain the ability of poorer countries to build the capabilities they need for industrialisation, banning policies used with spectacular success by several countries, including the advanced ones.

## Trends in industrial competitiveness in the developing world

This section uses two indicators: world market shares in *manufacturing value added (MVA)* and in *manufactured exports*. Developing regions are as follows:

Figure 1: Developing nations' share of global MVA (%)

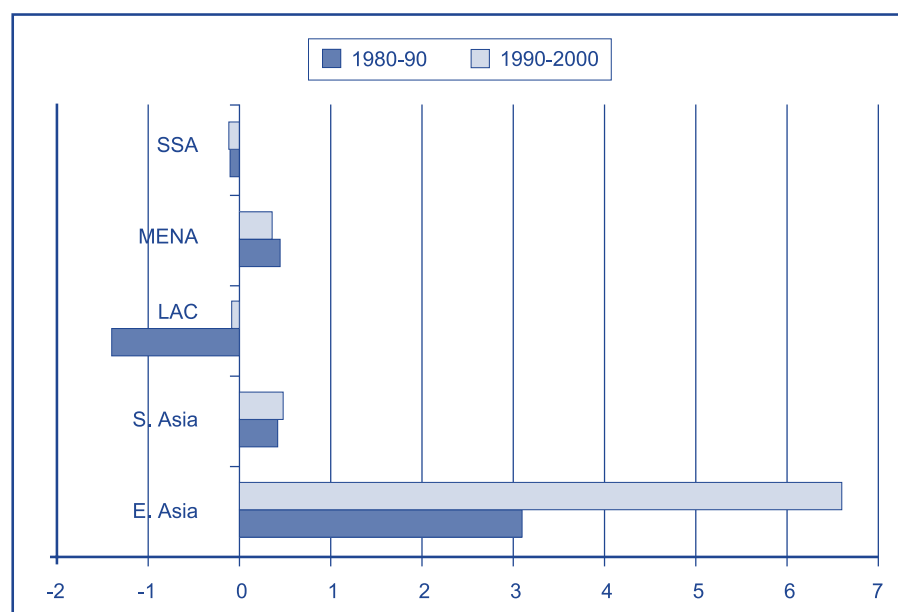


<sup>1</sup> This article is an abridged version of the paper, *Reinventing Industrial Strategy: The Role of Government Policy in Building Industrial Competitiveness*. This paper was first prepared for the Intergovernmental Group on Monetary Affairs & Development (G-24). It was also presented at the **dti**/UNIDO Competitiveness Conference – An Institutional Approach to Competitiveness – in Johannesburg in June 2004. The full paper can be found at <http://www.tips.org.za/research/>.

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**Figure 2: Changes in shares of global MVA (% points)**



- East Asia (EA) includes China and all countries in the Southeast Asian region apart from Japan, while EA2 excludes China.
- LAC (Latin America and the Caribbean) includes Mexico and LAC2 excludes it.
- South Asia includes the five main countries in that region.
- MENA (Middle East and North Africa) includes Turkey but not Israel (an industrialised country). SSA includes South Africa except in SSA2.

### Manufacturing Value Added

The developing world performed well in 1980 to 2000. Its share of global MVA rose by 10 percentage points (from 14% to 24%) and its annual rate of growth (5.4%) was over twice the 2.3% recorded by the industrialised world. Since this was a period of trade expansion, globalised production and liberalisation, it

may seem that globalisation and liberalisation were conducive to development. This is not so. Success in the developing world was very concentrated (see Figure 1). East Asia dominated, raising its world share from around 4% to nearly 14% – exactly the 20-point rise for the developing world as a whole. It came from behind LAC in 1980 to account for over two and a half times its share by 2000 (see Figure 2). Note that EA, while strongly export-oriented, was not ‘liberal’ in the Washington consensus sense (see Box 1). LAC, the region that liberalised the most, the earliest and the fastest, was the worst performer.

LAC and East Asia had very different approaches to industrialisation, initially to develop industry and later to liberalise it (see Box 2). EA has had much more strategic industrial policy than LAC. The resulting differences in outcomes are interesting, as Figures 3 and 4 show. The figures separate China in EA

and Mexico in LAC – both regional outliers – China because of its size, competitiveness and strong State role, and Mexico because of its location and privileged access to the US market. Both have done very well in manufactured exports, with a strong role for FDI, but their differences are also of interest. For instance, the link between export and MVA growth is far stronger in China than in Mexico: China is far less exposed to import competition and has used industrial policy to induce greater local content in its export activity.<sup>3</sup> Figure 3 shows MVA market shares *within the developing world* for EA without China, China, LAC without Mexico, and Mexico.

Figure 4 shows changes in these market shares over 1980 to 1990 and 1990 to 2000. In 1980, LAC accounted for 47% of developing world MVA and East Asia for 29%; two decades later, the shares were 22% and 58% respectively. The main surge in MVA growth in EA2 (excluding China) was in the 1980s, with a slowing down in the 1990s because of the financial crisis and the global recession.

In China the trends are reversed, with the more rapid growth in the 1990s, making its share of developing world MVA higher than the rest of East Asia together. LAC2, excluding Mexico, loses MVA shares more rapidly than Mexico, with the 1980s (the ‘lost decade’ after the debt crisis) being much worse than the 1990s.

The 1990s are illuminating for LAC industrial growth. It started the decade with considerable slack engendered by the lost decade, which favourable macro and policy conditions should have allowed it to exploit for high production and export growth. There was better macro management, widespread privatisation and lowering of trade barriers.

Despite these neo-liberal policies, the region continued to perform poorly: LAC2 had MVA growth of only 1.9% per annum, much lower than developing countries as a whole (6.4%) or East Asia (9.5%). It underperformed relative to South Asia and MENA, both highly interventionist regions. Mexico’s more robust growth of 4.4% was largely a consequence of trade privileges over other developing regions under NAFTA – hardly a neo-liberal recipe. In any case it did not match EA2 (6.7%) or China (13.1%), and this despite the fact that the 1990s were a bad period for EA2, reeling from the effects of the 1997 financial crisis.

### Box 1

As is now well known, most East Asian economies used infant industry protection, export subsidies and targets, credit allocation and direction, local content rules and so on to build their base of industrial capabilities, disciplining the process by strong export orientation (Amsden, 1989, Stiglitz, 1996, Wade, 1990, Westphal, 2002, World Bank, 1993).

There were different strategies within this general approach. The leading Tiger economies like Singapore, the Republic of Korea and Taiwan Province of China invested massively in human capital (particularly technical skills), fostered local R&D and built strong support institutions (Lall, 1996 and 2001). They tapped foreign direct investment (FDI) in different ways – Singapore by plugging into global production systems and the other two by drawing on its technologies via arm’s length means like licensing, copying and original equipment manufacturing.

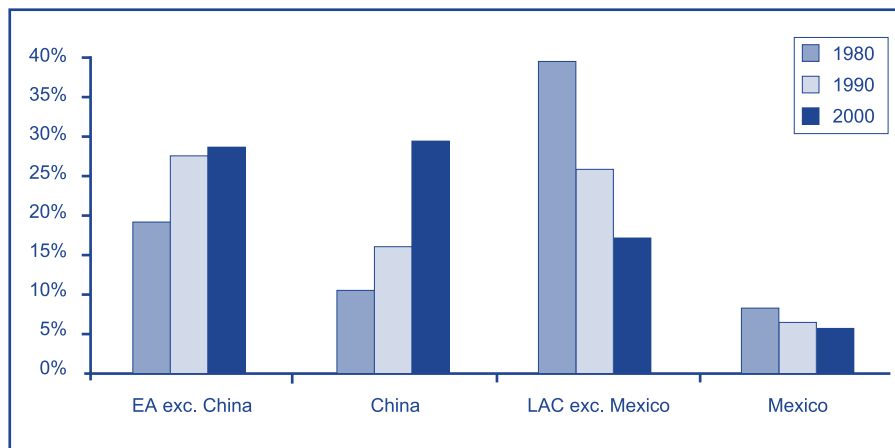
The second wave of Tiger economies like Malaysia, Thailand, Indonesia and Philippines relied more heavily on FDI in export processing enclaves and less on building indigenous capabilities; their export success was thus largely driven by global value chains, particularly in electronics.

China has a blend of different strategies, some similar to its neighbours and others, like public enterprise restructuring, uniquely its own (Lall and Albaladejo, 2003). The region as a whole liberalised cautiously and has retained a significant role for the State.

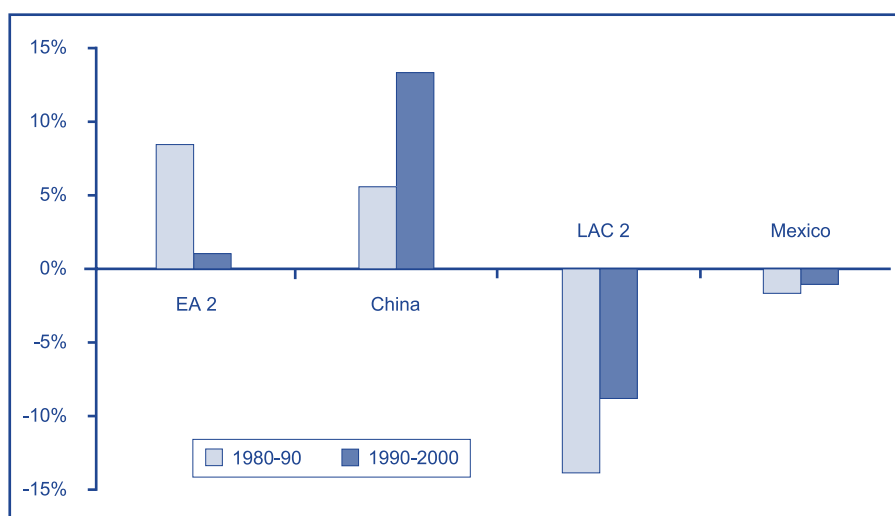
<sup>3</sup> China now poses a major competitive threat to Mexico in textiles and electronics. Mexican figures suggest the loss of over 200,000 jobs to China since 2001. See *The Economist* (2003) and *The International Herald Tribune* (2003).

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**Figure 3: East Asia and LAC, shares of developing world MVA (%)**



**Figure 4: East Asia and LAC, changes in shares of developing world MVA (%)**



**Box 2:**

In the first phase, LAC, in common with most other developing regions, relied heavily on protected import-substitution, sheltering enterprises from international competition but failing to offset this with incentives or pressures to export.

It did little to attract export-oriented FDI and so missed the surge in global production systems in electronics. It did not deepen local technological activity (by encouraging R&D) or develop the new skills needed for emerging technologies. In concert with widespread macroeconomic (and in some cases political) turbulence, this meant that LAC failed to develop a broad base of industrial capabilities that would drive competitiveness as it liberalised.

As a comparatively high wage region, LAC needed competitive advantages in complex activities to offset labour cost disadvantage vis a vis Asia. Despite its tradition of entrepreneurship and good initial base of skills, its industrial strategy failed to foster the necessary capabilities.

There were exceptions, such as the automotive industry in the larger economies and resource-based activities more generally. But many such activities were not growing rapidly in world trade, and LAC failed to increase its export market shares rapidly – the outstanding exception being Mexico, but due more to North American Free Trade Agreement (NAFTA) privileges than to strategy.

In the liberalisation phase, policy reform in LAC was rapid and sweeping, with no strategy to foster competitive capabilities and target promising activities. Again, there were exceptions, including the auto industry (restructured with the help of complementation programmes, banned under new WTO rules) and agro-based exports in Chile, but the general lack of strategy on industrial competitiveness meant that the region failed to catalyse export dynamism. Its main growth was in resource-based sectors where it was largely exploiting static comparative advantages.

**Export performance**

Figure 5 shows world market shares for manufactured exports for 1981 to 2000 and the value of such exports in 2000, separating China from EA2 and Mexico from LAC2.

EA accounted for 18% of world manufactured exports in 2000, up from 7% in 1981; within it, EA2 raised its global share from 6% to 11% and China from 1% to 7%. China has a much higher share of regional MVA than exports – its industry, perhaps not surprisingly in view of the size of the economy and its late entry to world markets – is far less export-oriented than its neighbours’. LAC lost world market share in 1981 to 1990 (from 3.2% to 2.4%), then raised it over the next decade to 5.2%. The initial fall was due entirely to LAC2 (from 2.7% to 1.9%), with Mexico steady at a 0.5% share. Over 1990 to 2000, LAC 2 raised its share marginally while Mexico had a six-fold increase to reach 3.0% (see Figure 6).

What may we conclude from these data?

- MVA performance is broadly correlated with manufactured export performance, though the fit is not perfect. EA2 and Mexico fare better in exports than in MVA in the 1990s, while the opposite is true of South Asia and MENA.
- Neither MVA nor export growth is strongly related to liberalisation in the Washington consensus sense. China, in particular, is hardly a neo-liberal paradigm.
- Industrial success remains concentrated, with no sign that liberalisation is leading to convergence. Yet the neo-liberal premise, on the basis of which many countries opened their economies, was that liberalisation would *by itself* promote industrial growth and competitiveness.

**Industrialisation strategies in the mature East Asian Tigers**

There was no general ‘East Asian model’. Each country had a different model within a common context of export orientation, sound macro management and a good base of skills. Each model reflected different objectives and used different interventions (though some, like support for exporters, were similar). As a result, each had a different pattern of industrial and export growth, reliance on FDI, technological capability and enterprise structure. However, for none was ‘getting prices right’ a sufficient explanation of industrial success.

Figure 7 shows recent MVA growth for the four countries Hong Kong, Singapore, Taiwan and Korea; China; and industrialised and developing countries for 1980 to 2000. Hong Kong stands out for its weak performance. Korea is the best performer among the mature

Tigers, but China outshines the four (and the rest of the region).

Figure 8 shows manufactured export growth from 1981 to 2000, with very similar patterns except that Singapore marginally outperforms Korea in the 1990s.

*Hong Kong* was nearest to the neo-liberal ideal, combining free trade with an open door policy to FDI. However, its success does not provide many lessons in the virtues of free markets to other countries. Hong Kong had unique initial conditions and its industrial performance, after the initial spurt, was weak. Its initial conditions included a long *entrepôt* tradition; global trading links; established infrastructure of trade and finance; presence of large British companies with immense spill-overs in skills and information; and influx of entrepreneurs, engineers and technicians (with considerable past learning) from the mainland. This allowed it to launch into light export-based manufacturing.

Other *entrepôt* economies in the developing world have provided similar policy environments but not enjoyed similar competitive success. Moreover, the colonial government did intervene to help industry, allocating scarce land to manufacturers and setting up strong and well-funded support institutions.

The absence of selective industrial policy, however, constrained the deepening and growth of manufacturing as inherited capabilities were 'used up'. Hong Kong *started with and stayed with* light labour-intensive activities where learning costs were relatively low.

