

This document is a summary of research commissioned for use by the Competition Policy Review Panel. The reports remain the responsibility of the individual researcher(s). The views expressed do not necessarily reflect those of the Panel or the Secretariat.

Competition Policy Review Panel
Research Paper Summary

Author: Luigi Orsenigo and Francesco Laforgia, University of Brescia, Italy

Title: Developing Competitive Firms and Industries in Global Markets: An Examination of the Experience of Successful Economies

Subjects Addressed:

- Competitiveness
- Infrastructure, human capital, financial capital, R&D, institutions
- Foreign Direct Investment (FDI)
- Macro-economic, industrial and sectoral policies

Ingredients for Successful Economic Growth:

The paper tries to draw out ingredients and processes for successful economic growth and transformation from the experience of several successful countries. However, there is a large diversity between the experiences. Finland's success story is based on one large company; others have several large companies; yet others are based on small and medium-size enterprises (SMEs). Some have relied on FDI, others on endogenous growth; some opened their markets, others kept them protected. Growth occurred in different sectors and started at different levels of national development.

A long list of variables can underlie the development of successful firms and industries. Consensus as to which institutional set-ups and policies are conducive to competitiveness and growth is quite low. Consensus does exist on the importance of infrastructure, education and the availability of skilled labour. Research and innovative capabilities, and the extent to which these are connected to production and investment, are always important. But more important than the ingredients are the combination and interaction between different ingredients and complementarities among variables.

The literature reviewed suggests a set of possible explanatory variables for growth: education, skilled human capital, ability to tap and adapt foreign know-how, and development of a new market niche. The literature is less unanimous on market and trade liberalisation, given that in some important success stories the degree of liberalisation was low, with State intervention playing a fundamental role. There is much controversy about alternative labour and financial market conditions and other institutions.

Relevant sector-specific dimensions of competitiveness include economies of scale and scope, the structure of costs (esp. sunk costs), barriers to entry, demand structure, technological change, and innovative processes. In each industrial activity, there are some 'typical' or "dominant" ways of organizing

This document is a summary of research commissioned for use by the Competition Policy Review Panel. The reports remain the responsibility of the individual researcher(s). The views expressed do not necessarily reflect those of the Panel or the Secretariat.

production. There can be more than one combination of strategies and forms of organisation with the same efficiency level, but not many.

New firms are sometimes thought to be important sources of productivity growth and carriers of new products, technologies and innovation. On the other hand, most of them are small and far below any efficient minimum scale; many are spin-offs from incumbent firms; and they require a decade to achieve a size, profitability and productivity comparable to incumbents. Whether the promotion of new company formation should be a policy focus is hence disputed.

The relative abundance of factors endowments (natural resources, human and financial capital) defines incentives and opportunities for particular economic activities, but resources, capabilities, and market opportunities are not simply waiting to be exploited; they are constructed, discovered and possibly transformed through active learning processes. For example, many countries have low labour costs as an endowment; some use it to export hats while other export soccer balls. These industries often arise out of the experimental efforts of lone entrepreneurs, followed by imitative entry.

Natural resource abundance has been linked to growth when coupled with innovation, but is not a pre-condition for growth. Infrastructure is a necessary component of development. However, apart from basic infrastructures, economic growth went hand in hand or even predated the construction of adequate or outstanding infrastructure.

Clusters and Multi-national Corporations:

Another policy approach revolves around clusters. Some countries have cluster policies and consider clusters as drivers of economic growth. Clusters provide several advantages, including a greater number of specialised local suppliers of industry-specific intermediate inputs and services; a pool of workers with similar, relevant skills; and easier communication among firms, leading to faster technology adoption, diffusion and innovation. It is much easier to provide hypotheses about how a cluster keeps going than how it was generated. They may grow around unexploited technological and market opportunities, a pool of skilled workers, a pioneering firm, or knowledge agents. Supporting institutions like venture capital and particular social attitudes (e.g. entrepreneurship) play a much lesser role in nascent clusters and tend to develop later on.

One of the main perceived externalities from clusters is knowledge spillover. However, it has also been argued that knowledge within a cluster does not simply “spill over”. Rather, access to knowledge requires deep involvement in the research process, scientific collaboration, and the conscious investment of resources to build the competencies to absorb the knowledge developed by others. Knowledge flows can occur via the mobility of researchers and workers, via market transactions, or via other institutionalised mechanisms involving highly complex economic and social structures.

