The year 2010 is approaching and the Lisbon strategy will have to be replaced by a new strategy. The Foreign Ministry has asked the Swedish National Board of Trade to arrange a seminar about the "the external dimension of a new growth strategy", external commercial policies to support the reforms carried out domestically to increase growth. For the seminar we have written eight reports and a summary. All the report can be downloaded from the National Board of Trade website: www.kommers.se/trade&growth

Innovation is an important part of the Lisbon Strategy. By strengthening its innovation capacity, the EU can become more competitive and better prepared to benefit from the opportunities of globalization, as well as the threat posed by climate change.

Most of the economic growth and rise in living-standards over time has been due to advances in technology and increased innovation. Open trade and investments policies can contribute to creating conditions that are beneficial for innovation. Standards can also have a beneficial effect on innovation and work as a channel for transfer of technology and know-how.

In this paper the Swedish National Board of Trade argues that the *Information Communication Technology (ICT)* and *environmental* sectors deserve special attention. We suggest that multilateral liberalization in the WTO or in regional trade agreements, be complemented with targeted agreements aiming at further liberalization of trade in goods and services in these key areas.

Information and communication technology (ICT) is an innovation driver. The innovation process is about bringing together new and existing knowledge from different sources with the aim of introducing new products, services, business processes or marketing methods. ICT is an important enabler in this process. The Board suggests that an overview of the Information Technology Agreement (ITA) is initiated. This should be complemented with liberalization of related ICT services negotiated on a sectoral basis under GATS in the WTO. In the ICT sector, products and services are often bundled together, a fact that underpins the rational of liberalizing trade in *both* ICT goods and services.

Trade in environmental goods and services is increasing. With the threat of climate change, it is clear that more innovation is needed in this area. A lowering of trade barriers for climate friendly goods and services would increase the transfer of technology and boost trade, giving a positive impact to sustainable development. The Board suggests that a new multilateral agreement for climate-friendly goods and services is negotiated in the WTO.

Open trade and investment policies for increased innovation in the EU

By strengthening its innovation capacity, the EU can become more competitive and better prepared to benefit from the opportunities of globalization, as well as the threat posed by climate change. Innovation is a cornerstone in the Lisbon Strategy and trade and investment policies should be adjusted in such a way that innovation is facilitated, encouraged and transferred for further use.

The aim of this paper is to indicate ways that trade and investment policies can contribute to creating conditions that are beneficial for innovation. However, an open trade and investment climate is not a sufficient condition to trigger innovation. Other important measures are effective policies for research and development (R&D) and education, as well as strong links between industry and academia. Protection of intellectual property rights (IPR) and a well-functioning technology licensing market are also recognized as increasingly important parts of an effective innovation system.

1. How trade and investment affect innovation

Innovation is a concept related to processes that connect knowledge and technology with existing resources to create better goods, services or processes. It is not merely about creating new knowledge but also about new ways to use and commercialize advancements in technology.

If the EU is to stay competitive in the global market, our companies must continue to innovate to create know-how, capitalize on new technology and enhance the workforce's skill. This is where the EU's competitive advantage lies, not in low-cost production.

Businesses are the main driving force of innovation. Government policy should create an environment that enables innovation. How governments can promote innovation and make effective public policies is an issue receiving increasing attention. In the OECD Ministerial Council Meeting 2007, it was decided that OECD should focus on innovation and its relation to trade and investments policies. An OECD Global Forum on "Trade, Innovation and Growth" was held in November 2007[1]. The OECD has conducted an overview of economic studies of the various effects trade and investments can have on innovation. In the following we draw upon this work by OECD[2].

[1] See www.oecd.org/tad/tradeglobalforum2007 and OECD (2007) Global forum on trade, innovation and growth (TAD/TC/WP/RD(2007)2)
[2] OECD (2008) Trade and Innovation (TAD/TC/WP(2008)6/PART1)

The link between innovation and growth is relatively well understood and documented. Most of the economic growth and rise in living-standards over time has been due to advances in technology and increased innovation.

International trade and investment can contribute to innovation, but what this relationship looks like is still a subject for discussion and research. This is a relatively new research area which will continue to evolve as more focus is given to this issue. OECD brings forward three ways in which an open trade and investment climate contributes to an environment that is conducive for innovation in a country; by enhancing technology transfer, increasing competitive pressure and triggering economies of scale.

