The rise of emerging markets and Knowledge-Intensive Foreign Direct Investment attraction

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Introduction

Business landscape is changing: emerging markets are reaching economic power and visibility. Among them, Brazil, India, China and Russian Federation, called BRICs, surprise the world with their high growth rate and fast development. Goldman Sachs’ projections forecast BRIC economies will be among the top five economies in the world in 2050. What are and what will be the consequences of this economic shift on foreign direct investment (FDI) location? One consequence is that, for the first time ever, in 2012 the global share of FDI inflows towards developing countries is higher than the ones directed to developed economies. In addition multinational corporations based on emerging economies are increasing their FDI outflows’ volume. These outflows are not only directed to other developing economies but they are increasingly investing in the high-knowledge industrial sector in advanced economies. Multinational corporations from emerging markets (EMNCs) are driven by asset-seeking motivations: they need to get access to technology, R&D and marketing capabilities, know-how, brands, skilled human capital and the managerial and organizational competencies that they lack. As some authors state, this is a technological catching-up strategy to leapfrog stages of industrial development absorbing know-how and knowledge built in developed countries. So, if on one hand advanced countries have growing opportunities to enjoy FDI inflows from emerging economies and to take advantage of their specific knowledge characteristics; on the other, future competition will be harder because emerging economies like India, China and Brazil, are massively increasing the resources devoted to Science and Technology (S&T) with the aim to become innovation-oriented societies in the next 15 years. For this reason, globalization offers and will offer chances and at the same time, stronger prospective competition for advanced economies. For the latter, however it is necessary to understand the most powerful leverages for attracting FDI -mostly high-knowledge intensive FDI- and therefore the beneficial effects they bring with.

This work supplies methods and best practises for cities, regions and nations willing to improve their power to attract foreign subsidiaries of global companies. This paper is divided in two sections. In the first section there is a deep analysis of what is changing in the economic landscape for identifying possible opportunities and risks which this global shift brings. Data and comments are provided on:

- emerging markets GDP growth,
- their rising outward FDI in developed countries
- their commitment to become technology-oriented societies by showing several S&T indicators

The second part is focused on strategies and best practice for being competitive, attractive for multinational corporations (MNCs) in the current and in the future world economic order. McKinsey Institute 2013 and The Economist intelligence Unit 2013, offers advice for countries and regions in order to maximize their appeal for global companies. First of all, local authorities should build a competitive business environment thanks to rising population for expanding local labour and talent pool and for improving infrastructures and local industries. In fact, as Richard Florida points out, attracting the “creative class”, namely highly-skilled labour force, researchers and artists, is an effective strategy to draw the attention of companies and obtain foreign investments. The second move consists in
identifying the most profitable sectors and in finding a match with their comparative advantages. Knowing where the institutional attention should be focused is a necessary step, which has been undertaken by Australia and South Australia, thanks to Deloitte’s report, “Positioning for Prosperity? Catching the next wave”. The aim of the Deloitte’s report is associating the most profitable business opportunities with the local strengths for underlining the current, the next and the future “waves” of economic prosperity. Once countries, regions and cities are aware of their potentiality, they should know the characteristics a MNC values the most when it selects the location for its subsidiaries, that is understanding how companies make their FDI location choice. According to McKinsey the decision-making of multinational companies is like a “funnel” with 3 different selection rounds. In the first step companies identify a long list of candidates motivated by the reputation of locations in a specific industry. Reputation can be built creating a solid and advanced innovation system, thanks to the agglomeration of expertise, production and academic research in order to reach the “critical mass”, able to turn a place into a “magnet” for capital, talent and overseas investments. In that sense, among South Australia’s strategies there are: the development of Tonsley Park, a knowledge-based industry hub for advanced manufacturing and the South Australian Health and Medical Research Institute.

In the second step of the funnel process, the alternatives are ranked by following many and diverse quantitative indicators, among them: market potential, wages and costs, presence of talent and universities, infrastructures, regulation and country risk, according to the companies’ different needs. By picking the top ranked, they reduce the long list to a few locations. Companies interested in establishing R&D facilities will be attracted by the quality of education, the talent pool size, the presence of centres of excellence and the availability of cooperation opportunities with local institutions and academia. Thanks to the strength of its S&T system and its potentiality to be an economic hub in the Asia-Pacific area, South Australia has remarkable advantages for being an R&D intensive FDI destination.