This document is a summary of research commissioned for use by the Competition Policy Review Panel. The reports remain the responsibility of the individual researcher(s). The views expressed do not necessarily reflect those of the Panel or the Secretariat.

Related to cluster thinking are theories on the role of multinational corporations (MNCs). Some authors consider them as seedbeds of industrial growth through knowledge externalities (or 'spillover') and dynamic increasing returns linked to learning. They can catalyze cluster formation. Many technologies are now only available through FDI. However, this is highly controversial as knowledge is mostly transferred within firms. At a minimum, any knowledge transfer to domestic industries depends on their absorptive capacity. Evidence of spill-overs is limited to highly developed countries and their estimated size depends critically on the measures which are used.

MNCs can act as powerful instruments for restricting knowledge flows and appropriating knowledge. In addition, many MNCs now outsource the production of parts and components, leaving their subsidiaries to carry out very little R&D and engineering. "Maquila" type assembly operations provide for a rapid expansion of exports, but not for an increase of domestic productivity or capabilities. When wages rise, they move on to lower-wage countries.

Institutions:

Competitiveness is profoundly shaped by institutional factors, including the formal and informal "rules of the game" for society and the formal organizations, procedures, and regulatory frameworks that mould economic activity.

Many studies find a strong correlation between measures and indexes of institutional efficiency and performance variables like per capita income, growth rate and growth volatility; however, the direction of causation is unclear. Many poor countries get out of poverty through good policies, pursued by dictators, and subsequently improve their political institutions. Economic growth triggers institutional change. Also, the particular structure of the system seems to be irrelevant, e.g. neither bank-based nor market-based financial systems are more effective at promoting growth; what matters is the financial system's overall level of development.

It has been suggested that it is the particular combination and coherence (congruence or mismatching) of particular institutional arrangements which defines the possibilities for any one country to excel in specific economic activities (and maybe fare worse in others). Institutional settings can be more or less efficient, according to their coherence and the interaction of institutions, in particular regions and economic activities, rather than in absolute terms.

Policy:

The role of policies is debated between neoliberals and "structuralists". The core of the neoliberal approach is that government intervention should be limited to correct market failures, particularly in the provision of public goods and basic infrastructure; that government failures are more pervasive and dangerous than market failures; and that the best strategy for all countries and in all situations is to liberalize – and not do much else. The structuralist view considers that

This document is a summary of research commissioned for use by the Competition Policy Review Panel. The reports remain the responsibility of the individual researcher(s). The views expressed do not necessarily reflect those of the Panel or the Secretariat.

theorems of complete markets, perfect competition, the knowledge of economic agents, stationary technologies and preferences, and “rational” decision-making do not hold in the real world. Imperfect information is pervasive, and significant information and coordination externalities exist.

Research, Knowledge and Innovation:

Research, knowledge and innovation are crucial for the entering the high-technology sector. Even manufacturing is becoming more information-intensive: larger parts of value added consist of activities like research, design, marketing and networking. Access to knowledge and the ability to absorb it are necessary ingredients for competitive performance, at the firm, sectoral and country level. Economic growth is linked to the diffusion of “superior” or “best practice” techniques close to the technological frontier.

Research and knowledge have to some degrees the properties of “public goods” in that their use is non-rival (the fact that one uses it does not prevent others from using it) and non-excludable (were it not for patents); their generation is subject to sunk, upfront costs and basically zero cost of reproduction; and there are increasing returns to their use. However, knowledge has a significant tacit aspect, which makes it person- or organization-embodied and rather sticky in its transmission. Its creation and use implies (often substantial) pre-existing competencies, investment and efforts. The acquisition of knowledge from external sources (e.g. imitation) is not costless and automatic, but requires pre-existing capabilities. Learning is also cumulative, and it is hard to learn and innovate outside existing trajectories and to accumulate capabilities in new fields. The economic benefits from innovation can thus be privately appropriated (even without patents), making innovations less of a public good.

All processes of generation or adaptation of new scientific and technological knowledge involve diverse, complementary sources of learning, including business firms, public training and research institutions, “communities of practice”, technical societies, and trade unions. Institutions and policies on technological learning have to construct national systems of production and innovation; promote and sustain innovation, in high-technology and in traditional industries; create and develop competencies (absorptive capabilities, human capital, laboratories and equipment); allow experimentation; provide coordination; promote key agents to facilitate knowledge flows; and “de-lock” from the past to foster novel developmental trajectories.