Trade and investment contributes to **transfer of technology and know-how**. Multinational enterprises that make international investments are, compared to national firms, more efficient and productive and generally possessing a higher level of technology. When these enterprises make investments they contribute to the host economy through transfer of knowledge and beneficial spillovers to domestic firms. Outward investments generate positive and beneficial effect to the home economy through global sourcing of knowledge.

Trade contributes to transfer of know-how through the technology embedded in the traded products. Import of goods with high content of technology contributes to domestic production and innovation through transfer of knowledge and R&D spillover from one trading partner to another. Another indirect contribution of an open trade policy is that prices and the cost of access to technology are lowered, which leads to diffusion of technology. The importing country can use this technology and know-how in new products making it into a comparative advantage which in turn drives trade. Zhu and Jeon (2007) find that technology spillovers from foreign countries are very important for increased productivity, more so than domestic R&D investments, making a strong case for an open trade policy as an channel for transfer of technology and know-how.

International standards contain information on best practices in both procedures and technology. International standards could therefore also work as a channel for transfer of technology and know-how.

An open trade and investment climate in a country increases the **competitive pressure**. How this affects the domestic industry's incentives for innovation is under debate with two opposing, but not necessarily contradicting, views. Schumpeter and others argue that when competition increases, the companies' profit margins decrease which reduces the companies' ability to innovate. Other economists argue the opposite, that an increased competition stimulates firms to improve their performance by catching up with new technology and encourages companies to meet global customers' expectations. Competition from foreign firms in the market, forces companies to develop new products with new features to keep their market shares.

The OECD notes that there is no conclusive empirical evidence that one or the other of these two views hold. Competition can either stimulate or suppress innovation. If a company is at the technology frontier, increased competition through freer trade and investment is more likely to lead to an increase in innovation than if the company is below the technological frontier.

Exporting is an important way for especially small countries to achieve the **scale economy** necessary to have an innovative economy. Companies producing for both domestic and foreign markets can use the larger sales quantities of an international marker to cover for the costs incurred by research and development (R&D) investments.

2. An open trade policy in key sectors for innovation

A successful conclusion of the on-going WTO negotiations would lower barriers for trade in goods and services, thereby providing access to more technology and promoting competition in the domestic market. In the long run this will have positive effects on innovation in the EU.

In the following we will highlight two important sectors – ***Information and Communication Technology (ICT)*** and ***environmental goods and services*** - where an open trade policy could lead to more innovation in the EU. These sectors are important for the EU's competitiveness and for its objective of achieving a sustainable development. We suggest that multilateral liberalization in the WTO or in regional trade agreements, be complemented with targeted multilateral agreements aiming at further liberalization in these key areas. The importance of international standards will also be underscored.

a) Liberalization of trade in goods and services in the ICT sector

Information and communication technology (ICT) is an innovation driver. The innovation process is about bringing together new and existing knowledge from different sources with the aim of introducing new products, services, business processes or marketing methods. ICT facilitates the sharing of knowledge in terms of both time and cost. The OECD concludes that information and communication technology has been the main driver and enabler of recent marketing and organizational innovations such as internet marketing and outsourcing in service sectors. ICT products are also often input components that enable new innovations.

Today new ICT-products often come across barriers in the form of tariffs or technical barriers and the problem is growing.

In 1997 the Information Technology Agreement (ITA) entered into force as a result of an initiative taken by a small group of WTO-members, among them the European Union, the US and Japan. Today 71 countries have joined the ITA, representing more than 97 per cent of global trade in products related to the agreement. The full dismantling of tariffs was accomplished in 2000.

The ITA must be regarded as a major success. The benefits of the agreement over the past 10 years include e.g.:

- extensively increased international trade leading to lower prices; over the past 10 years world exports of ITA-products more than doubled expressed in US dollars;
- diffusion of technology products leading to economic growth, increased productivity and investment, higher levels of innovation, and creation of employment;
- improved access for consumers to ICT-products, thereby enhancing ICT-penetration rates;
- possibilities for developed as well as developing countries to play a substantive role in the global supply chain;

In the last few years, however, emerging problems related to the ITA have been noted. There are tendencies to classify more sophisticated and technologically advanced ICT products outside the agreement, thereby depriving them of the benefits of duty-free treatment. Among the products affected are e.g. LCD-screens, set-top boxes and digital cameras. If these products are classified outside of the scope of the ITA Agreement they might face high tariffs. In the case of the EU these tariffs can be as high as 14% .