The last step in the MNCs’ decision is based on a more qualitative criterion: subsidiaries will be placed in areas where managers would like to visit frequently, where they would like their family to live, where there are good schools and cultural excitement. In other words, liveability matters for both talent and FDI attraction. In this regard Australia is one of the most liveable nations in the world, having four cities ranked in the top 10 of the City liveability Index 2013 by the EIU; Adelaide is the 5\textsuperscript{th} in this ranking and the most liveable capital city in the country according to a survey made by the Property Council of Australia. With regard to liveability, the Singapore case study is an example of an economic development path that cares about sustainability and high standard quality life. The ultimate goal of this process is to develop global cities: vibrant, innovative and technological city, capable of exerting magnetic attraction for talents, investors and tourists. Greater Stockholm’s case study is presented: the region surrounding Stockholm has been defined the European Region of the future 2012/2013, by FDI Intelligence of The Financial Times for their ability to be attractive, liveable and competitive. This case study is a good example that combines all of the strategies that have been mentioned, for this reason we analyse from where it derives its good reputation and the policies which have fostered it. Particular attention is given to its main clusters: ITC, life science, clean-tech and creativity. Lastly, along the lines of the best practices for improving high-knowledge FDI attractive power in the mutable and globalized world of tomorrow, the main comparative advantages of South Australia are highlighted.
1. Present and future: overlook on competitiveness, foreign direct investment and science and technology system around the world

1.1 Economic growth and FDI distribution

With the arrival of the new millennium, a new era has commenced, an era in which the engine of the world economy is no longer represented by developed countries, whereas emerging markets are establishing themselves as the protagonists of the future economic landscape. In the last decade, especially after the economic crisis of 2008, the United States continues to maintain a leading position in the economy and global politics and Europe strives to reach the total economic recovery. Whereas developing economies, year after year, are responsible for their increasing percentage of global growth and they are gaining an increasing proportion of wealth, consumption, investment, trade and technology generated in the world. For decades the unsolved question has been how to prompt other economies’ growth and make possible their catching-up in a globalized world dominated by the Triad (US, UE, Japan) but, with the advent of the post-2008 that stagnation, it is evident that China, Russia, Brazil, Indonesia, Vietnam, Turkey, and other emerging markets actually are catching up and fast. This seems to be one of the most relevant shifts in the global economy after the industrial revolution: these countries are competitive in many industrial areas, they have very convenient investment opportunities and their multinational companies are growing bigger and more powerful in the business landscape. The most impressive growth since 2000 belongs to the largest emerging economies: Brazil, Russia, India and China, which Jim O’Neill of Goldman Sachs in 2003 called for the first time BRICs. Jim O’Neill made a detailed projection of how the expansion of the BRICs could reshape the world economy, not only in economic growth, but also how the influence of emerging markets grew and overtook the major advanced economies. The most recent Global Economics Paper by Goldman Sachs, about BRICs’ economic forecasts, identifies the possibility of BRICs to line with the leading economies in the world, competing with US, Euro area and Japan. BRIC economies keep growing in their share of global GDP, and will be among the top 5 economies in the world in 2050, but their greatest impact on global growth, the “Great Transformation”, is yet to happen and progression is highly improbable; the higher changes could take place elsewhere: in fact, it is likely that, all the other emerging economies will be the ones to increase their importance most. So, even if inequality within countries keeps increasing, income inequality between countries has been and will lessen, allowing a growing number of people to enter in the global middle class, resulting in an equal spread of income across countries (Table n. 1 in the Annex). According to Goldman Sachs’ forecast, China will be the richest country in the world by 2050, surpassing US, while according to World Banks’ statistics currently it has the second highest GDP; Brazil is projected to rise from 7th in 2013 to 4th in 2050, Russian Federation from 8th to 5th and India, from 10th to 3rd, will place in the top 5 of the ranking becoming wealthier than Japan, UK, Germany and France. During the decade 1980-1990 BRICs economies accounted for about 10% of global GDP, by 2012, it increased to 27% by 2012(World Bank dataset), and, by 2050 Goldman Sachs projections, this share will rise to about 40%.
The following table, included in Goldman Sacks Global Economics Paper, summarize the projected years in which BRICs will overtake in term of US$GDP UK, Germany, France and US.