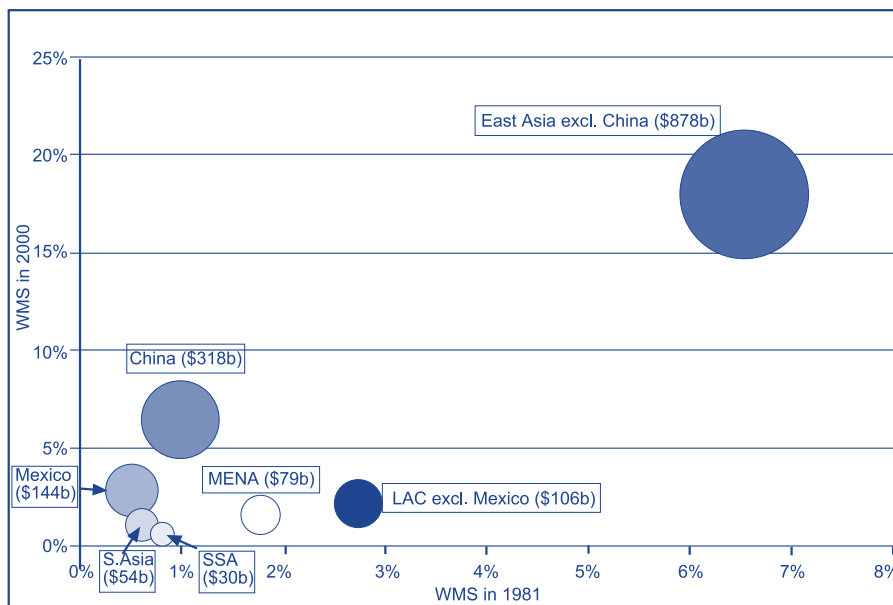
There was some progress in terms of product quality and diversification, but little industrial or technological deepening over time – in striking contrast to Singapore, a smaller *entrepôt* economy that pursued strong industrial policy.

As a result, Hong Kong deindustrialised as costs rose; manufacturing now accounts for less than 5% of GDP compared to over 25% at the peak. Its manufacturers shifted to other countries, mainly China, and its own exports went into decline in the 1990s.

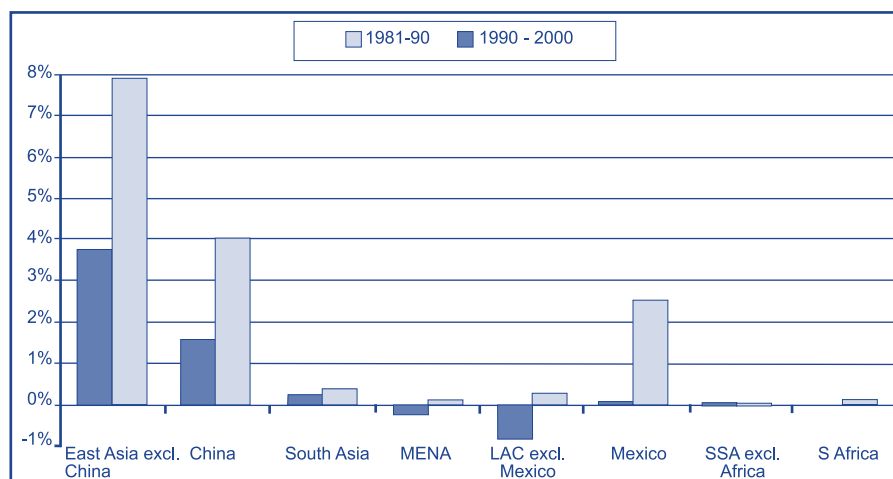
The economy has been growing slower than the other Tigers, and its main competitive advantage – providing financial and other services to the mainland – is under threat as China builds its own service capabilities. In any case, as far as *industrial development* goes, its experience does not convince one of the unalloyed benefits of free trade.

*Singapore* used highly interventionist policies to promote and deepen industry but in a free trade setting, showing clearly how industrial policy can take many other forms apart from import protection.

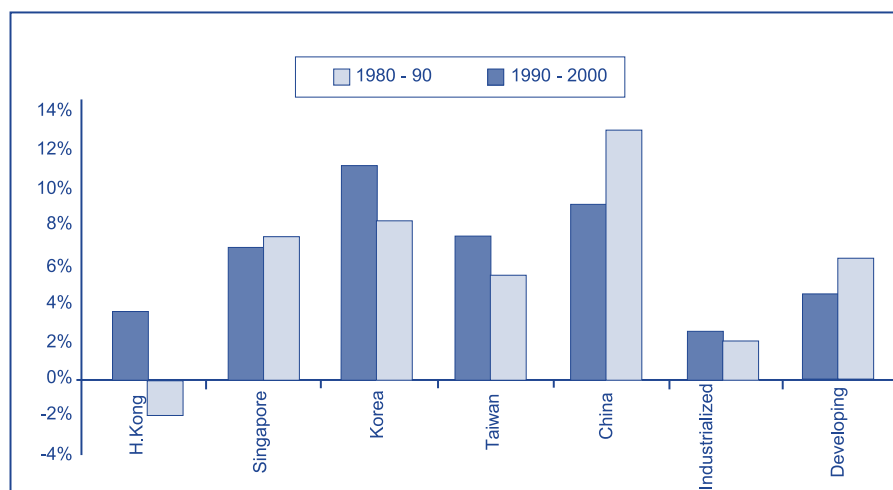
**Figure 5: World market shares for manufactured products in 1981 and 2000, and values of manufactured exports in 2000 (US\$bn)**



**Figure 6: Changes in world market shares for manufactures (% points)**



**Figure 7: Growth rates of MVA (% p.a.)**



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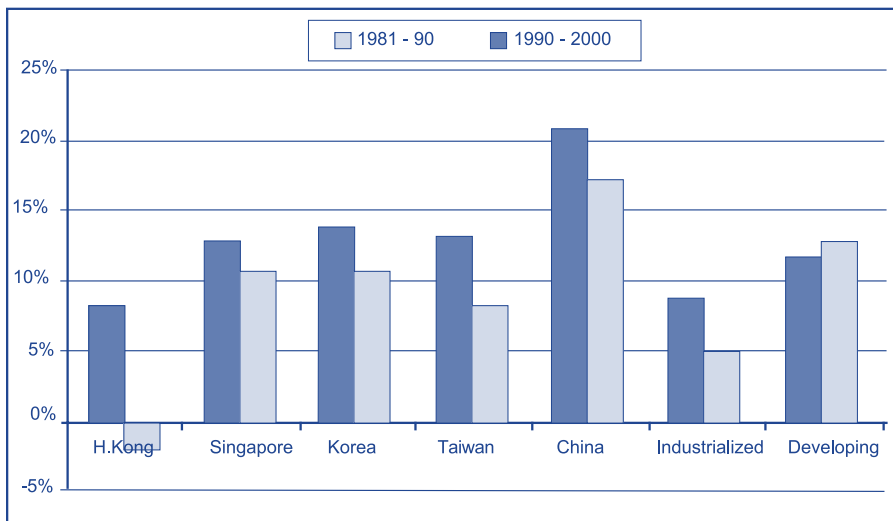
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With half the population of Hong Kong, even higher wages and a thriving service sector, Singapore did not suffer a similar 'hollowing out' of manufacturing. Its industrial structure, with strong policy support, deepened steadily over time, allowing it to sustain rapid industrial growth. It relied heavily on TNCs but, unlike Hong Kong, the government targeted activities for promotion and aggressively sought and used FDI as the tool to achieve its objectives (Wong, 2003).

Singapore started with a base of capabilities in *entrepôt* trading, ship servicing and petroleum refining. After a spell of import substitution, it moved into export-oriented industrialisation, based overwhelmingly on FDI. There was little influx of new technical and entrepreneurial know-how from China, and a weak tradition of local entrepreneurship.

After a decade or so of light industrial activity, the government acted firmly to upgrade the industrial structure. It guided TNCs to higher value-added activities, narrowly specialised and integrated into their global operations. It intervened extensively to create the specific skills needed (Ashton *et al.*, 1999), and set up public enterprises to undertake activities considered in the country's strategic interest, where foreign investment was unfeasible or undesirable.

**Figure 8: Growth rates of manufactured exports**



Such specialisation, with the heavy reliance on FDI, reduced the initial need for local technological effort. Over time, however, the government mounted efforts to induce TNCs to establish R&D and foster innovation in local enterprises (Wong, 2003). This strategy worked fairly well, and Singapore now has the third highest ratio in the developing world of enterprise financed R&D in GDP, after Korea and Taiwan (UNIDO, 2002).

The two larger Tigers – Korea and Taiwan – adopted the most interventionist strategies, spanning product markets (trade and domestic competition) as well as all factor markets (skills, finance, FDI, technology transfer, infrastructure and support institutions). They had a strong preference for promoting indigenous enterprises and for deepening local technological capabilities, and assigned FDI a secondary role to technology import in other forms.

Their export drive was led by local firms, backed by a host of policies that allowed them to develop impressive technological capabilities. The domestic market was not exposed to free trade; a range of quantitative and tariff measures were used over time to give infant industries 'space' to develop their capabilities. The deleterious effects of protection were offset by strong incentives (in the case of Korea, almost irresistible pressures) to export.

Korea went much further in building heavy industry than Taiwan. To compress its entry into complex, scale and technology-intensive activities, its interventions had to be far more detailed and pervasive. Korea relied primarily on capital goods imports, technology licensing and Original Equipment Manufacturing (OEM) agreements to acquire technology.

It used 'reverse engineering', adaptation and own product development to build upon these arm's length technology imports and develop its own capabilities (Amsden, 1989, Westphal, 1990). Its R&D expenditures are now the highest in the developing world, and ahead of all but a handful of leading OECD<sup>4</sup> countries. Korea accounts for some 53% of the developing world's total enterprise-financed R&D (UNIDO, 2002).

One of the pillars of Korean strategy, and one that marks it off from the other Tigers (but mirrors Japan), was the deliberate creation of large private conglomerates, the *chaebol*.

The *chaebol* were handpicked from successful exporters and were given various subsidies and privileges, including the restriction of TNC entry, in return for furthering a strategy of setting up capital and technology-intensive activities geared to export markets.

The rationale for fostering size was obvious: in view of deficient markets for capital, skills, technology and even infrastructure, large and diversified firms could internalise many of their functions. They could undertake the cost and risk of absorbing very complex technologies (without a heavy reliance on FDI), further develop it by their own R&D, set up world-scale facilities and create their own brand names and distribution networks.

This was a costly and high-risk strategy. The risks were contained by the strict discipline imposed by the government: export performance, vigorous domestic competition and deliberate interventions to rationalise the industrial structure. The government also undertook various measures to encourage the diffusion of technology, putting pressures on the *chaebol* to establish supplier networks.

Apart from the direct interventions to support local enterprises, the government provided selective and functional support by building a massive technology infrastructure and creating general and technical skills. Korea today has the highest rate of university enrolment in the world, and produces more engineers each year than the whole of India. Its enrolments in technical subjects at the tertiary level are over twice the ratio in the OECD.

Even more striking than its creation of high level skills was its promotion of industrial R&D. Enterprise-financed R&D in Korea as a percentage of gross domestic product (GDP) is the second highest in the world, after Sweden, and exceeds such technological giants as the US, Japan and Germany. Such R&D has grown dramatically in the past two and a half decades as a result of the promotion of the *chaebol*, export orientation, incentives, skill availability and government collaboration. *All this was an integral part of its selective industrial policy.*

Taiwan's industrial policy encompassed import protection, directed credit, selectivity on FDI, support for indigenous skill and technology development and strong export promotion (Wade, 2000).

While this resembles Korean strategy in many ways, there were important differences. Taiwan did not promote giant private conglomerates,

<sup>4</sup> Organisation for Economic Co-operation and Development

nor did it attempt a similar drive into heavy industry. Taiwanese industry remained largely composed of SMEs, and, given the disadvantages to technological activity inherent in small size, it supported industry by a variety of R&D collaboration, innovation inducements and extension assistance.

Taiwan has probably the developing world's most advanced system of technology support for SMEs, and one of the best anywhere. But it also built a large public sector in manufacturing, to set up facilities where private firms were unwilling or unable to do so.

In the early years of industrialisation, the Taiwanese government attracted FDI into activities in which domestic industry was weak, and used a variety of means to ensure that TNCs transferred their technology to local suppliers.

Like Korea, Taiwan directed FDI into areas where local firms lacked world-class capabilities. The government played a very active role in helping SMEs to locate, purchase, diffuse and adapt new foreign technologies. Where necessary, the government itself entered into joint ventures, for instance to get into technologically very difficult areas such as semiconductors and aerospace (Mathews and Cho, 1999).

This outline of industrial policy in the mature Tigers leads to the following conclusions:

- Selective as well as functional interventions played vital roles in the industrial and technological development of the most dynamic economies in the developing world (Hong Kong is the odd one out since its story is largely one of truncated industrial development).
- Each mixed selective and functional policies in each area of intervention. There is thus no reason to partition policy into these categories – any effective policy has elements of both.
- The extent of technological deepening in the three Tigers is directly related to their selective interventions in industry. Those who argue that intervention was irrelevant to their industrial success show a lack of understanding of the real capability-building processes underlying industrialisation.
- Governments in these Tigers showed the ability to devise and implement complex interventions effectively. In

Korea and Taiwan, the two that used trade interventions, export orientation imposed a strict discipline on both industry and governments. In Singapore, trade openness and the need to attract and retain FDI did the same.

- In all three, government capabilities improved over time, with growing levels of skill, remuneration and insulation allowing bureaucrats to operate efficiently and autonomously.<sup>5</sup>
- The nature and impact of interventions differed according to government objectives. The failures were addressed by different policies, reflecting location, size, history, culture and political economy.
- FDI was treated differently by each of the countries and so played varying roles in technology development. Those that wanted to promote indigenous technological deepening had to intervene to restrict foreign entry and to guide their activities and maximise the spill-overs. Those that chose to rely on TNCs and upgrade within their global production structure had to target investors, guide their allocation and induce them to set up more complex functions.
- The options and compulsions applicable to the larger economies, with greater scope for internal specialisation and local content as well as better established indigenous enterprises, were different from those open to small states with weak indigenous entrepreneurship and a tiny internal market. Given the need to spread technological development more widely, the former had to take more direct steps to assist local firms.

Finally, the contrast between the success of industrial policy in the Tigers and its failures elsewhere suggests that there is no justification for the general Washington consensus case against selective interventions.

It shows instead that the outcome depends not on *whether* governments intervene but *how* they do so. On 'how to intervene', the differences between typical import-substituting strategies and those used in the Tigers lay in such things as:

- Selectivity rather than promoting all industrial activities indiscriminately and in an open-ended way.

- Picking activities and functions that offer significant technological benefits and linkages.
- The role of government in industrial competitiveness.
- Forcing early entry into world markets, using exports to discipline and monitor both bureaucrats and enterprises.
- Giving the lead role in productive activity to private enterprises but using public enterprises as needed to fill gaps and enter exceptionally risky areas.
- Investing massively in skills creation, infrastructure and support institutions, all carefully co-ordinated with interventions in product markets.
- Using selectivity in FDI helps to build local capabilities (by restricting FDI or imposing conditions on it) or tap into dynamic, high-technology value chains.
- Centralising strategic decision-making in competent authorities who could take an economy-wide view and enforce policies on different ministries.
- Improving the quality of bureaucracy and governance, collecting huge amounts of relevant information and learning lessons from technological leaders
- Ensuring policy flexibility and learning, so that mistakes could be corrected *en route*, and involving private sector in strategy formulation and implementation (Lall and Teubal, 1998).

The list could be longer but it suffices to show that there are *many ways to design and implement* industrial policy. The analysis offers important lessons on what to do now.

There are also *many levels* of selectivity, and adopting 'industrial policy' does not mean that the country has to copy the comprehensive and detailed interventions used in Korea or Singapore.