A major reason that many ICT products fall outside the scope of the ITA is obviously that so far no revision of the agreement has been undertaken. The product lists annexed to the agreement reflect the prevailing situation ten years ago in terms of technology and tariff nomenclature. In combination with a sometimes restrictive interpretation of the tariff classification rules this situation threatens to erode and dilute the agreement.

It is fundamental that these problems are addressed properly in a **revision of the ITA Agreement in order to maintain and fully realize the goals and objectives of the agreement, thus supporting innovation and new products.**

In paragraph 1 of the Ministerial Declaration on Trade in Information Technology Products participants declare that each party's trade regime should evolve in a manner that enhances market access opportunities for information technology products. Periodical revisions of the ITA are provided for in paragraph 3 of the annex to the declaration.

There is now an obvious need for a revision which would also give the participants the opportunity to add new products to the agreement.

There is also a need for an updating of the product lists to take account of the modernization of the Harmonized System Nomenclature that has taken place in the years after 1997. Furthermore the rules for classification should not be implemented more strict than necessary but with due regard to the letter and the spirit of the ITA.

In the light of the importance to support innovation *all new* industrial products should ideally enjoy zero duties. Such an arrangement would need delimitations and technical solutions that require further elaboration. An open and positive attitude should, however, be obvious and natural as regards the extension of the ITA to new products. Likewise it must be in the interest of all participants to see to it that the ITA is continuously updated and in line with the ongoing technical progress in the ICT sector.

The National Board of Trade also suggests that the revision of the ITA Agreement should be complemented with liberalization in ICT services under the WTO Agreement for Trade in Services (GATS). The aim should be that countries undertake **highly ambitious and comprehensive commitments for Information and Communication Technology services.**

The rationale behind this proposal is that there is no clear dividing line between ICT products and services. ICT products are often sold together with services making up a business model. One example is telecom equipment that is sold to telecom operators together with a bundle of services, from one or several service providers, for design of the network, installation, maintenance and performance improvement. Complementing the ITA Agreement with a services component would therefore make much sense, both from the viewpoint of the companies in the sector and to ensure that the objective of free trade in the ICT sector is upheld.

There is no specific ICT sector in GATS. A negotiation on ICT-related services would comprise at least telecommunication services and "computer and related services", a sub-sector of business services according to GATS definitions. The Board does not exclude the possibility that there are other relevant services that could be included.

It is important to avoid the risk that technology progress causes the services commitments to become partly out of date, as happened with the ITA agreement. To ensure this, countries should be encouraged to schedule their commitments to open their service sectors at the highest level possible. [3] New types of services within the sector would by this method be automatically covered by the commitments.

For a more in-depth analysis on the possibilities of conducting sectoral negotiations in the GATS and other ideas on how to stimulate trade in services, please see our report on services in this series[4] .

[3] This has been suggested in the GATS negotiations in the communication "Understanding on the scope of coverage of CPC 84 – Computer and related services" (TN/S/W/60, S/CSC/W/51) by a number of Members, including the EU.
[4] The report can be downloaded from www.kommers.se/trade&growth

b) Creating a new multilateral agreement for climate-friendly goods and services

Climate change is one of the greatest challenges for the international community today. Innovations in environmental technologies, both products and processes, could potentially provide means by which the world could meet the challenges posed by climate change with sustainable economic growth.

Sales of environmentally related technologies have grown from approximately USD 450 billion in 1993 to USD 652 billion in 2005. Given the importance attached to this sector, there should be scope for a larger increase in trade in both environmental goods and services if trade barriers are removed. A World Bank report concludes that the elimination of tariff and non-tariff barriers to "clean energy technology" (wind, solar, clean coal and efficient lighting) could result in a 7-14 per cent increase in trade volumes in these technologies[5]. In addition a lowering of trade barriers would increase transfer of technology in this area and thereby give a positive impact to sustainable development.

The National Board of Trade would like to bring attention to an EU-US joint proposal to negotiate an **Environmental Goods and Services Agreement (EGSA)** in the World Trade Organization (WTO) [6]. The experience from the Information Technology Agreement (ITA) has shown that liberalization in new technology sectors can be a successful way of expanding global trade, increasing productivity and investments and achieving higher levels of innovation.