Education and Skilled Labour:

Education and the availability of skilled labour is probably the most fundamental variable for economic growth. This was the case in Ireland, which has the highest student-population ratio in Europe and a focus on international business, engineering, and new technology, similar to the situation in Finland, and in the Asian Tigers. Education was one of the most conspicuous efforts made by the Asian Tigers as early as the 1950s, with a strong emphasis on vocational training

This document is a summary of research commissioned for use by the Competition Policy Review Panel. The reports remain the responsibility of the individual researcher(s). The views expressed do not necessarily reflect those of the Panel or the Secretariat.

and engineering, science and mathematics education. India has low rates of basic education, but it has world-class institutes and large numbers of graduates.

Besides formal education, large firms provide training to employees. In many of the cases examined, universities were not the primary factor leading to strong firms and industries; a secondary education and firm-level training were sufficient. Yet, with the recent technological revolutions and the mass investment in R&D infrastructures and education, this may no longer be the case. Academic research is increasingly playing a critical role, both as a support to industrial R&D and as a direct source of new innovative opportunities.

Country Experiences of Successful Economic Growth and Transformation: Successful firms in different countries emerge in disparate industries and market segments, differing in terms of structure, size, degree and forms of competition. The nature, organisation and governance model of these firms differ drastically. In Finland, growth was largely led by one firm. Ireland transformed a weak, peripheral and inward oriented economy into a high-technology, advanced and outward oriented country through a radical “cold-shower” approach. Firms reacted by specializing in specific sub-sectors of their industry, while industrial growth was achieved largely by attracting foreign multinational corporations.

In Korea, industrialisation began with light industries, moved on to heavy industries, and then entered high tech industries. The *chaebol* structure – hierarchically structured, centrally organised and vertically integrated – enabled quick and unified support for a new business area, including moving human and financial resources quickly.

The growth of Taiwan relied on SMEs, first in light industries, then in heavy and petrochemical industries, and more recently in high-technology industries. A large public sector was built in manufacturing and infrastructure, and foreign direct investment was very important.

Hong Kong had a long entrepôt tradition, global trading links, an established infrastructure of trade and finance, presence of large British companies, and an influx of entrepreneurs, engineers and technicians from the mainland. It developed and stayed with light labour-intensive export-based manufacturing and de-industrialized as costs rose and manufacturers shifted to other countries.

Singapore started with a base of capabilities in entrepôt trading, ship servicing and petroleum refining and some growth in light industrial activities, but the engines of development became trans-national corporations in higher value-added, export-oriented industries and in services, mainly banking and finance. Singapore has moved towards medium and high-technology products and has a high rate of venture capital, entrepreneurs, and R&D. However, it has been unable to develop new industries in biotechnology, despite world class research capabilities.

This document is a summary of research commissioned for use by the Competition Policy Review Panel. The reports remain the responsibility of the individual researcher(s). The views expressed do not necessarily reflect those of the Panel or the Secretariat.

India emerged as a major exporter of software on the basis of the wage advantage of local software programmers, but it involved the accumulation of technological skills of domestic firms and the development of specific business models - the out-sourced service model, - which turned out to be quite effective for taking advantage of exogenous opportunities emerging in the world market and above all the emergence of market niches untapped by the worldwide industry leaders. In pharmaceuticals, Indian firms exploited the absence of drugs product patent protection to produce inexpensive generic drugs.

What the Successful Cases had in Common:

In all cases industrial take-off occurred on the basis of accumulated experiences and knowledge. Entry and development does not occur completely *ex novo*; they rest and build on previously constructed technological and organisational capabilities. The technological specialisation of countries is highly sticky over time. However, it is extremely hard to predict in advance which specific capabilities and advantages will turn out to be the keys to success. This militates in favour of strategies of broad-based, across the board learning, in contrast with extreme and early specialisation (although the scope of learning cannot be boundless and resources have to be focussed in some directions).

Success is built on highly specific competitive advantages. A wide knowledge base sets the stage for specialisation. Cumulative learning processes become increasingly focused in well defined trajectories.