In fact, the new setting may provide a case for lower degrees of selectivity in some areas. At the same time, the rigours imposed by globalisation and technical change may well strengthen the case for more intervention in others.

The mistakes of some industrial policies should not be allowed to overshadow the success of others. The evidence on the benefits of their effective use is overwhelming, and that on the effects of the alternative (passive and rapid liberalisation) is very disappointing for

*(continued on page 14)*

<sup>5</sup> There was no 'super-bureaucracy' in East Asia, and the process of building administrative competence was slow and halting. It often focused on the critical operational parts of the government rather than covering the whole apparatus. Thus, there are important transferable lessons on improving government capabilities from the Tigers – it is difficult to argue that their ability to mount industrial policy was unique and unrepeatable. See Evans (1998) and Cheng et al. (1998).

(continued from page 13)

countries with weak capabilities. To insist on the difference between selective and functional interventions and to condemn the former outright seems to fly in the face of theory and evidence – it carries the hallmarks of ideology.

### Industrial policy for the new era

What difference do technical change and globalisation make to the policies that developing countries need to promote industrialisation?

**Technical change:** The rapid spread of information technology, the shrinking of economic distance and the skill and institutional needs of new technologies have made the competitive environment more demanding. Competition arises faster and with greater vehemence and immediacy. Minimum entry levels in terms of skill, competence, infrastructure and 'connectivity' are higher. Specialised education is more important and technology support more essential.

All these raise the need for support of learning by local enterprises. Low wages matter, but over time they matter less in most activities, particularly for unskilled labour. Only the possession of natural resources gives an independent competitive advantage, but only for its extraction; subsequent processing also needs competitive capabilities.

The essential policy needs of capability building have not changed much. They are *direct* – the infant industry case to provide 'space' for enterprises to master new technologies and skills without incurring enormous and unpredictable losses – and *indirect* – to ensure that skill, capital, technology and infrastructure markets meet their needs.

There is also a need to *co-ordinate learning* across enterprises and activities, when these are linked in the production chain and imports cannot substitute effectively for local inputs.

At the same time, technical change makes it necessary to *provide more access to international technology markets*; it also makes it more difficult to anticipate which activities are likely to succeed. The information needs of industrial policy rise in tandem with technological change and complexity.

Does the greater complexity of technology make selectivity unfeasible? Not necessarily. Detailed targeting of technologies, products or enterprises may be more difficult because of the pace of change, but targeting at higher levels is feasible – and more necessary.

Technological progress may actually make industrial policy easier in some respects at

the right level. Information on technological trends and markets is more readily available, and more is known about the policies adopted by the successful countries, and their progress – and that of competitors – is easier to monitor.

With weak local capabilities, industrialisation has to be more dependent on FDI. It is difficult to see, however, how FDI can drive industrial growth in many parts of the developing world without the development of local capabilities, for several reasons:

- FDI tends to concentrate in technology and marketing intensive activities where enterprises can develop ownership assets. It does not cover large areas of manufacturing with mundane skill, branding and technological requirements – the heartland of industrial growth in late-comers.
- Attracting manufacturing FDI into complex activities (beyond simple resource extractive and labour-intensive activities) needs strong local capabilities, without which TNCs cannot launch efficient operations.
- Retaining an industrial base with a strong foreign presence needs rapidly rising capabilities as wages rise and skill demands change.
- FDI is attracted increasingly to efficient agglomerations or clusters of industrial activity, again calling for strong local capabilities.
- The cumulative nature of capabilities means that once FDI takes root in particular locations and global sourcing systems become established, it becomes more difficult to newcomers to break in, particularly in the more complex activities and functions. First-mover advantages, in other words, mean that late-latecomers face increasing entry costs – without strong local capabilities they will find it difficult to overcome these costs.

It is also difficult to see how host countries that have FDI can tap its potential fully without using time-honoured strategies like local content rules, incentives for deepening technologies and functions, inducements to export and so on. Admittedly, performance requirements have been deployed inefficiently in many countries, but, as with infant industry protection, they have also been used very effectively.

Among the most assiduous users of incentives for technology transfer and innovation are the advanced industrial countries. It is a puzzling dilemma of the current policy environment

that it recommends that countries open up to FDI while removing policy tools to overcome uncertainty, information failures, learning costs and so on.

**Globalisation:** 'Globalisation' is used here narrowly to mean the fragmentation of processes and functions across countries.

Fragmentation allows countries to develop competitive activities in niches – one component or process – and reach huge markets in ways not possible some years ago. The capability needs are narrower and more specialised than those in traditional forms of industrial specialisation. TNCs can transfer the 'missing elements' of technology, skills and capital needed to complement local capabilities if they see a competitive product at the end of the investment. In the process, they develop new capabilities – mainly production skills – in the affiliates to the extent needed for efficient production.

The spread of integrated systems makes it *more difficult and risky* to take the autonomous route of Japan, Korea or Taiwan.

It is much easier for countries to attract particular segments of TNC activity and build upon that rather than to develop local capabilities to match those of affiliates. In any case, local firms would find it extremely hard to enter export markets in a major way, emulating the earlier example of OEM contractors from Korea and Taiwan.

All the later entrants into globalised systems – from Malaysia and Thailand to Mexico and Costa Rica – have gone the FDI route. As FDI regimes are more liberal today, TNCs are less willing to part with technologies to independent firms that might become competitors.

Globalisation does not do away with the need for all selective industrial policies; it only reduces the scope and raises the potential cost of some. FDI is not, as noted, a replacement for local enterprises or capabilities – after a certain level of development the two are complementary. Strong local capabilities raise the possibility of attracting high value systems and of capturing skill and technology spill-overs from them; these capabilities need selective policies. Moreover, attracting export-oriented FDI increasingly requires selective promotion and targeting.

But there is a more fundamental issue: how far *can* globalised production systems spread across the developing world and how much do they *realistically offer* to industrial development in many poor, low capability countries?

After all, fragmented production is characteristic of only some industries in which production processes can be readily separated in

technological and geographical terms, and where differences in labour cost significantly affect the location of each process.

In low technology industry, it is strong in clothing, footwear, sports goods and toys; in high technology industry, it is strong in electronics.

In medium technology industry, it is strong in automobiles but the weight of the product and its high basic capability requirements mean that it only goes to a few proximate, relatively industrialised locations. This leaves a broad range of industries in which FDI and exports are not driven by global production systems.

Where such systems exist, they are likely to continue relocating to lower wage countries in only some activities.

Low technology industries are the best candidates because of low entry requirements, but here the abolition of the Agreement on Textiles and Clothing in 2005 raises the risk that garment production will shift back to East Asia rather than spread further to poor countries. However, wages are rising rapidly in the Chinese coastal areas that provide the bulk of garment exports, and infrastructure in the interior is still poor. Major new export platforms may be located in other countries, like Vietnam or Cambodia and South Asia, and Chinese enterprises may themselves become outward investors to find the most economical sites.

How far they will encompass least developed countries in Africa or medium income ones in LAC or MENA is difficult to say. It is indicative that other labour-intensive systems that do not have trade quotas driving location – footwear, toys and the like – have not looked for production bases in these regions.

In high technology production systems like electronics the picture is different. Entry levels are higher than in the late 1960s when the industry first sought cheap labour in Southeast Asia. Production techniques have advanced and grown more capital intensive. Manufacturing systems have 'settled down' in their new locations, with established facilities, logistics, infrastructure and support institutions. If these systems grow, they are likely to cluster around established sites rather than spread to new, less-developed ones.

Entry by newcomers is possible, of course – China is the obvious case – but most poor countries lack the industrial capability, size, location and other advantages of China. And most cannot use selective industrial policy to attract hi-tech FDI and induce it to source local inputs and skills in the way that China still does.

The prospects of complex global production systems spreading to most of Africa, LAC, South Asia or MENA are fairly dim. So far only South Africa, India and Morocco seem to offer some potential.

### **The desirable, the practical and the permissible**

The new formal 'rules of the game' under WTO aegis do not prohibit all selective interventions, only those that affect trade.

However, there are other forces making for liberalisation that are not formal and rule-based: structural adjustment programmes, bilateral trade and investment agreements, and pressures by rich countries. Taken together, these constitute a formidable web of constraints on the ability of governments to mount industrial policy.

As noted at the start, constraints may be useful. They may prevent the more egregious forms of intervention that led in the past to inefficiency, rent-seeking and technological sloth.

They are also beneficial to countries that have already developed strong capabilities behind protective barriers and should exploit them in competitive production: countries like India, Brazil or China should accelerate liberalisation if they can combine this with a strategy to restructure activities and enter promising new activities.

At this time, the main forms of selectivity permitted pertain to skills formation, technology support, innovation financing, FDI promotion and targeting, infrastructure development for IT, and all general subsidies that do not affect trade performance.

These tools – and some not in line with the spirit of the rules (US tariff protection on steel, for instance) – are all used vigorously by the industrialised countries. Most semi-industrial countries also use them, but the less-developed countries generally do not (on weaknesses in technology support in SSA, for instance, see Lall and Pietrobelli, 2002).

The critical issues facing the development community in industrialisation are:

- Is the degree of policy freedom left to developing countries sufficient to promote healthy industrial development? (see Box 3)
- If East Asia offers lessons for industrial policy, will the new environment allow them to be implemented?
- Without strong policy intervention, will persistence with liberalisation suffice to drive industrialisation?

### **Box 3**

What is 'sufficient' is of course largely subjective.

Some may consider it 'sufficient' that poor countries do not industrialise and stay specialised in primary activities: market fundamentalism sanctifies market-determined outcomes, and any deviation from these – even if it leads to faster growth – is by definition wrong, unhealthy or distorting.

Others may consider it 'sufficient' if countries are able to raise industrial and manufactured export growth to, say, 5% over an extended period, and still others may set the benchmark at the record of East Asia.

The precise objective does not matter as much as the acceptance that industrial development has to be accelerated and that needs policy intervention.

The answer to all these questions is 'probably not'.

The permissible tools are probably not enough to foster the rapid and achievable development of technological capabilities. They will force poor countries with weak local industrial bases to become over-dependent on FDI to drive industrial and capability development.

This cannot meet a major part of the needs of sustainable industrialisation. Even countries fortunate enough to plug into some global production systems can only do so as providers of the low-level labour services; subsequent deepening may be held back by constrictions on selective capability development.

For developing countries that have a capability base, the rules can deter strategic diversification into new technologies and activities. They can prevent newly industrialising economies from diversifying into advanced activities where entry is particularly risky and costly.

In general, the rules and pressures for liberalisation threaten to *freeze comparative advantage* in areas where capabilities exist at the time of liberalisation, yielding a relatively short period of competitive growth before the stock is 'used up'. Subsequent upgrading of competitiveness is likely to be slower than if governments had the tools to intervene selectively.

Returning to the East Asia/LAC comparison, the current policy regime is likely to prevent most of Latin America from emulating the growth and dynamism of the Tigers. And other developing regions are likely to fare even worse if they accept the rules and renounce all policy in favour of market-driven allocation.

*(continued on page 18)*

SA Trade Flows to the World

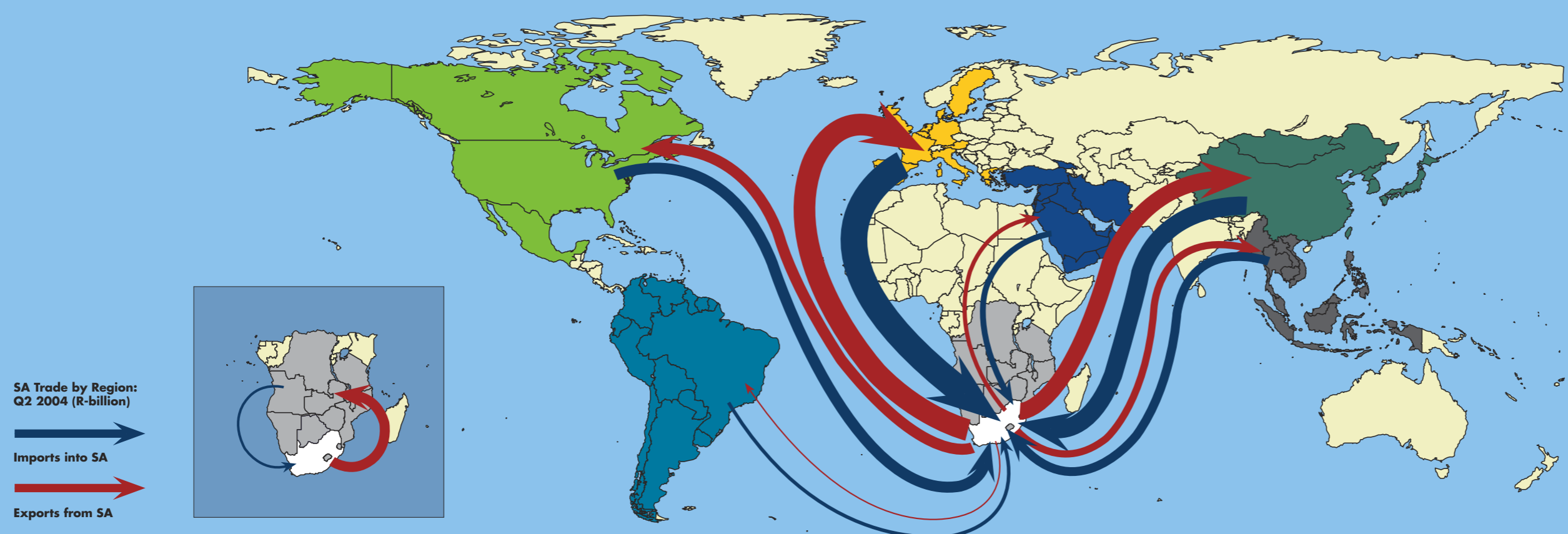
	Q2 2003		Q2 2004		Q1 2004		Q2 2004	
	Rbn	US\$bn	Rbn	US\$bn	Rbn	US\$bn	Rbn	US\$bn
Total Exports	62.60	8.07	72.32	10.98	67.25	9.95	72.32	10.98
Total Imports	62.57	8.07	79.05	12.01	64.08	9.48	79.05	12.01
Trade Balance	0.03	0.00	-6.73	-1.03	3.17	0.48	-6.73	-1.03

# SA TRADE AT A GLANCE

SA Trade with the World: Percentage Growth Rate

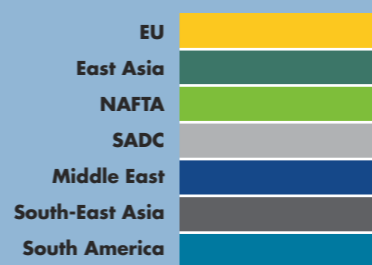
	Q2 2003 – Q2 2004 (%)	Q1 2004 – Q2 2004 (%)
Total Exports	15.53	7.53
Total Imports	26.34	23.35

Note: Growth rates have been calculated on the Rand values



Top Three Non-Mineral Exports from and Imports to SA from Regions (HS4, Q2 2004)