In the services part of the Environmental Agreement, the members would undertake **highly ambitious and comprehensive commitments for services that fulfill climate change objectives**, such as environmental services (air pollution and climate control services), technical testing and analysis (air composition and purity testing services), energy-related (engineering and maintenance services to optimize the environmental performance of energy facilities) and services for the design and construction of energy-efficient buildings and facilities. This proposal covers a sub-set of the services included in the GATS sector of Environmental Services, but it also covers a number of services defined as pertaining to other sectors in GATS. The National Board of Trade supports the broad scope in the proposal for an Environmental Agreements. A suggestion is to further broaden the scope to also include *climate friendly transport* (e.g. maritime and rail transport).

[5] World Bank (2007) International trade and climate change – Economic, legal and institutional perspectives

[6] EU and US (2007) Proposal for a result under paragraph 31 (iii) of the Doha ministerial declaration (JOB(07)/193/Rev1)

The other objective of this new Environmental Agreement would be to have **zero tariffs world-wide for climate-friendly goods no later than 2013**. To achieve maximum impact the agreement should have a broad coverage. We note that several ways exist of denoting these products: *environmental goods* (WTO negotiation on environmental goods), *climate-friendly goods* (EU-US joint proposal) or *low carbon goods* (Trade minister meeting in Bali 2007). A technical committee with the responsibility of monitoring implementation of the Agreement and deciding on updates to the product list should also be established. This is necessary in order to avoid the situation currently faced with the ITA Agreement were the recent technological developments in new products has not been incorporated into the Agreement.

If it is not possible to agree on a multilateral Environment Agreement, a plurilateral agreement with the major trading countries in the world, including the EU, could be an option. Trade in goods and services increases the transfers of knowledge embedded in the goods and services and increases competition spurring innovation. Unilateral dismantling of trade barriers in the environmental sector could therefore be an opportunity for the EU.

An Environmental Agreement would not address all market access barriers. A survey carried out by the National Board of Trade in co-operation with the Swedish Trade Council concluded that many of the problems encountered by firms in the environmental sector are related to non-tariff barriers[7]. A lot of the administrative procedures necessary for importing and exporting goods are both time- and money-consuming, especially for the small and medium sized companies.

[7] National Board of Trade (2004) "Liberalisation of trade in environmental goods and services – Swedish interests" Ref.nr 100-156-04

c) The importance of international standards

Standards are references and benchmarks for designers, engineers and service providers and help build the "soft infrastructure" of modern, innovative economies[8]. Standards are voluntary documents developed for common use but they are also referenced in binding technical regulations.

Standards can both stimulate and hinder the development of new technology. The role of standardization in innovation systems and in disseminating knowledge and new technology is a research area where more work is needed. An Official Report to the Swedish Government concludes nonetheless that according to the current research findings, standards have a beneficial effect on innovation. In areas where standards set restrictions, the producers of new products and services are forced to focus on other aspects such as price, quality and complementary features to remain competitive. In this way standards forces producers to become innovative.[9] Standards contain information on best practices in both procedures and technology, making is probable that international standards could therefore also work as a channel for transfer of technology and know-how and, in the long run, spur innovation.

One aim of developing international standards is to facilitate the harmonization of regional and national standards in order to eliminate the risk of these becoming technical barriers to trade. The report notes that early development of **common standards** facilitates the growth of new markets. **The environmental and information communication technology are two sectors where the development of new markets could be enhanced through development of standards**, according to the government report.

[8] CEN (European Committee for Standardization) defines standard as "A document established by consensus, and approved by a recognized body, that provides, for common and repeated use, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context". http://www.cen.eu

[9] Swedish Government Official Reports (2007) Standards and growth: A research review, SOU 2007:83

A case to illustrate the importance of common standards is the development of standards in the ICT sector, which has resulted in a high level of integration and transfer of knowledge between the countries sharing the same standard. Nokia (Finland) is a showcase of how standards can play an important role in encouraging innovation of an individual firm through competition. Innovation in the telecommunication industry was limited when markets were segmented by differing standards. The unification of the telecommunication markets in the Nordic region and subsequently with in the EU led to a larger market, triggering competition, innovation and considerable growth. OECD concludes that Nokia, coming from a small country like Finland, clearly benefited having a common standard with larger market. [10]

The choice of method used for harmonization of technical regulation has an impact in innovation. The EU's *New Approach* method has proved to be more supportive of innovation than the methods previously used. In the *New Approach* references are made to European standards in the binding technical regulations, instead of laying down detailed specifications in the legislation.