<table>
<thead>
<tr>
<th>Economy</th>
<th>Ranking</th>
</tr>
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<tbody>
<tr>
<td>United States</td>
<td>1</td>
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<tr>
<td>China</td>
<td>2</td>
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<tr>
<td>Japan</td>
<td>3</td>
</tr>
<tr>
<td>Germany</td>
<td>4</td>
</tr>
<tr>
<td>France</td>
<td>5</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>6</td>
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<tr>
<td>Brazil</td>
<td>7</td>
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<tr>
<td>Russian Federation</td>
<td>8</td>
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<tr>
<td>Italy</td>
<td>9</td>
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<tr>
<td>India</td>
<td>10</td>
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<tr>
<td>Canada</td>
<td>11</td>
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<tr>
<td>Australia</td>
<td>12</td>
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<tr>
<td>Spain</td>
<td>13</td>
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<tr>
<td>Mexico</td>
<td>14</td>
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<tr>
<td>Korea, Rep.</td>
<td>15</td>
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<tr>
<td>Indonesia</td>
<td>16</td>
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<tr>
<td>Turkey</td>
<td>17</td>
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<tr>
<td>Netherlands</td>
<td>18</td>
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<tr>
<td>Saudi Arabia</td>
<td>19</td>
</tr>
<tr>
<td>Switzerland</td>
<td>20</td>
</tr>
</tbody>
</table>

The world in 2012
(GDP in millions of US $)

Source: authors' elaboration World Bank dataset

The World in 2050
(GDP 2010 USD trn)

Source: GS Global ECS Research
Foreign direct investment (FDI) pertains to international investment in which the investor obtains a lasting interest in an enterprise in another country. In particular, it may take the form of buying or constructing a factory in a foreign country or adding improvements to such a facility, in the form of property, plants, or equipment. FDIs are calculated to include all kinds of capital contributions, such as the purchases of stocks, as well as the reinvestment of earnings by a wholly owned company incorporated abroad (subsidiary), and the lending of funds to a foreign subsidiary or branch. The reinvestment of earnings and transfer of assets between a parent company and its subsidiary often constitutes a significant part of FDI calculations. According to the United Nations Conference on Trade and Development (UNCTAD), the global expansion of FDI is currently being driven by over 65,000 transnational corporations with more than 850,000 foreign affiliates. An investor’s earnings on FDI take the form of profits such as dividends, retained earnings, management fees and royalty payments.” (Reported by Greater Europe and R&D Collaborations Desk, DPC SA Gov. Sept. 2013).

FDI is usually measured in stock and inflows or outflows; quoting the description available on UCTAD STAT website: “FDI stock is the value of the share of their capital and reserves (including retained profits) attributable to the parent enterprise, plus the net indebtedness of affiliates to the parent enterprises. FDI inflows and outflows comprise capital provided (either directly or through other related enterprises) by a foreign direct investor to a FDI enterprise, or capital received by a foreign direct investor from a FDI enterprise. FDI includes the three following components: equity capital, reinvested earnings and intra-company loans. Data on FDI flows are presented on net bases (capital transactions' credits less debits between direct investors and their foreign affiliates). Net decreases in assets or net increases in liabilities are recorded as credits, while net increases in assets or net decreases in liabilities are recorded as debits. Hence, FDI flows with a negative sign indicate that at least one of the three components of FDI is negative and not offset by positive amounts of the remaining components. These are called reverse investment or disinvestment.”

The global FDI flows are still recovering after the crisis period, even if there were good signals in 2011 (US$1.65 trillion) with a 17% improvement compared with 2010, the 2012 inflows, are US$1.35 trillion, displaying an 18% decline, in contrast with other macroeconomic variables like GDP, trade and employment which show positive growth rates respect to 2011. Consequently the path towards total
recovery is fluctuating and it can be further delayed than previous expectations; this stalemate is probably due to MNCs’ caution in front of economic fragility and policy uncertainty in some of the world’s largest economies. UNCTAD forecasts show a global FDI inflow for 2013 close to 2012 but rising: US$1.4 trillion and, if the other macroeconomic indicators keep progressing, investors are likely to regain confidence in the next 2 years increasing the global flows to US$1.6 trillion by 2014 and US$1.8 trillion by 2015.