Region	Exports			Imports		
	Products	Value (Rbn)	% Share	Products	Value (Rbn)	% Share
EU	Centrifuges	1.7	7.5	Original equipment	3.4	11.6
	Ferroalloys	1.3	5.6	Aircraft	2.8	9.4
	Motor vehicles	1.1	4.8	Motor vehicles	2.4	8.1
East Asia	Woven fabric	2.7	22.2	Original equipment	2.2	15.6
	Salts, ethers and derivatives	1.8	15.0	Motor vehicles	0.9	6.3
	Yarn	1.4	11.7	Data processing equipment	0.7	5.4
NAFTA	Ferroalloys	0.9	9.1	Aircraft	1.3	17.2
	Motor vehicles	0.7	7.1	Motor vehicles	0.4	5.1
	Motor vehicle parts	0.1	1.5	Turbojets	0.2	3.0
SADC	Motor vehicles	0.2	2.5	Cotton	0.1	3.6
	Iron or steel structures	0.2	2.5	Refined copper	0.1	2.5
	Hot-rolled products, iron/steel	0.1	1.7	Copper wire	0.1	2.2
Middle East	Citrus	0.1	5.6	Nitrogenous fertilisers	0.1	1.9
	Cane sugar	0.1	4.7	Motor vehicles	0.1	1.4
	Hot-rolled products, iron/steel	0.1	3.9	Polymers	0.1	1.3
South-East Asia	Phosphoric acids	0.2	17.0	Original equipment	0.3	9.7
	Chemical wood pulp	0.1	7.2	Rice	0.3	8.7
	Hot-rolled iron or steel	0.0	4.1	Data processing equipment	0.3	8.6
South America	Ferroalloys	0.1	15.1	Original equipment	0.4	18.3
	Insecticides	0.0	4.9	Soybean oil-cake residue	0.3	13.0
	Filament yarn	0.0	3.3	Soybean oil	0.2	7.1



Top 10 Export Markets and Import Sources (Q2 2004), all products

Exports			Imports		
Country	Value (Rbn)	Share (%)	Country	Value (Rbn)	Share (%)
US	8.6	11.9	Germany	10.6	13.4
Japan	7.1	9.8	US	6.8	8.6
UK	6.6	9.1	France	6.2	7.8
Germany	5.0	7.0	Japan	5.2	6.6
Netherlands	3.2	4.5	China	5.1	6.5
Italy	2.0	2.8	Saudi Arabia	5.0	6.4
Belgium	2.0	2.7	UK	4.9	6.2
Australia	1.6	2.2	Iran	4.7	5.9
China	1.6	2.2	Nigeria	2.3	2.9
Spain	1.6	2.2	Italy	2.3	2.9
<b>Total</b>	<b>39.31</b>	<b>54.4</b>	<b>Total</b>	<b>53.00</b>	<b>67.1</b>

SA Trade with the World: Top 10 Products (HS2; Q2 2004)

Products	Total Exports (Rbn)	% of Total Exports	Products	Total Imports (Rbn)	% of Total Imports
Precious medals	19.5	27.0	Mineral and fuel oils	14.2	17.9
Iron and steel	8.7	12.0	Machinery and boilers	12.0	15.2
Mineral and fuels oils	5.9	8.2	Electric machinery	6.8	8.6
Motor vehicles	5.5	7.6	Special motor parts	6.7	8.5
Machinery and boilers	4.6	6.4	Motor vehicles	6.2	7.8
Aluminium	2.4	3.3	Aircraft	4.9	6.2
Citrus fruit	2.3	3.2	Medical & surgical equipment	2.4	3.0
Ores, slag and ash	2.3	3.2	Plastics and articles thereof	1.8	2.3
Inorganic chemicals	1.6	2.3	Pharmaceutical products	1.5	2.0
Electric machinery	1.6	2.2	Organic chemicals	1.4	1.8
<b>Total</b>	<b>54.50</b>	<b>75.4</b>	<b>Total</b>	<b>57.84</b>	<b>70.5</b>

SA Trade by Region (Rbn)

	Q2 2003		Q2 2004		Q1 2004		Q2 2004	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
EU	19.2	25.5	22.9	29.7	21.1	27.6	22.9	29.7
East Asia	9.4	11.3	12.0	13.8	11.1	12.4	12.0	13.8
NAFTA	6.3	7.2	9.4	7.6	7.1	6.4	9.4	7.6
SADC	6.4	1.3	6.2	2.3	5.4	1.4	6.2	2.3
Middle East	2.3	3.6	2.4	6.1	2.0	2.5	2.4	6.1
South-East Asia	1.9	2.7	1.9	3.4	2.1	2.8	1.9	3.4
South America	0.7	1.8	0.8	2.4	0.7	2.4	0.8	2.4
Rest of Africa	2.8	1.2	3.1	2.6	2.7	0.5	3.1	2.6
Rest of the World	13.5	8.0	13.6	11.1	15.1	7.9	13.6	11.1

Note: Share refers to the proportion of total exports/imports from the specified trade partner.

Note: Share refers to the proportion of total exports/imports



While local capabilities matter more than ever in an era of globalisation, this does *not* mean that all developing countries try to replicate the selective policies used by Tigers like Singapore, Korea or Taiwan.

What it means is drawing lessons on selectivity from their experience and adapting them to local needs and circumstances. This should be done in the following stages.

- The *first* stage of a desirable international policy regime would be to provide policy-makers with an objective and detailed analysis of what successful countries did to build industrial capabilities. This is not the case today; on the contrary, the system denies that industrial policy has any role to play.
- The *second* would be to create greater policy space for industrial policy. The move to wholesale liberalisation has great momentum, but rules are man-made and can easily be reversed if a consensus exists. Yet, despite all the public breast-beating about growing poverty, marginalisation, Millennium Development Goals and the like, the assumption on which international development is based is that the industrial sector will develop best under the new rules – only further liberalisation is necessary.
- The *third* stage would be to help to develop the capability to mount industrial policy. The final recourse of the neo-liberal – when confronted with the unanswerable theoretical case for selective interventions – is that it is impossible for governments to design and implement them. But there is a large body of case material showing that such interventions can work: government failure is, in other words, not inevitable. What is needed as an integral part of industrial policy is the building of the administrative competence, information and insulation that governments need. That government capabilities and governance can be strengthened is not in doubt (if it is, there would no scope for any kind of development policy).
- The *fourth* stage would be to help to devise strategies appropriate to each country. Creating more policy space and strengthening government capabilities should not mean returning to the bad old days of import substitution. It should be used for careful and flexible policy making, with clear targets and checks aimed at specific forms of technology development. This would be the most difficult step, since it requires the rich countries not only to admit

that industrial policy has a role and to allow poor countries to use such policy but to actively help them in designing and implementing it.

If this seems a forlorn hope at this time, consider the alternative of persisting with wholesale liberalisation. This would support the strong and penalise the weak, on the assumption that globalisation will by itself be sufficient to catalyse industrial development. This does not appear very promising. And there is enough evidence that well-used industrial policy can transform economic prospects.

The development community has to accept this, provide the 'space' for such policy and help countries to mount such policy, not deny its usefulness and practicability.

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# Addressing Market Power in a Small, Isolated, Resource-based Economy: The Case of Steel in SA<sup>1</sup>

SA has long been characterised as an economy that has built a comparative advantage in a range of resource-based intermediate products. While the country has significant cost advantages in many of these products, they are generally also characterised by large scale economies. This means high levels of concentration and concomitant market power, especially given high transport costs and a lack of regional competition. In this article, Nimrod Zalk and Simon Roberts<sup>2</sup> examine issues related to how government can address the implications of these economic characteristics. They also pointed to difficulties in applying off-the-shelf competition and regulatory solutions derived from industrialised countries, using the steel industry as an example of these issues. They highlighted the effects of market power on the development of relatively labour-intensive downstream manufacturing, drew out challenges for policy and suggested an agenda for further research.

## Background

SA has long been characterised as an economy that has built a comparative advantage in a range of resource-based intermediate products (see, for example, Fine & Rustomjee: 1996; Joffe, A. et al: 1995). These industries are characterised by a small number of large, scale-intensive firms that produce intermediate products or services based on processing the feedstocks of SA's primary resource endowments. They dominate substantial parts of the secondary and tertiary sectors of the economy, particularly the metals, chemicals and electricity sectors. It is also significant that a number of the dominant firms in these sectors are, or have been, State-owned enterprises (SOEs) or derive much of their competitive advantage from an SOE<sup>3</sup>.

In large part because of the concentration in resource-based, upstream, intermediate industries it has also long been recognised that the SA economy is highly concentrated. Thus the need for a strong competition policy in the post-apartheid economy was recognised in key policy documents such as the RDP<sup>4</sup> (1994: 25) and GEAR<sup>5</sup> (1996: 14).

The concern with concentration in the economy is often expressed in the context of the frequently stated policy objective of industrialising by using SA's resource base as a platform for downstream beneficiation, that is, moving from the processing to fabrication stages of manufacturing with the attendant benefits of value addition and employment

creation. Dissatisfaction with progress made with beneficiation is reflected in **the dti's** IMS (2002):

*South Africa's economic development is founded upon its natural resource endowments. However, we have failed to fully capitalise on these resources even though there has been significant progress made in the past eight years in value addition and beneficiation of raw materials ... Issues to be addressed include import-parity pricing. ... Beneficiation is the core mechanism for the transformation of our economy. **the dti** (2002:34), authors' emphasis.*

The practice of import parity pricing goes to the core of the competition problem associated with attempts to promote beneficiation in the SA economy. It is widespread in upstream, resource-based industries and effectively works as a mechanism to retain resource rents upstream as opposed to passing the advantages of SA's resource endowment to downstream industry.

Indeed, the trend in the past 10 years has been more of continuity than change. Capital- and energy-intensive resource-processing upstream sectors have performed well, with relatively poor performance by more labour-intensive downstream manufacturing industries (see Figure 1). The partial exception is the growth of production of the motor vehicle sector. However, this is related to a specific government programme, the MIDP<sup>6</sup>. Even in this

sector, the single largest component export was based on natural-resource processing of platinum catalytic converters.

While **the dti's** policy objectives of increasing beneficiation and development of stronger local value matrices are widely agreed upon, there is not necessarily a good understanding of the main obstacles to this happening. The three sectors of *Basic Iron and Steel*, *Non-ferrous Metals* and *Basic Chemicals* which have registered such high output growth rates are characterised by high levels of concentration. At the same time, their products have a relatively low value-to-mass ratio, meaning that transport costs per Rand of product are high. This allows for the possibility of market power to be exerted in the local market.

As a result there continue to be large net exports of products such as steel, aluminium and polymer chemicals in unbeneficiated form, and net imports of more beneficiated products.

Government's 10-year review indicates that competition policy has not adequately dealt with high levels of concentration in the economy and attendant pricing implications.

*...there is concern that the competition authorities have not been as effective in the field of combating prohibited practices .... Industry concentration remains high in*

*(continued on page 20)*

<sup>1</sup> The full paper on which this article is based can be found at <http://www.tips.org.za/events/regulation2004.asp>. It was presented at the September 2004 conference, Pro-Poor Regulation and Competition: Issues, Policies and Practice, co-ordinated by the Centre on Regulation and Competition (CRC), University of Manchester and the University of Stellenbosch's School of Public Management and Planning, in partnership with TIPS.

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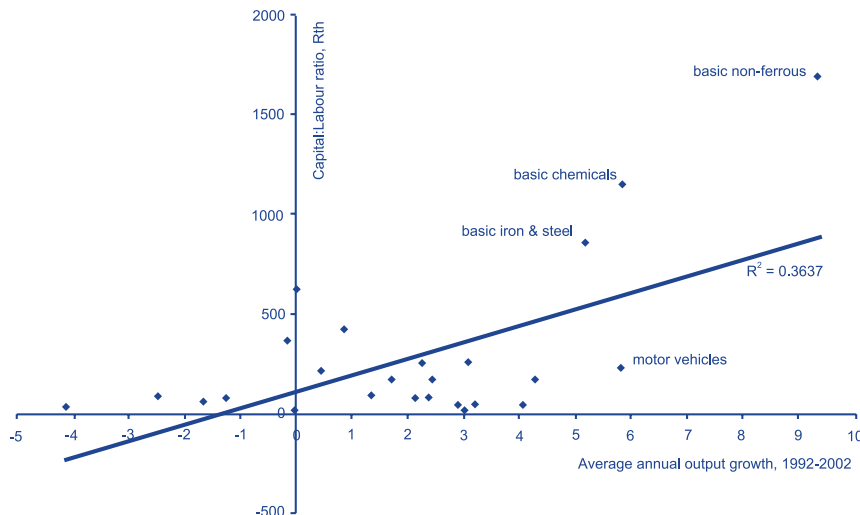
<sup>3</sup> For example, the aluminium industry consumes vast amounts of electricity and hence is attracted to investment destinations where electricity is relatively cheap.

<sup>4</sup> Reconstruction and Development Programme

<sup>5</sup> Growth, Employment and Redistribution Strategy

<sup>6</sup> Motor Industry Development Programme

**Figure 1: Output growth and factor intensity in manufacturing, 1992-2002**



[Source: Calculated from Quantec data]

Notes: Capital:labour ratio is measured in thousands of Rand of capital stock per employee in 2002. The coke & refineries sector was not included in the figure as it has a capital:labour ratio of R7,237,000.

South Africa.... As a result, price mark-ups in South Africa are high by international standards, especially in certain key intermediate products. Towards a Ten-Year Review (2003:40).

This is a concerning evaluation, particularly in the light of the importance assigned by the IMS to downstream beneficiation as the major contributor to SA's industrialisation.

### The Case of the SA Steel Industry

The case of SA's steel industry is an ideal example against which to assess the extent to which off-the-shelf institutional solutions are able to address the issue of market power in scale-intensive, resource-based processing industries in a small, isolated economy. Liberalisation and industry restructuring have led to increasing concentration of primary steel production, and at the level of steel traders. There is also vertical integration of the largest trader with the largest producer.

The behavioural challenge is starkly illustrated by the practice of import parity pricing, a widespread practice in the SA economy, particularly by upstream firms.

### Structure of the South African Steel Market

At the core of the analysis is whether low production costs of resource-based products are translated into low domestic prices to the benefit of the users of those products for downstream manufacturing. It is thus necessary to understand the steel value chain, from the nature of steel production and the linkages of

steel into downstream manufacturing to the characteristics of the downstream steel users.

### Production and distribution of steel

#### Inputs and production costs

The major inputs into steel production are iron ore, energy, labour costs and coking coal. With its high-quality iron ore deposits, low electricity costs and relatively low labour costs, SA is a highly advantageous investment destination for steel production. Due to the low number of steel producing firms, monopsonistic purchasing power means that inputs such as ore and electricity are purchased at very beneficial prices. Coking coal is the only major imported input.

#### Products, technologies and economies of scale

Carbon steel is produced in two main forms. Flat steel products are produced in hot-rolled coils – sheets of steel of around 28 tonnes which are rolled up after coming out of the furnace and can only be uncoiled again by re-heating.

This process also allows them to be rolled into thinner sheets (of cold-rolled coil) and/or cut into different shapes and sizes. Long products are produced in the form of very large billets (blocks) of steel which are then formed and shaped into a range of further products, including steel rods and bars.

The processing of iron ore into steel is generally characterised by large economies of scale.<sup>7</sup> Thus, as with much processing of natural resource feedstocks into intermediate dimensional products, steel production can

generally be considered a natural monopoly – economies of scale are such that it would not be economically efficient for the existence of multiple steel producers producing predominantly for and competing in all but the largest domestic steel markets. Hence, of the 3.6-million tonnes of flat steel and 2.7-million tonnes of long steel that SA produces each year, around 44% is exported.