The emergence of competitive firms is often associated with entry in new markets and technologies. Technological and market revolutions offer opportunities as well as threats. Entry takes place in market and technological segments that are not already exploited by incumbents. These niches do not require, at the beginning, the commanding of top level technology. They appear as outcomes of product differentiation or vertical specialisation within industries. Success is more likely in activities that are complementary to those of incumbents and avoid direct competition.

In all countries, exports (global or regional) were key to the take off. Exports provide large markets (in none of the cases domestic demand was large or sophisticated enough to sustain growth). Foreign competition provides a powerful competitive stick that forces firms to continuously upgrade capabilities, efficiency and innovativeness. Sophisticated users are sources of ideas, knowledge, and technological advances. However, exports are as much a determinant as a consequence of competitiveness - firms export because they are competitive.

Openness in the sense of participation in global production and research networks is necessary for access to knowledge and technologies. This can be obtained from FDI, but also from participation in global production systems, or licensing and copying. FDI tends to concentrate in technology and marketing intensive activities. Attracting manufacturing FDI into complex activities (beyond

This document is a summary of research commissioned for use by the Competition Policy Review Panel. The reports remain the responsibility of the individual researcher(s). The views expressed do not necessarily reflect those of the Panel or the Secretariat.

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.

While domestic market protection in Latin America did not work because there were no strong incentives to develop competitiveness, it did work in Southeast Asia because it was conditional on strong export performance.

In all the cases studied, success has been predicated on the development of “systems of innovation” which link research activities conducted by large and small firms, new companies, universities and other public research organisations. Some are based on large indigenous firms (Nokia, chaebols), some on MNCs (Ireland, Singapore), and some on small firms (Taiwan). Technological activities in these countries have grown at rates far higher than in the OECD as a whole. While public support is crucial, it is essential to develop the competence for technology acquisition and innovation within the firms, otherwise technology transfer and commercialisation become difficult.

There is little evidence on the role of specific institutions in fostering competitiveness and growth. The countries analyzed have very different political institutions (democratic vs. authoritarian, with widely different levels of transparency), financial markets (bank-based vs. market-based), and labour markets (corporatist, union-based, or repressive). None of the countries reviewed exhibited a “pure” market economy nor even the usual features associated with the Anglo-Saxon model; perhaps they were closer to a corporatist model.

The Role of Policy in the Cases Studied:

While all the cases started off with very different policy environments, macroeconomic adjustment was considered a component of the take-off process in almost all of them. In Ireland, industrial growth resulted from the adjustment to the Single European market and the single currency. Macroeconomic adjustment relied largely on severe cuts to government spending and taxes. Finland needed to control inflation and break a boom-bust cycle based on currency devaluation and export prices.

Macro-economic policy in East Asia was strictly connected to growth, rapid structural change internally, and high export performance. Monetary and fiscal disciplines were maintained; external debt was low; and exchange rates did not become overvalued. This led to high savings and investment rates, robust growth, and moderate inflation. Macro-economic policies were an important factor, but they were focused on industrial growth and competitiveness. In all the cases examined, however, macroeconomic policies were never divorced from the objectives of industrial growth and competitiveness, and they were also based on public support

This document is a summary of research commissioned for use by the Competition Policy Review Panel. The reports remain the responsibility of the individual researcher(s). The views expressed do not necessarily reflect those of the Panel or the Secretariat.

As industrial policies are concerned, experiences are strikingly different. Ireland does not have an explicit industrial policy beyond the low rate of corporation tax and the attraction of MNCs. However, the Irish Development Agency identifies high growth sectors that are a good fit for Ireland and launches campaigns to develop Ireland as a major European location and to attract the strongest companies in these niches. It targets high-skill-intensive sectors. Enterprise Ireland has the task of developing the domestic industry and integrating foreign companies into the Irish economy. It has a strong involvement in the development of venture capital and of new science, technology and innovation policies.

The hallmark of the Finnish experience is the emphasis on education, science, technology and innovation, emphasizing integration among these factors, and taking the concepts of national innovation system and industrial cluster as basic policy frameworks. The 'cluster-program' did not pick winners or plan and create clusters, but promoted public-private networks to enhance the international competitiveness of firms within the existing industrial clusters.

The Asian tiger economies have followed different economic models with different objectives, interventions, growth patterns, FDI schemes, and technological efforts. The Hong Kong government set up strong and well-funded support institutions like the Hong Kong Productivity Council and the Hong Kong Industrial Technology Centre as an "incubator" for high-tech start-up firms and a technology transfer agent between academia and industry. Funding has been provided for applied R&D, universities and polytechnics were expanded, a new University of Science and Technology was established, and technical and vocational training was strengthened.