Sharing a common standard facilitates economic integration between countries. When possible the EU should therefore use international standards and CEN and other relevant organizations should be encouraged to make sure that European standards are aligned to international standards when possible.

For more information and analysis on how the international standardization and the use of the New Approach could contribute to increased competitiveness in the EU, please see the report on technical rules in this series[11].

3. Investment: Creating an open and transparent investment climate

Openness to inward and outward investments is a necessity if the businesses in the EU are to remain innovative. Inward investments in a country contribute to that country's innovation through transfer of knowledge and beneficial spillovers to domestic firms. Outward investments in foreign markets contribute to the domestic industry through knowledge-sourcing.

[10] OECD (2008) Case Study No. 1: Market openness, trade liberalisation and innovation capacity in the Finnish telecom equipment sector (TAD/TC/WP(2008)/PART2/A)
[11] The report can be downloaded from www.kommers.se/trade&growth

During the last 25 years we have seen a big change in the way industries organize their business. Today many companies have globalized supply chains, which means that the production is scattered over a number of factories and R&D is done in various research centers all over the world. In these fragmented production chains companies are becoming increasingly specialized, focusing on their core competence. Such a trend could not have developed without the gradual liberalization of investment flows worldwide. The development of the Information and Communications Technology (ICT) has also been an enabler in this process.

Finland is an example of a country that has transformed from a resource-driven economy to a knowledge-based economy in a relatively short period of time. This transformation would not have been possible without open trade and investment policies. In the beginning of the 1990s, Finland opened its economy to foreign investment. The restriction of ownership of Finnish firms and restrictions on capital flows were lifted and several bilateral investment and protection agreements with third countries were concluded. As a result the stock of Finnish inward foreign direct investment (FDI) as a share of GDP multiplied more than five times between 1990 and 2000 (from 3,7% of GDP in 1990 to 20,2% in 2000). Most of these were direct investments made in new production and R&D facilities, or expansion of existing ones, creating new production capacity and jobs and triggering transfer of knowledge and know-how. The foreign investments also created a more competitive marketplace which forced Finnish businesses to make innovative solutions in order to survive.[12]

Although there are also other important factors that contributed to the success of Finnish sector, and in particular the telecom industry, such as R&D investments, effective education policies and strong links between industry and academia, the Finnish experience shows the importance of the government promoting an open investment regime for innovation. The EU should therefore continue to open up the EU market to foreign investments and pursue a global opening for EU investments overseas. The EU also needs to promote a stable and predictable investment environment to ensure that innovative businesses can benefit from the globalization of their supply chains.

For more information and analysis on how the EU's policy agenda for investments be linked to the Lisbon Agenda, please see report in investments in this series[13].

[12] OECD (2008) Case Study No. 1: Market openness, trade liberalisation and innovation capacity in the Finnish telecom equipment sector (TAD/TC/WP(2008)/PART2/A)
[13] The report can be lownloaded from www.kommers.se/trade&growth

4. Concluding remarks

If the EU is to stay competitive, the EU businesses need to continue to innovate and to capitalize on their innovations in the domestic and the international markets. An open climate for trade and investments is necessary for this to this happen.

A successful conclusion of the on-going WTO negotiations would lower barriers for goods and services, thereby providing access to more technology and promoting competition in the domestic market. In the long run this will have positive effects on innovation in the EU. In this paper we argue that the **Information and Communication Technology** (ICT) and the **environmental sectors** are two areas which deserve special attention. We suggest that multilateral liberalization in the WTO or in regional trade agreements, be complemented with targeted agreements aiming at further liberalization of goods and services in these key areas. The Information Technology Agreement (ITA) is a good benchmark, showing that liberalization in a new technology sector can be a successful way of expanding global trade, increasing productivity and investments and achieving higher levels of innovation.

Standards can have a beneficial effect on innovation and work as channel for transfer of technology and know-how. The method used for harmonization of technical regulations also has an impact in innovation. The *New Approach* method, which makes reference to European standards, is the most suitable one for harmonization of technical regulations since it is more supportive of innovation than the methods previously used. We have also noted the importance of aligning European standards to international standards when possible.

We have also pointed to the importance of an open and transparent investment regime. Today the EU's investments are regulated through a patchwork of agreements. EU should take action to achieve a more coherent structure for its investment agreements, while opening up the EU market to foreign investments and pursuing a global opening for EU investments overseas.

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