In flat steel there are just two producers, Iscor and Highveld Steel & Vanadium. Iscor, which produces at Vanderbijlpark and Saldanha, is overwhelmingly the largest producer, supplying 84% of the local market. In long products there are several producers – Iscor (at its Newcastle works), Capegate, Scaw Metals and CISCO.

### Domestic distribution and imports

There are two channels through which domestic steel is purchased: directly from the steel producers and through steel merchants. Steel can generally be purchased directly from producers only in the case of bulk purchases. A number of steel merchants perform the task of 'breaking bulk' as well as adding value by cutting steel into dimensions required by the customer.

Evidence is mounting that steel merchants and intermediate players in the long products market play a significant role in maintaining prices at levels far above those which would prevail in competitive markets.

Imports account for a very small proportion of domestic flat product sales (between 3% and 5%), mainly grades or specifications not made locally.

### Ownership

The major primary steel producer, Iscor, was established as an SOE in 1913.<sup>8</sup> Iscor was privatised in 1989, five years before the first democratic government. No regulator was put in place at the time. Over the 1990s there has been substantial restructuring. A foreign investor, LNM, has driven much of the restructuring process, and has progressively raised its shareholding. Finally in 2004, the competition authorities approved the merger of LNM and Iscor, with the former raising its shareholding to over 50%. Thus Iscor has moved from being an SOE to becoming majority owned by a foreign direct investor.

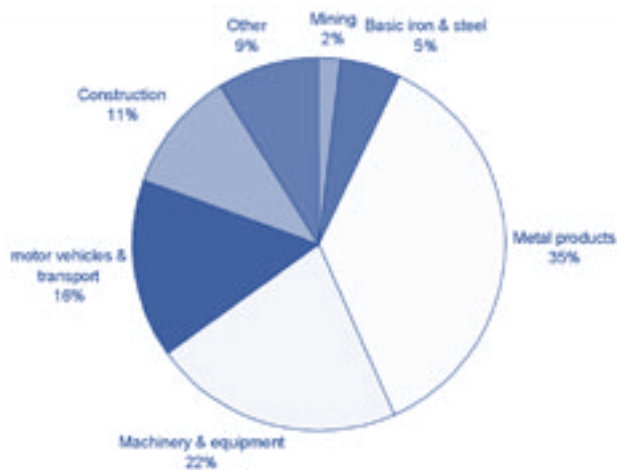
### Domestic consumption of steel

The main markets for *Basic Iron and Steel* output are Metal Products, Machinery and Equipment, Motor Vehicles and Construction (see Figure 2).

<sup>7</sup> Although Fine (1997:24-26) makes the case that minimills provide a feasible alternative to large-scale integrated plants (the predominant technology in steel production).

<sup>8</sup> As the Union Steel Corporation of South Africa.

**Figure 2: Main domestic market for Basic Iron and Steel**



[Source: Statistics South Africa, Supply and Use Tables 1998]

Basic Iron and Steel is a very important input for these sectors, especially Metal Products and Machinery and Equipment. Table 1 demonstrates that steel comprises between 18% and 32% of direct material inputs into key downstream steel consuming sectors. Taking into account indirect inputs, it ranges from 23% to 43% of material input costs.

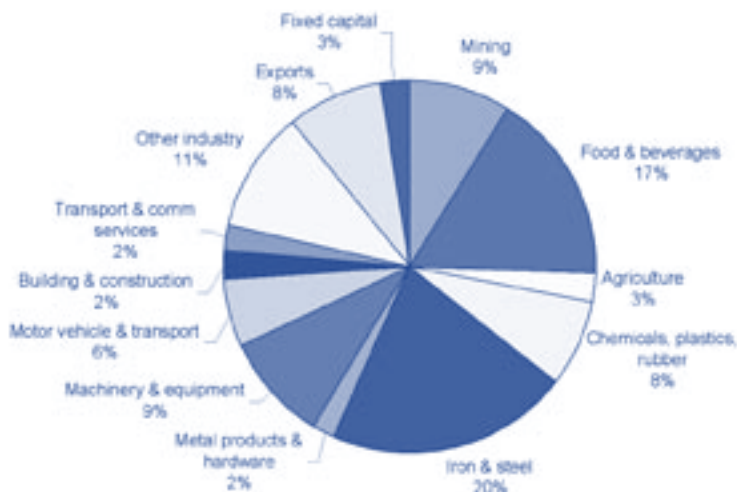
**Table 1: The proportion of basic iron and steel as direct and indirect inputs into key downstream industries**

Sector	Sub-sector	% Direct inputs	% Direct + indirect inputs
Metal products	Structural metal products	32.0	42.7
	Treated metal products	35.8	40.9
	Other fabricated metal products	36.6	42.2
Machinery & Equipment	General machinery	19.3	24.9
	Mining machinery	18.8	24.4
	Food machinery	18.4	23.4

[Source: Statistics South Africa, Supply and Use Tables 1998]

As such, steel pricing has very important competitive effects for downstream sectors. This is reinforced by the wide variety of uses for fabricated metal products as intermediate products themselves. While structural metal products are used predominantly in construction, fabricated metal products are inputs into many other sectors, as indicated in Figure 3.

**Figure 3: Main markets for other fabricated metal products**



[Source: Statistics South Africa, Supply and Use Tables 1998]

The high direct and indirect proportion of steel as an input into key downstream steel-consuming industries, and the multiple industries which the latter supply, mean that the pricing of steel has a pervasive effect on the competitiveness of downstream manufacturing.

**Pricing**

Essential to understanding the potential for price-setting is the market over which such market power can be exerted. If there are good substitute products, a price increase will induce consumers to switch to alternative products. This applies to the definition of the market in both geographic scope and product characteristics.

*Market differentiation*

While there are generally not good substitutes for steel (in that consumers cannot switch quickly and costlessly<sup>9</sup>), the geographic scope of the market is not as immediately apparent.

There is a clear differentiation between the two markets into which steel is sold – the international market and the local market. The local market is quite distinct for a number of reasons:

- There is extremely limited domestic competition and no regional competition. The latter is due to the relative underdevelopment of surrounding countries.
- Primary steel is a high transport cost, low value product. The costs of importing steel, including the shipping, tariff, wharfage and related charges are significant relative to the cost of the steel. SA's distance from alternative steel suppliers exaggerates the magnitude of these notional costs which feed into the import parity price on which domestic sales are based.
- Imports take time to arrange and ship – typically around six to eight weeks from order to delivery.
- Steel-using firms value guaranteed supply with the ease of redress in case of quality problems. This means a significant disadvantage in resorting to imports.
- There are increasing allegations from downstream users that steel traders are reluctant, or even refuse, to import, further limiting imports as a source of competition.

*(continued on page 22)*

<sup>9</sup> Over time, other products such as aluminium or plastics may replace steel. This does not necessarily mean that they are good substitutes and depends on the functions for which the product is being used. Interestingly, in specific uses where plastics, for example, can be used instead of steel, Iscor has a different pricing structure.

(continued from page 21)

These factors result in a significant price differential (around 30% to 40%) between the price received for exported steel and steel sold in the local market<sup>10</sup> and significant margins above domestic prices found in comparable countries (see Figure 5).

There is a near monopoly in flat products while there is some competition in long products.

*The economics of import parity pricing*

At the most basic level, import-parity pricing may be argued to be the result of local firms' pricing based on their competition with imports. It is certainly based neither on local firms competing with each other for local sales, nor on the underlying costs of production. Indeed, it depends on geographical accident, as the margin is due largely to the distance of the local market from the sources of imports. Crucially, steel is a product in which SA has a large excess of domestic supply over domestic demand. This reflects historical decisions and cost advantages which have underpinned decisions to expand production for export.

The trade surplus means that the cost of supplying an extra unit to the local market is the revenue foregone by exporting one unit less (the opportunity cost). A 'free' market would therefore be expected to yield an export-parity price.

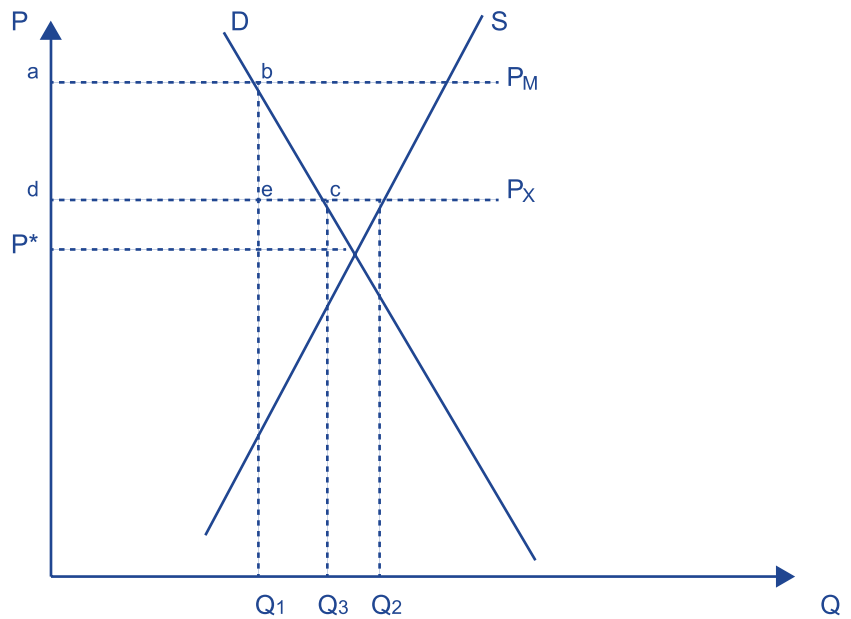
In terms of textbook microeconomics, import-parity pricing demonstrates market power as the firms are 'price-setters' due to their ability to dictate the price up to the ceiling provided by the import-parity price level. With competition, firms would be 'price-takers' and the market price would reflect the minimum average costs of production.

Import-parity pricing in products with a large trade surplus is therefore a signal of collusion or, if there is only one dominant producer, the exertion of monopoly power in setting price. For example, with two producers and a much lower price being received for the product being exported than for the product being sold into the local market, there is a very strong incentive for each firm to try to increase its local market share and hence to have to export less of its output. This process of competing for local customers will exert downward pressure on the price, possibly down to the price received for exported products. The absence of this competitive process means that producers continue to charge different prices for the same product sold into different markets (local and export).

<sup>10</sup> This is the order of magnitude of the price differential experienced by a domestic firm which does not receive any export or industry specific pricing arrangement.

<sup>11</sup> Taken from Malikane et al. (2000)

**Figure 4: Illustration of the static economic effect of import-parity pricing**



There are major welfare losses from this, as it means under-consumption in the local market due to the demand response to the higher price (as illustrated in Figure 4<sup>11</sup>):

- In the absence of trade the local price would be P\*.
- If the product is exported at a price of Px, a total of Q2 is produced by local firms.
- Import-parity pricing to local customers mean they are charged at the higher price of PM and consume Q1. The actual amount exported is equal to Q2 minus Q1.
- Exports are more than they would be if all customers were charged Px, and local demand is lower (at Q1 instead of Q3).

Producers may also argue that the point of import tariffs is to ensure that prices in the local market are higher than they are internationally. Tariffs on steel manufactured in SA remain at 5%. But tariffs account for only a minor portion of the margin between the domestic and international price (30% to 40%). Transport costs, wharfage and related charges increase the costs of buying imported materials. There is also a non-price disincentive to import in the form of the time required, and the greater difficulty of recourse if there are quality problems with an overseas supplier.

Lastly, while import-parity pricing is consistent with the pursuit of profit-maximising objectives, as might be expected of any privately run firm, the nature of steel as an important input for downstream firms means that its pricing has an effect on the competitiveness and growth of downstream firms such as those manufacturing metal products. Pricing decisions to maximise returns in the short term for the upstream steel producers may at the same time inhibit the growth of demand from local downstream industry in the longer term.

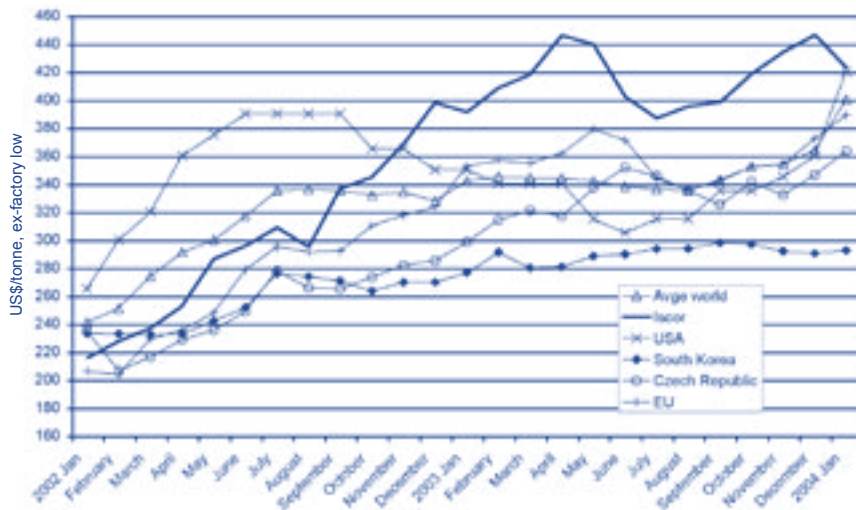
It should be emphasised that it is perfectly rational for a monopolist to exert its market power through maintaining prices above competitive levels. This does not mean that it will raise prices as high as it possibly can. Increasing prices will lower purchases, even in the absence of good substitutes as there is an 'income effect'. Consumers' incomes do not go as far given the higher prices and they adjust their purchases downwards. In addition, increasing prices mean that purchasers start to consider other, previously unattractive, substitutes. The presence of substitutes (including imports) is therefore the result of the exertion of monopoly power rather than a factor inhibiting it.

*International comparisons*

Figure 5 demonstrates some international comparisons in flat steel pricing in various domestic markets. It shows that SA flat steel prices have been above the world average since late 2002. The world average is itself not a good reflection of competitive conditions, since it has been dragged upwards during 2002 by high US prices, which in turn were driven by protectionist safeguard duties in place at the time.

A better comparison is with EU domestic prices in which regional competition prevails. SA prices have been consistently above EU levels – an average 17% in 2003 notwithstanding higher costs of production in Europe. Price differentials are even higher relative to more comparable developing countries with lower cost structures. In 2003 the price premium of SA over the Czech Republic was 26% and 44% above the South Korean price.

**Figure 5: International comparisons: ex-factory low prices for Hot Rolled Coil 2.0-3.0, CQ<sup>12</sup>**



[Source: MEPS and Iscor]

Note: Calculation for Iscor assumes import parity price discount, 2.5% settlement discount, 4.5% volume discount, excludes transport and packaging

**Downstream competitiveness**

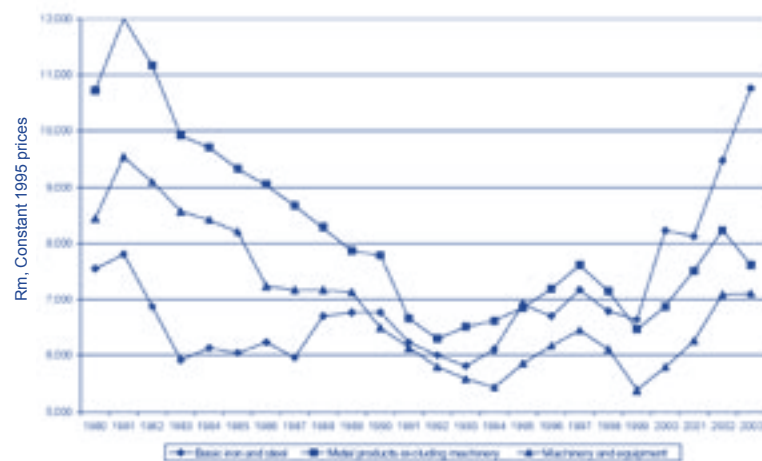
By comparison with the very capital-intensive Basic Iron and Steel sector, Metal Products and Machinery and Equipment are relatively labour intensive. The ratio of fixed capital stock to employment in Basic Iron and Steel is R858,000 per employee (in 2002), compared with just R77,000 in Metal Products and R86,000 in Machinery and Equipment.