Singapore relies heavily on TNCs and the government aggressively sought targeted FDI as the tool to achieve its objectives. It encouraged TNCs in higher value-added, export-oriented industries and intervened extensively to create the specific skills needed. Public enterprises provided infrastructure. A modern banking and financial services sector was developed. As labour and land costs rose, the government encouraged MNCs to relocate the lower end operations in other countries and make Singapore their regional headquarters.

Korea and Taiwan had a strong preference for promoting indigenous enterprises and assigned FDI a secondary role to technology import in other forms. The domestic market was not exposed to free trade; protectionist measures gave infant industries 'space' to develop. The negative effects of protection were offset by strong incentives to export. Korea relied primarily on capital goods imports, technology licensing and OEM agreements to acquire technology. It used 'reverse engineering,' adaptation and own product development to build on these technology imports. Its R&D expenditures are the highest in the developing world.

This document is a summary of research commissioned for use by the Competition Policy Review Panel. The reports remain the responsibility of the individual researcher(s). The views expressed do not necessarily reflect those of the Panel or the Secretariat.

Taiwan used direct subsidies, mostly in the form of tax incentives: low corporate income tax, tax holidays on new investments, and exemptions from import duties on equipment for specified manufacturing sectors. Taiwan attracted FDI into activities in which domestic industry was weak, and ensured that TNCs transferred their technology to local suppliers. The government also directly helped establish industries, even building factories to hand them over to private entrepreneurs or run them as public enterprises.

All countries adopted mixes of policies targeted towards specific firms or industries and “horizontal” interventions which in principle should impact on the whole economy. They targeted new industries and technologies rather than protecting old industries. Some privileged “deepening” approaches, focussing systematically on the development of a few industries and firms. All supported “widening” policies to enlarge the population of potential innovators and general processes of competence accumulation. All countries have used hard sticks (export and/or domestic competition) jointly with juicy carrots (tax incentives, subsidies) and measures to strengthen capabilities. While several countries have introduced big shocks to the economy, most policies have been gradual.

Many authors argue that the growth of the Tigers was not facilitated by industrial policies, but that it was the natural result of high rates of saving and capital accumulation and happened despite the policies. Some argue the intervention policies had negative effects, because they encouraged rent-seeking and corruption, or that industrial policy in Korea and Taiwan was only a mild accelerant of a growth rate already high because of the high growth of capital, education, and gains in total factor productivity (TFP) realized from borrowing technology from abroad.

However, another large strand of literature maintains that these policies – with all their shortcomings, mistakes and problems - were necessary and fundamental components of the industrial growth process. Active policies were undertaken in all the success stories, whereas the cases of many Latin American countries show that, in the absence of these policies, growth failed to occur.

Conclusions:

While there are many ingredients to economic success, not all the necessary ingredients were usually present at the onset of development and growth processes. The factors that generated the spark igniting growth process (luck, extreme tax breaks, a new market opening) and the factors that sustained the subsequent growth (R&D, education, government coordination, infrastructure, and growth of domestic suppliers) were largely different. Externalities are not simply in the air waiting to be exploited; they need public intervention to coordinate collective action.

The diffusion of knowledge as such does not provoke growth in the absence of agents (public or private) able to integrate it (e.g. biotechnology). The

This document is a summary of research commissioned for use by the Competition Policy Review Panel. The reports remain the responsibility of the individual researcher(s). The views expressed do not necessarily reflect those of the Panel or the Secretariat.

innovation system underlying previous successes may not be “fit” for achieving success in a different field with extreme uncertainty, long lags from basic research to product development, and strong intellectual property protection.

A unique recipe for success does not exist. It is the combination and interaction of the available ingredients which matters. Different ways of organizing a firm or an industry work better for certain ways of learning and certain technological regimes. Competitiveness and growth arise from the interactions of a wider set of actors, organisations and institutions.

In all cases, government action was present and all governments have tried to steer industrial development, well beyond simple public good provision. Public policy has always been conceived and implemented keeping a strong dialogue and contact with firms and industries, and often, especially in the more successful cases, also with other stakeholders. Considerable attention was always attributed to education, technology, research, innovation, new technologies and new industries. Export promotion is a further common element, though not necessarily without some degree of domestic protection.