The performance of the Metal Products industry has been very poor. Value added has declined sharply from the early 1980s while Basic Iron and Steel has performed much better (see Figure 6). This underlies the fact that local steel consumption remains lower at present than in the early 1980s.

While there has been some improvement in Metal Products' output in recent years (and especially following the Rand depreciation), output volumes turned sharply downwards from the second half of 2002. The combination of Rand strength and rising rather than falling steel prices resulted in a decline in Metal Products and a levelling off of Machinery and Equipment value added in 2003.

Similar patterns are observed in capacity utilisation, with much higher levels of capacity utilisation in Basic Iron and Steel (see Figure 7). To an extent, this reflects the large-scale, capital-intensive nature of steel product, with sunk costs such that plant is operated at as close to full capacity as possible at all times. Conversely, the decline in Metal Products and the levelling off of Machinery and Equipment in

**Figure 6: Value added – Basic Iron & Steel, Metal Products and Machinery and Equipment**



[Source: Quantec]

**Figure 7: Capacity utilisation – Basic Iron & Steel, Metal Products and Machinery and Equipment**



[Source: Quantec]

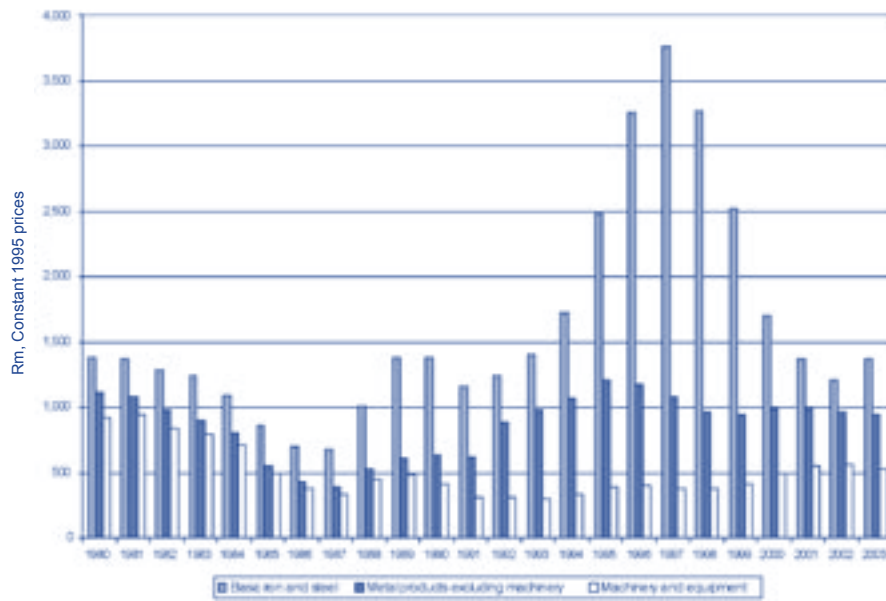
2003 are particularly concerning. The former is at a lower level than in any other year in the past decade.

An even more divergent pattern is evident in investment (see Figure 8). While major investments were made in Basic Iron and Steel between 1996 and 1999 which supported the output growth from 2000, investment in Metal Products has been very low, further indicative of low margins and weak competitiveness. It is important to note that the big investments in Basic Iron and Steel – in Saldanha Steel and Columbus – received a high level of support from the State in the form of Industrial Development Corporation (IDC) finance, as well as infrastructure and tax breaks.

The poorer performance of the Metal Products sector evidently has important implications for employment. While Basic Iron and Steel is capital intensive and has become more so, with

<sup>12</sup> The comparison is based on bulk purchases direct from the primary producer. It does not take into account export rebates or industry specific arrangements. In SA such arrangements are limited and cover a relatively small proportion of steel consumers. Nor does it take into account differences in premia added by steel traders in the various markets.

**Figure 8: Investment – Basic Iron & Steel, Metal Products and Machinery and Equipment**



[Source: Quantec]

large-scale retrenchments during the 1990s, the Metal Products sector is relatively labour intensive and has the potential to increase employment if output and investment expand.

The analysis of trade data suggests that SA has a strong comparative advantage in upstream production, based on the costs of materials and historically developed capabilities. This is not, however, translated into relatively low-cost downstream intermediate inputs due to the lack of competitive pricing. As a result, SA has remained a net exporter of unbeneficiated products.

Exports of Metal Products in 2002 remained lower than for most of the 1990s, and reflected a small trade deficit given increased imports (see Figure 9). Exports, at 12.9%, remain a small proportion of the output of Metal Products. This compares with the huge trade surplus in Basic Iron and Steel. It should be noted that this is despite transport costs generally being more significant for upstream unbeneficiated products than for higher value-added goods.

**Downstream competitiveness**

International comparisons further reinforce the relative under-development of the downstream steel-consuming industry in SA (see Table 2). By comparison with Basic Iron and Steel, the Metal Products sector is both much smaller in SA and more poorly performing. In particular, with regard to Chile and South Korea, average wages are significantly lower and yet the Metal Products grouping has performed very poorly.

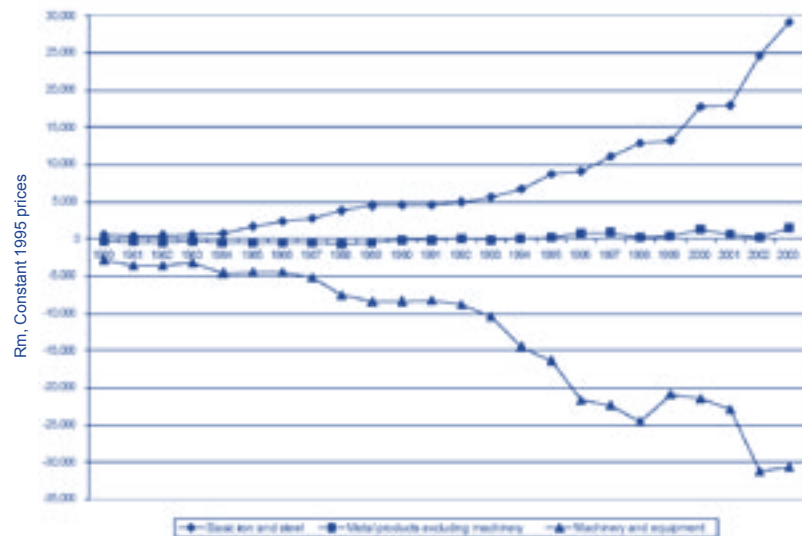
**Assessing Policy Options for Fostering Competition in Resource-based, Scale-intensive Industries in SA**

**Trade liberalisation**

Trade liberalisation does not automatically lead to domestic competition. In SA's case, a number of conditions mitigate against domestic competition in upstream, scale-intensive, resource-based industries.

Large economies of scale mean that a number of such industries are natural monopolies. This is reflected in the large trade surpluses run by such industries. Unless an economy is very large, the major source of competition is regional not national. Due to the relative underdevelopment of the southern African region, SA lacks the regional competition that would put downward pressure on domestic prices. The high weight to value ratios of dimensional intermediate products militate against effective import competition, and may well be exacerbated by the role of the steel merchants and other intermediaries.

**Figure 9: Trade balance – Basic Iron & Steel, Metal Products and Machinery and Equipment**



[Source: Quantec]

**Table 2: Comparative performance of iron & steel and metals, 1990-1999**

	Iron & steel				Metal products			
	SA	Chile	Korea	Malaysia	SA	Chile	Korea	Malaysia
VA, US\$m, 1999	2 207	351	8 978	592	1 391	593	7 257	838
Average ann. VA growth	-0.7	2.4	4.2	8.4	-2.2	5.5	3.9	11.4
Average ann. empl gr.	-2.8	-5.0	-1.5	7.7	-1.2	0.7	-1.5	6.8
Average wage, 1999 (\$/th)	13.0	17.5	17.5	5.1	7.2	8.5	12.7	4.8

[Source: UNIDO (sourced from Quantec)]  
 Note: Growth in value-added is calculated from current US\$ figures for 1990 to 1999.

All these factors are exacerbated by SA's unique economic geography. First, imports can only be sourced from distant producers by sea, typically from Europe or Asia. In the second place, SA's historical pattern of industrialisation means that the bulk of economic activity is located inland, with attendant freight costs from the coast. Thirdly, SA's transport costs are high by international standards. Finally, there are long lead times in arranging imports and there is limited redress with respect to quality or other problems. All of these factors contribute to an import parity price well above international domestic comparators.

### Privatisation

Transfer of ownership from public to private hands is often aimed at improving inter-firm rather than inter-market efficiencies. This appears to have been the case with respect to the privatisation of the major steel producer: Iscor in 1989. Inter-firm efficiencies have indeed been achieved, but at a very large cost to employment – although much of the efficiency improvement seems to have occurred fairly long after the privatisation, from the mid 1990s onwards and with the assistance of foreign investor LNM.

However, no attention appears to have been paid to inter-market efficiencies during the privatisation process. Ironically, pricing under State control more closely resembled competitive market outcomes, prior to privatisation, since pricing was based on a cost plus model. Thus privatisation appears to have diminished rather than improved competitive outcomes in the steel industry.

### Competition policy

SA's post-apartheid competition law and authorities are far stronger than their predecessors. However, it is unlikely that competition policy alone, particularly as currently implemented, will be a complete solution to addressing market power of scale-intensive, resource-based firms.

First, SA's competition legislation is based on dealing with ex-post anti-competitive conduct rather than ex-ante dominant market structure. There are sound industrial policy reasons for this. Due to SA's comparative advantage in the production of a number of intermediate resource-based products, disallowing market dominance *per se* would effectively prevent investment in scale-intensive resource processing.

Secondly, the manner in which the competition authorities have dealt with complaints in these industries has been on a legally driven case-by-case basis. In this regard, findings of anti-competitive behaviour, coupled with some form of sanction such as a fine, would help greatly to discourage future anti-competitive pricing.

However, there appears to be an anomaly emerging in the application of competition law in such cases. The authorities appear to deal fairly easily with more than one firm colluding to fix a price at a particular level. However they have been less able to come to grips with the – theoretically less competitive – situation of a single firm fixing a price at a particular level, such as import parity level.

Irrespective of the effectiveness of the competition authorities, their ex-post focus on conduct means that they are unlikely to deal with the broader pricing issue from a policy perspective. Therefore a broader policy response is required.

### Regulation

The regulation of a natural monopoly is a theoretically sound response to the problem of market power exerted by scale-intensive, resource-based industries. However, the ability to do so may be constrained, with the primary constraint relating to both domestic and global political economy considerations. Both relate to the somewhat elusive concept of 'investor perceptions'. With respect to fixed investors, the ex-post regulation of privatised former-SOEs and other natural monopolies, could discourage investment in resource processing, although much would depend on the circumstances under which such regulation takes place (for instance, the history of pricing behaviour of the firm and the responsiveness to government requests for voluntary 'restraint'). Similarly, and with even less certainty about the nature and severity of a negative response, there could be an adverse reaction from portfolio investors.

Part of the political economy problem with introducing regulation is the lack of coherent criteria for assessing which industries should be subject to regulation and which should not. While economic theory implies that there is an in-principle case for the regulation of natural monopolies, fairly arbitrary criteria are adopted in practice. The general approach in practice seems to be to regulate current or previous SOEs that provide consumer goods directly to the public, such as electricity, telecommunications, water or gas.

### Policy Implications

The analysis outlined above indicates the incompleteness of the off-the-shelf policy recommendations for dealing with market dominance in resource-based industries as a comprehensive solution, particularly given SA's unique economic geography.

Some brief policy implications can be drawn. Broadly speaking, it is critical for government to develop a coherent approach to dealing with the pricing of large, resource-based manufacturing firms with market dominance.

This involves co-ordinating a range of policies, particularly across industrial, competition and trade policy, and includes:

- Developing a clear understanding of the relative importance of particular natural monopolies in the economy, and the nature and extent of the negative externalities that are being imposed on the economy. This allows for a prioritisation of interventions.
- Reducing the information asymmetry between the State and large, resource-based firms with market dominance, through ensuring good collection of information on prices and the market in which such firms operate.
- The key industrial policy objectives, as set out in the IMS, must inform the utilisation of tools such as investment incentives and support for 'mega-projects' in such a way that they are consistent with the behavioural change required of upstream, resource-based firms.
- Trade policy needs to take into account the potentially important disciplining effect that import competition has on concentrated industries. This includes the use of instruments such as tariffs, as well as contingent protection (antidumping, countervailing and safeguard duties).
- The effectiveness of competition policy needs to be revisited. At present it appears as if little progress has been made in taking on prohibited practices and such cases can easily be delayed. The competition authorities need to play a more active role in systemically monitoring prices and in using their investigative powers to collect information and analyse industries to enable government to address anti-competitive behaviour in the most effective way. Competition cases are only one possible avenue to do this.

### Research agenda

This analysis also gives rise to a number of fruitful research questions, including:

- The role of large, resource-based manufacturing firms in the post-apartheid economy. This is an area which has not received adequate attention in post-1994 policy discourse.
- The relationship between the State and such firms over this period, including consideration of the extent to which the ability of the State to discipline such firms has changed over this period.

*(continued on page 26)*



(continued from page 25)

- The experiences of other industrialising countries facing similar challenges.
- Implications of the internationalisation of large resource-based corporations.
- A review of the theoretical approaches pertinent to analysing these issues in a dynamic sense including competition and regulation theory, institutional economics, and the determinants of corporate strategy of large firms.

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# The Socio-Economic Impact of Rail and Port Reform in SA

As part of the research activities within its Economic Regulation Research Programme, TIPS held an intensive two-day workshop on economic regulation and restructuring of infrastructure industries in July 2004. TIPS research associate Richard Goode and Information Junction's Karl Venter presented the results from a scenario modelling exercise that explored how reform in the railways and ports might support government's broader goals.

The scenario modelling exercise, undertaken with the support of the Department of Transport and **the dti**, sought to generate preliminary estimates of the economic impacts and welfare effects of reform scenarios, while simultaneously linking this to challenges associated with reform and building an economic case for reform.

The aim of this work was not so much to achieve accuracy, but to illustrate how any prospective policy intervention can be evaluated and fine-tuned in terms of the overarching goals of government using a structured methodology and existing modelling tools.

A high-level policy design and implementation model was created to provide a structured means to link any prospective intervention by government to the overarching goals of economic growth, poverty reduction, job creation and BEE. A key stage in this model is the quantification of the socio-economic outcomes of the intervention, and the optimisation of the intervention in terms of the overarching goals. The outputs from this stage are necessary inputs into the processes of making cases to each of the key decision-making stakeholders to obtain approval for implementation. They also form the basis for the monitoring processes set in place to assess the effectiveness of the intervention over time.

A scenario was developed of reform in the rail and ports aspects of the transport sector. The effects of reform were estimated using a simplistic model of the transport sector. The railways and ports entities' current estimates of capital investment required in the infrastructure and operations of the railways and ports were

accepted as they stand. The macro-economic effect of the investment spending was assessed using a classical macro-econometric model. A Computable General Equilibrium (CGE) model was then used to assess the economy-wide social and economic impact of this reform on employment, production and balance of trade.

Core components of restructuring scenario involved the following critical features:

- The separation of operations from State-owned infrastructure
- The introduction of competition in operations
- The injection of public funds for infrastructure
- The regulation of access, via a sector regulator, to the relevant transport infrastructure by competing train operators and cargo terminal operators.

For modelling purposes, an aggregate transport sector price reduction was calculated by applying estimated productivity improvements in rail and port operations, road and inter-modal transfers weighted by the value of freight carried.

Two scenarios were considered, yielding a 15% and 29% aggregate transport price reduction. Transnet's own five-year capital expenditure projection of R35.5bn was used. It was assumed that R27bn in State debt would be raised to fund the required capex.

The macro-economic effects of additional debt were examined and found to be a minimal 0.177% reduction in GDP over five years. The positive effects of the investment were ignored for the macro analysis. The CGE model calculated that the economy-wide impacts over five years of the 15% and 29% price reduction scenarios include:

- A 1% and 1.8% increase in GDP
- A R5.6bn to R10.2bn per year improvement in the trade balance
- An average 0.3% to 0.5% per annum reduction in the Consumer Price Index
- An increase in employment (by 35,000 to 63,000 employees)
- An average R2.5bn to R4.6bn per year government tax revenue increase



- The impact is skewed to primary industry and basic manufacturing

The impacts of the reforms are very significant and make good financial and economic sense. The coarseness of this first effort will have concealed many of the detailed benefits. The structural resistance in the economy to labour absorption is a feature of these results, and is a consideration that should be explored to design interventions to increase such absorption.

Further work is planned to refine the transport reform scenario modelling by improved data

collection, disaggregating of the transport sector and revising capital expenditure spending projections as data become available, as well as exploring themes such as the employment effects of reform scenarios.

The work confirmed that it is possible to make socio-economic impact assessments of policy interventions within a structured policy development process. The resources exist in SA to conduct such an analysis. Targeted data specification and gathering processes are required to improve the basic quality social and economic modelling and to fine-tune the

analysis of a particular intervention, such as reform of the railways and ports.

It is common practice in some countries (notably Australia) that policy development is subject to the disciplines of structured process and modelling, and SA can build upon these foundations. It is very important for SA to deploy its limited means in a highly efficient manner to create growth, jobs, poverty alleviation and the most broadly based BEE. The approaches illustrated in this work offer an example of how this can be achieved.

# Clusterpreneurs – Promoting High-tech Clusters in Low-tech Regions<sup>1</sup>

Ph.D. student Dagmara Stoerring and Associate Professor Jesper Lindgaard Christensen of Aalborg University, Denmark discuss the feasibility and dilemmas of stimulating high-tech clusters in low-tech regions by looking at the role of actors, or clusterpreneurs, in cluster formation.

## Introduction

Cluster initiatives<sup>2</sup> have become a central feature of policy promoting growth on regional and national level. Many governments' policies are aimed at imitating the success of famous clusters such as Silicon Valley, Medical Alley or Research Triangle in the belief that their local areas may also capture the benefits of new high-technology firm formation and expected economic growth (Cooke, 2001a). This promotion of high-tech clusters is not confined to urban areas but often also takes place in periphery regions, such as the possible development of a bio-medico cluster in Denmark's North Jutland region described in this article.

However, the effectiveness and appropriateness of transferring experiences from other regions is debatable, as is cluster policy as such. One condition for success of cluster policy in periphery regions is the degree of systemic innovation in the regions – to what extent institutions and actors are interlinked (Cooke, 2001a). Thus the European Commission points out that:

*"It is not simply the presence of units of RTD<sup>3</sup> infrastructure, but of the degree of interaction between them which is the most significant factor in local innovation. The quality of the linkage and the presence of local synergy is the key element. Therefore a systems or network approach provides the best basis for understanding and promoting regional RTD-based innovation" (CEC, 1988).*

Morgan (1997) contends that less-favoured regions often are not only less favoured in the traditional sense of poor physical infrastructure, higher unemployment rates and low income per head; they also have poorly developed social capital<sup>4</sup>. One may add that they often also lack large firms that could work as drivers of clusters. This emphasises the focus on the carriers of the cluster policy. When policy is to a large extent about stimulating collective learning processes and building social capital, the key issues for policy become very much about human capital in both the 'supply' and 'demand' dimension.

## The concept of clusterpreneurs

Cluster studies tend to see cluster development as driven by industrial evolution or policies, ignoring actors to a large extent. Figure 1 shows that different types of actors are often necessary. Thus, although cluster initiatives may be started, for example, by local government, in time a broader set of actors becomes involved, and more importantly, clusterpreneurs may tie these actors together.

Figure 1 is a static model including the most important actors for cluster formation. If we take three components – university/research, private firms/industry and policy from Triple Helix literature (Etzkowitz, 2000) and add the fourth element important for cluster formation, venture capital and access to specialised services – and localise all these factors in one region, the clusterpreneur can be put somewhere in the middle, playing the role of linking elements.

The clusterpreneur can be one type of actor (a private person) or a group of two or more of these four types. Their collaboration can be loose and informal or formalised as a group/organisation devoted to the promotion of a given cluster (such as BioMedCommunity in our case study). In the latter case, the formalised clusterpreneurs often finance the activities of cluster initiatives by fees coming from the companies involved in the initiative.

The cross-factoral character and collective ('group') character of clusterpreneurs should be emphasised. Although policy-driven cluster initiatives which include mainly public clusterpreneurs are the most common type of cluster initiative, we highlight the involvement

*(continued on page 28)*

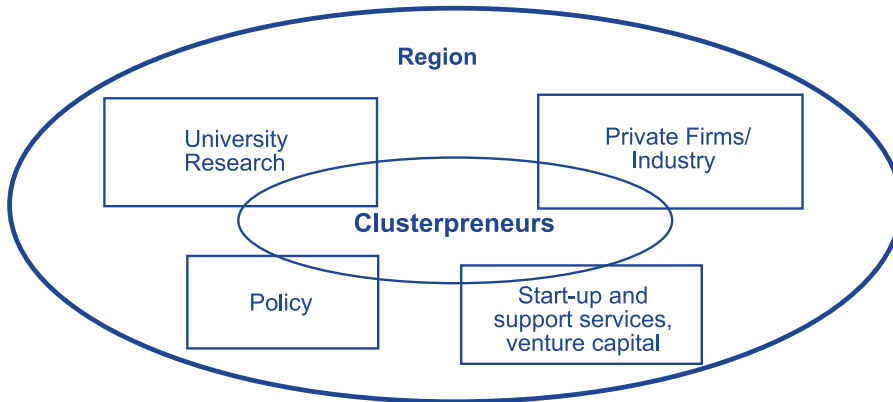
<sup>1</sup> This article is an abridged version of the paper, *Clusterpreneurs – Promotion of High-Tech Clusters in Low-Tech Regions*, presented at the DRUID Summer Conference on Industrial Dynamics, Innovation and Development in Elsinore, Denmark in June 2004. The full paper can be found at <http://www.druid.dk/ocs/>.

<sup>2</sup> "The Cluster Initiative Greenbook" defines cluster initiative as an organised effort to increase the growth and competitiveness of a cluster within a region, involving cluster firms, government and/or the research community (Sölvell, et al, 2003).

<sup>3</sup> Research and Technological Development

<sup>4</sup> Morgan thus supports the OECD in: "Less-favoured regions seem to have little or no social capital on which they can draw, a point which turns the spotlight on factors such as the institutional capacity of the region, the calibre of the political establishment, the disposition to seek joint solutions to common problems. These factors – the invisible factors in economic development – are just as important as physical capital" (OECD, 1993).

**Figure 1: Model of cluster formation**



of other types of actors, such as university researchers, representatives of local industry, and venture capital and support services firms which make cluster policy more legitimised and acceptable. Further, clusterpreneurs are not limited to individual representatives of industry, or entrepreneurs.

We distinguish two types of clusterpreneurs: individuals and private organisations that are devoted to promote clustering, and regional government represented by government agencies and other public bodies. The differentiation between private and public type of clusterpreneurs is based upon the assertion that these two types may, at the same time, have some common and some divergent interests.

Moreover, their activities are determined and controlled by different mechanisms and rationales. Private clusterpreneurs are motivated by the profit companies can obtain from being members in a cluster, whereas public actors mainly try to provide new workplaces in the region in which they are interested. There are many policy dilemmas connected with cluster promotion, such as targeting the right cluster/industry. These dilemmas do not exist for private clusterpreneurs, as it is obvious that their interest lies in the promotion of their industry/sector/cluster. Nevertheless, both types understand the role of sustainable economic growth in the region.

Porter (1998) emphasises that many clusters include governmental and other organisations – universities, standard-setting agencies, think tanks, vocational training providers and trade associations – that provide specialised training, education, information, research and technical support. Very often these actors who are an integral part of the cluster are one of the factors affecting the emergence of clusters.

Another important feature of a cluster is the synergy effect, with linkages among cluster members resulting in a whole greater than the sum of its parts. This synergy, as

enhanced by clusterpreneurship, gives the possibility for concerted action, where linkages between different actors are created through informal co-operation. Porter suggests a new agenda of collective action in the private sector in that it is not only governments' function to invest in public goods. Cluster thinking clearly demonstrates how companies benefit from local assets and institutions (for example, trade associations establishing university-based testing facilities and training or research programmes). Even if it seems obvious that private firms may at the aggregate, and in the long term, benefit from such investments, it involves the classic dilemma of free-riding as well as conflicting micro-macro objectives.

However, cluster thinking is a joint effort of public and private sector action, and the clusterpreneur can be a 'symbol' of this. The shared financing of the formalised clusterpreneurs' organisations is an example of how the clusterpreneurs' activities can trigger private sector participation in public goods building, thus improving collective action.

**Cluster policies: the principle difficulties for cluster formation in the periphery/low-tech regions**

Cluster policy (also called cluster initiatives, or CI) has become a central feature of microeconomic policy in the last decade, linking to industrial policies, regional policies, SME policies, FDI attraction, and research and innovation policies. However, despite the widespread usage and popularity of the cluster concept among governments at national, regional and local levels, the role of cluster policy in cluster formation process is contentious. Even so, although cluster policy is being widely criticised by the academic world (Martin, 2003), it is widely implemented by policy-makers (OECD 1999, 2001).

Cluster promotion often takes place in the periphery regions characterised by low-tech specialisation, and it is mostly high-tech

cluster initiatives that are undertaken. The dilemmas of cluster promotion are obvious in the periphery regions. These regions are generally characterised by a lack of physical infrastructure and social capital, but also an absence of big companies that could play the role of driving forces/pull factors in the cluster formation process. In high-tech cluster initiatives, an additional trade-off emerges between attracting big companies and smaller participants. On the one hand having big high-tech companies (with R&D departments) is perceived as one of the factors that can accelerate the cluster emerging process. On the other hand, reaching a critical mass of small companies in the cluster poses a problem in peripheral areas. The challenge lies in how to combine the different strategies of approaching big (attracting FDI) and small (policies towards SMEs) companies.

The first problem for high-tech cluster formation in low-tech regions is that the low-tech specialisation pattern in these regions is difficult to change. These regions are mainly dominated by primary industries, such as agriculture and raw materials that do not demand a high level of innovation intensity. On the other hand, urban areas have been shown to attract high-tech/high innovation enterprises (Therrien, 2005). The second difficulty is the low education level of the labour force, and the lack of pools of specialised skills.

Periphery regions with ambitions to develop a high-tech profile also face the problem of reaching a critical number of firms that could develop a cluster. It is further not easy to decide how many companies are needed to achieve a critical mass. It may rather be a question of the quality of R&D/innovation within these companies than the number of firms for the region to become competitive at the international level. This difficulty may be particularly applicable to regions wanting to foster high-tech clusters in biotechnology (Cooke, 2001b).

A lack of or scarce venture capital and knowledge-intensive business services (such as lawyer offices, consulting companies, etc.) is another difficulty for cluster formation – especially bio-tech clusters – in the periphery regions. Bio-tech companies very often arise as spin-offs from universities and other companies, and the possibility of finding financing for the new company is crucial.

This links to a further problem of periphery regions – access to universities. Universities and business services are mainly concentrated in urban areas. However, in the case of universities, they can also stimulate cluster development in periphery regions.

All these factors are interconnected and to a certain degree all are necessary for promoting

cluster formation. Very often the absence of one is the reason why the others cannot be developed in the region, and so active actors in cluster initiatives/clusterpreneurs are even more needed in these regions. It is, however, important to emphasise that the presence of, for example, venture capital and business services are not enough. Cooke (2001b) contends that it is not the more readily available presence of venture capital and university bio-tech research that makes the US bio-tech industry outperform that of Europe, but rather the system for commercialisation of the research, which is more efficient in the US.

### Specific difficulties in North Jutland

The North Jutland region has traditionally been characterised as peripheral, and has one of the highest unemployment rates in Denmark. The industrial profile of the region's capital, Aalborg, is dominated by traditional labour-intensive manufacturing industries, while other parts of the region are dominated by primary industries, especially agriculture and fishing, and in more recent decades, tourism. Although the region during the 1990s seems to have undergone a process of structural change towards more growth-oriented industries (such as machinery and equipment as well as electronics), it must still be characterised as low-tech/periphery, as illustrated in Table 1.

### Cluster policies – content, challenges, dilemmas

#### Content of cluster policy

The role of policy in the cluster concept is controversial. The general perception in the literature seems to be that one cannot create clusters from scratch.

Thus, according to Dahl (2004), "Porter argues for an active role of governments in shaping, upgrading and reinforcing established and emerging clusters by removing obstacles, relaxing constraints, and eliminating inefficiencies that impede cluster innovation and increased productivity. However, he goes against efforts to create entirely new clusters, since new industries evolve best out of existing related industries. Instead, only clusters that have already passed 'the market test' should be targeted by policy makers (Porter, 1998a)".

Our hypothesis is that some seeds for cluster are needed initially, followed by a presence of clusterpreneurs and/or supporting policy that may speed up the process.

Government plays an essential role in ensuring that appropriate microeconomic foundations are present as well as a context that encourages upgrading clusters through appropriate policies, such as competition, intellectual property, taxation and the regulation of product quality, safety and environmental

**Table 1: Comparison of North Jutland and Denmark as a whole**

	North Jutland	Denmark
Specialisation in the periphery regions		
Agriculture, fishery, raw materials	1.49	1.36
Finance, business services	0.77	0.79
Education level (share of people with highest education as)		
Primary school	38	34
University	3	5
Start-up rate	3.14	4.22
GDP 1993-2001 index	118	125
Patents per 1000 inhabitants	0.665	0.965
Unemployment rate	About 1.7 percentage points above the national average	
Share of Danish R&D/share of Danish firms	0.65	
Share of Danish Venture Capital/share of Danish firms	0.93	

[Sources: Nordjysk Erhvervsredegørelse 2003, Erhvervslivets forsknings og udviklingsarbejde 2001, The Danish Investment Fund.]

impact (Porter 1990). However, these, as well as the policies of investing in education, setting the rules of competition by establishing open market institutions, ensuring the physical infrastructure, motivating collective action by the private sector, and tolerating and even encouraging multinationals are rather general areas of policy (Gambardella *et al.* 2002).

Keeble and Wilkinson (2000) suggest the following measures (from Spilling and Steinsli, 2003):

- Diffusion of knowledge from the science and technology base, for example by reducing barriers between industry and university by supporting technology consultants to help small firms to use knowledge from the university.
- Support networking and collective learning processes by supporting research collaboration between local SMEs.
- Business support for high-technology SMEs, for instance through education and training facilities targeted at their specific needs and development.
- Policies targeted at the specific needs at a regional level to develop policies that address the particular challenges in each region.

#### Cluster policy versus traditional industrial policy

Cluster initiatives have developed as a new policy agenda; however, it is often based on traditional policy areas such as regional policies, innovation policies and industry policy. According to Porter, the aim of cluster policy is to reinforce the development of all clusters by removing obstacles and constraints to productivity growth. Porter stresses that the role of government in cluster development should not be confused with an industrial

policy, where governments support selected industries. Figure 2 shows cluster policy emerging from three distinct policy fields:

#### Choosing the right area/industry sector/cluster

Policy-makers are often faced with the dilemma where clusters may emerge in several areas, but resources are restricted. On the one hand, they might wish to promote such clusters; on the other, they do not want to target policies too much towards benefiting certain sectors at the expense of others.

Therefore it is important to see the two types of clusterpreneurs – regional policy bodies and private individuals/organisations – as mutually reinforcing. Particularly, the presence of private clusterpreneurs may be convenient for local government to legitimise spending resources on specific sectors.

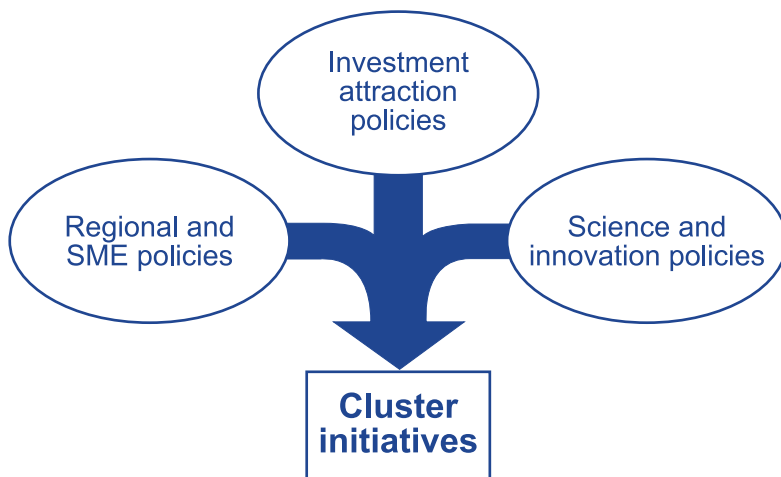
#### Rationale behind the promotion of low labour-intensive high-tech industries

An additional problem may arise when low labour-intensive high-tech industries are promoted. In the case of periphery regions, unemployment is usually policy-makers' biggest problem. This introduces a time perspective dilemma between short-term and long-term policy objectives.

Although in the short term, low-tech industries provide more workplaces in the region, they are more vulnerable to fluctuations on the regional, national and global level (for example, moving production to low labour cost countries). On the other hand, the promotion of high-tech industries or clusters involves structural change in the region, which may take along time. This may put a pressure on policy-makers to stick to stimulating the existing industrial structure.

(continued on page 30)

Figure 2: Cluster initiatives built on three main policy areas



[Source: The Cluster Initiative Greenbook, Sölvell, et al, 2003]

### Biomedico in North Jutland

During the last three years some projects were initiated to promote regional development in biomedical technology in North Jutland:

1. At national level, the Danish government's strategy aimed to develop Biomedico industries as growth potentials from 2000 (*Regerings handlingsplan – Biomedico området fra 2000*).
2. At regional level, actors interested in local economic development are looking for new industry that can supplement or eventually replace the existing Mobile Telecommunications (Information and Communications Technology, or ICT) cluster. The ICT cluster shows a long tradition for co-operation with the industry at Aalborg University.
3. Existing competencies within Life Sciences at the university and hospital.

The ICT cluster shows the presence of a local entrepreneurial spirit and social network traditions in the region that is very unusual for periphery regions. It can also be a source of competencies which may be applied within the Biomedical Technology area, for example telemedicine, biosensors and nanotechnology.

However, in the last two years this cluster has experienced problems and its future has been widely discussed, which could be a reason why interest has been directed towards other competencies in the region.

In fact, it has been explicitly expressed (for example by clusterpreneurs during interviews conducted by the authors) that the ambition is to replicate the successful development of the ICT cluster. Policy had an important role in the development of that cluster and policy-makers in the region are aware that active policy may likewise be decisive for the Biomedico cluster.

Finally, the actors behind the cluster initiative have identified competencies in the region that can be decisive for the emergence of this cluster.

### Structural setting

#### Aalborg University (AAU)

In recent years, the AAU has established a substantial activity within Health Science and Technology, Medico-technology, Biotechnology and related areas overall termed Life Sciences<sup>7</sup>. Particularly research within the medico-technical area at the Centre for Sensory Motor Interaction (SMI) has developed new methods for stimulating and treating electrical signals from muscles.

Furthermore, new advanced methods are being developed for measuring and activating the motor system and for locating pain. Moreover, the university has developed a centre for research into stem cell technology to determine how stem cells may be used to develop human 'spare parts'. Another potential research field at AAU is biotechnology, and the cluster initiative actors also show possibilities in nanotechnology.

Denmark has a public health system and hospitals are under county authorities (in this case North Jutland County jurisdiction). Aalborg Hospital obtained university hospital status in 2003 on the basis of its own research and its tradition of co-operation with Aalborg University and Århus University<sup>8</sup>. This co-operation is formalised in the HEALTHnTECH Research Centre, established in 2003, which offers support and evaluation of product ideas and applications developed by the industry. The close relations between doctors, scientists and commercial resources have resulted in the set-up of about five spin-off companies.

Figure 3 describes biomedical technology as defined by the actors behind the cluster initiative as situated in the intersection between Biotechnology (at AAU), clinical/hospital re-research (Aalborg Hospital) and electronics / IT / informatics / telecommunication (AAU, local ICT cluster).

#### Companies in the region/Industry

As already mentioned, the main high-tech companies in the region are found within electronics and telecommunications. This sector is represented by big international companies<sup>9</sup>, but also many smaller companies that play even more important roles for ICT cluster.

However, in the Biomedico technology the region is not characterised as competitive from the industrial point of view. At the moment there are about 35 companies whose profiles can be described as biomedical technology to a certain degree (their profiles range from medical devices production companies to IT companies). These companies are mostly very small development companies employing one to two people. Some of them are spin-offs from university research and should therefore rather be called development projects. Among these firms there are only five companies that can be classified as biomedical production/manufacturing companies and that employ more than 10 people.

Dynamism is another feature of the firms in this cluster. For instance, the cluster's set-up according to *The Competences Catalogue* has changed from one year to another, with some companies disappearing and new ones being established.

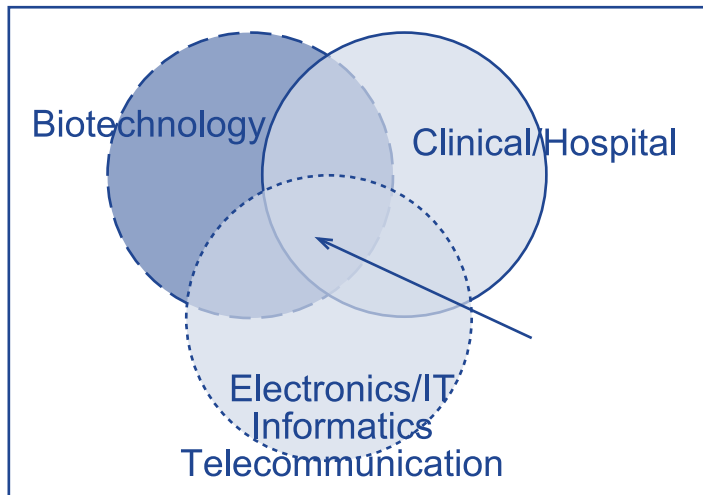
Within the biomedical area, the region is characterised by a lack of big companies and a very small number of small companies whose specialisation profile is much differentiated.

<sup>7</sup> www.biomedcom.dk

<sup>8</sup> The co-operation with hospital gave Aalborg University the access to perform clinical tests and provide documentation, thus it plays also a very important role for the university's research.

<sup>9</sup> International companies like Siemens, Motorola, L.M. Ericsson, Texas Instruments and Flextronics have their subsidiaries in North Jutland as a part of ICT cluster.

**Figure 3: Biomedical Technology in North Denmark**



[Source: White Book: Biomedical Technology in North Denmark]

### Cluster initiative

The initiative was started in 2000 by the Aalborg Commercial Council<sup>10</sup> together with the Industrial Liaisons Office at Aalborg University, after which other actors – policy-makers such as North Jutland County and Aalborg Community, and finally industry representatives – joined. This initiative was formalised in 2003 when BioMed Community: Science & Innovation for the Living, a co-operation with the objective to develop and promote North Denmark's cluster within Life Sciences, was established. The competence group represents the main actors in the region interested in this cluster initiative – Aalborg University, Aalborg Hospital, Biomedical companies, North Denmark County, Aalborg Commercial Council and the Region Aalborg Co-operation – and so involves agents from universities, government, industry and venture capital/supporting services (see Figure 1). Thus, although cluster initiatives may be started by local government, for example, in time a broader set of actors becomes involved, and more importantly, clusterpreneurs may tie these actors together.

BioMed Community co-operation is an example of a formalised clusterpreneur. It defines its existence in relation to the cluster existence as follows:

"Biomedical technology can be defined as technologies at the intersection of biotechnology electronics/IT/informatics and clinical treatment. The intersection of these areas at Aalborg University and Aalborg University Hospital is a strong basis for the transfer of technology to industrial companies. Combined with access to venture capital and strong networks between public institutions,

the interdisciplinary tradition at the Faculty of Engineering and Science at Aalborg University and Aalborg University Hospital makes North Denmark a potential place for biomedical technology companies." (White Book, 2003)

Figure 4 illustrates the BioMed Community's, and thus the clusterpreneurs' perception of the present position of Biomedico cluster in North Jutland. According to Figure 4, the total biomedical technology cluster is at the beginning of a significant takeoff. In terms of the dimensions – research, education, networking, venture capital and the health sector – the region is already above the critical mass. The small number of companies shown on the figure as 'industry' is placed under the critical mass, indicating that the clusterpreneurs are aware that in terms of 'industry' in relation to the cluster's existence, competencies such as venture capital and other business supporting services may have been overestimated.

### Actual policies in North Jutland towards promoting of Biomedico cluster

Policies to promote this cluster can advance the understanding of the concept of clusterpreneurs and their role in the cluster emergence process. This section is mainly based on interviews with the actors (clusterpreneurs) involved in the initiative.

Publishing promotional material, marketing, attracting new firms to the region and the promotion of new and established companies have been the main activities of BioMed Community during the first two years. However, the cluster initiative has taken a more dynamic path recently. In February 2003, the so-called 'Firms club' was established for companies from the whole of North Denmark (so not limited to

North Jutland County), whose co-operation should establish synergies between companies in the region, especially by learning of each other's existence, identifying and discussing common problems, and influencing their co-operation with the Liaisons Office and the Hospital, to be able to support innovative activities within the industry more efficiently.

Determined to develop industry in the cluster, the cluster initiative actors have mobilised considerable financial resources in an attempt to speed up the process of cluster formation.

The present nurse and radiography school is being transformed into the 'Research House', including laboratories, to localise 10 to 15 research groups from the Hospital. There will also be scope to establish a new company or a department that is closer to the hospital (for example, for clinical testing), as well as an area dedicated to group rooms for students. The idea is to gather the innovation environment in one place.

The BioMed Community also employed three new people to work with the initiative – a start-ups consultant, an ambassador and a communication consultant.

Transferring competencies from the University and Hospital to industry and reaching a critical mass of companies is the clusterpreneurs' main challenge.

### What can we learn from this case study?

Biomedico is very young cluster initiative. In fact, it is debatable whether one can already call it a cluster, as the main competencies are localised at the university and the hospital. According to the actors involved in the initiative it is an emerging cluster, although they are aware of the undeveloped industry and see the greatest challenge in transferring existing research competences to the companies.

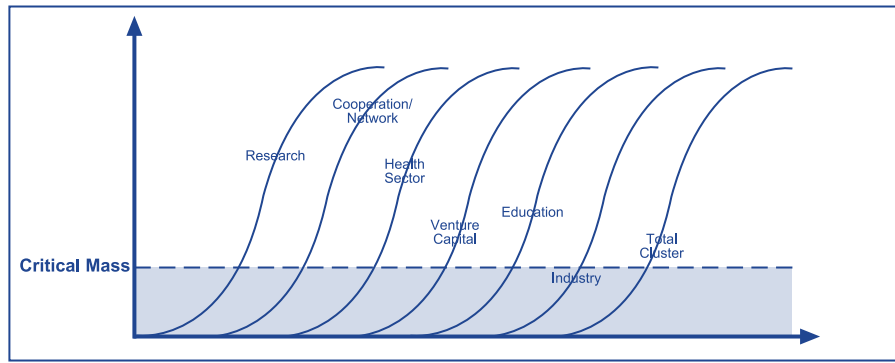
The case of the Biomedico cluster illustrates the following:

- The multiple character of clusterpreneurs – both private (industry representatives) and public (university and policy representatives) actors are involved.
- The formalisation process of the clusterpreneurs – the establishment of BioMedCommunity as an organisation to promote the cluster and the creation of the 'Firms club'.
- The cross-factoral character of clusterpreneurs – legitimacy is given to the initiative, enabling it to overcome some of the dilemmas associated with the promotion of high-tech clusters in low-tech regions.

<sup>10</sup> Aalborg Commercial Council provides the service to the more than 5,000 companies, including counselling of business establishment, financing, export, import, staff and management development, marketing, subsidies, and so on (Competence Catalogue).

(continued on page 32)

**Figure 4: Biomedico cluster in North Jutland**



[Source: White Book: Biomedical Technology in North Denmark]

Local society is more amenable to dedicating financial resources to Biomedico cluster with a range of different actors involved.

- The concerted/collective action of the clusterpreneurs – from the informal collaboration between the university and the hospital through the establishment of the HEALTHnTECH Research Centre to the founding of the Research House.
- Coexistence of different environments at the Research House – researchers and students from Aalborg University and Hospital, and the prospective presence of an increasing number of companies – should enhance collective learning in the cluster.
- The *common vision* of clusterpreneurs in the Biomedico cluster in North Jutland – although they represent very different types of actors with divergent interests – is translated into the Biomedico cluster development strategy (see Appendix 1 of the full paper).
- Building *social capital* in the region – the network policy is the main objective and instrument of the clusterpreneurs' action, and all activities at the Research House, new consultant appointments and informal branding by the clusterpreneurs aim to build new contacts, particularly with industry within and outside of the region.

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