<table>
<thead>
<tr>
<th>Macroeconomic indicators</th>
<th>% growth rate</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013*</th>
<th>2014*</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td></td>
<td>1.4</td>
<td>-2.1</td>
<td>4</td>
<td>2.8</td>
<td>2.3</td>
<td>2.3</td>
<td>3.1</td>
</tr>
<tr>
<td>Trade</td>
<td></td>
<td>3</td>
<td>-10.3</td>
<td>12.5</td>
<td>5.9</td>
<td>2.6</td>
<td>3.6</td>
<td>5.3</td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td>1.1</td>
<td>0.5</td>
<td>1.3</td>
<td>1.5</td>
<td>1.3</td>
<td>1.3</td>
<td>1.3</td>
</tr>
<tr>
<td>FDI</td>
<td></td>
<td>-9.3</td>
<td>-33</td>
<td>15.8</td>
<td>17.3</td>
<td>-18.2</td>
<td>3.6</td>
<td>17.1</td>
</tr>
<tr>
<td>FDI value in US$ trillion</td>
<td></td>
<td>1.82</td>
<td>1.22</td>
<td>1.41</td>
<td>1.65</td>
<td>1.35</td>
<td>1.4</td>
<td>1.6</td>
</tr>
</tbody>
</table>

*Projections

Source: author’s elaboration, of UNCTAD World Investment Report 2013, based on United Nation for GDP, IMF for Trade and ILO for employment

The distribution of FDI inflows by region shows that in 2012, for the first time, the inflows toward developing countries outdid the inflows toward developed countries. In fact, developing economies account for 52% of global FDI inflows, gaining almost 8% respect to 2011 and reaching the second highest level ever recorded US$703 billion, whereas developed countries currently account for 41.5% of world inflows with an amount of US$561 billion. Developing economies seem to be relatively resilient to the effect of the global crisis, losing just 4% of FDI inflows between 2011 and 2012, whereas developed economies lost 31.6%

| FDI inflows by region, 2010-2012 |
|---------------------------------|-----------------|------|------|------|
|                                 | 2010 | 2011 | 2012 |
| World                           | 1,409| 1,652| 1,351|
| Developed economies (inflows US$ billions) | 696  | 820  | 561  |
| Developing economies (inflows US$ billions) | 637  | 735  | 703  |
| Transition economies (inflows US$ billions) | 75   | 96   | 87   |
| Developed economies (%share global FDI flows) | 49.4 | 49.7 | 41.5 |
| Developing economies (%share global FDI flows) | 45.2 | 44.5 | 52.0 |
| Transition economies (%share global FDI flows) | 5.3  | 5.8  | 6.5  |

Source: author's elaboration, UNCTAD FDI database (www.unctad.org/fdistatistics).

This situation is confirmed by the global ranking of larger recipients of FDI, in fact 4 developing countries, China, Hong Kong, Brazil and British Virgin Islands rank among the top 5 host economies; 9 developing countries appeared among the largest 20 global largest FDI destinations but USA still lead this ranking.
It is noted that, China, India, Brazil and Russia all appear in the top 20. China ranked the 2nd world FDI recipient in the world for 2012, the majority of foreign investments toward China are in the manufacturing sector, followed by real estate and leasing & business services (Reported by Greater Europe and R&D Collaborations Desk, DPC SA Gov. Sept 2013). India, ranking 15th, has about US$36 billion FDI inflow during 2012; mostly in services, telecommunications, construction activities and computer software and hardware. Even though FDI to the Russian Federation and Brazil is slow in respect to the previous year, the attraction power of these countries remain strong and they respectively place 4th and 9th in the global ranking of FDI destinations.

Source: UNCTAD FDI database (www.unctad.org/fdistatistics).

<table>
<thead>
<tr>
<th>Economy</th>
<th>FDI inflow 2000-2012 ($US billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>33 22 16 10 18 15 19 34 45 26 48 67 65</td>
</tr>
<tr>
<td>China</td>
<td>40 47 53 53 61 72 73 83 108 95 115 124 121</td>
</tr>
<tr>
<td>India</td>
<td>3 5 6 4 6 8 20 25 47 36 21 36 25</td>
</tr>
<tr>
<td>Russian Federation</td>
<td>3 3 3 8 15 15 37 57 75 36 43 55 51</td>
</tr>
</tbody>
</table>

Source: authors’ elaboration UNCTAD dataset
As the graph below shows, BRICs’ FDI inflows and inward stock both increase during the period 2000-2012; with inflows increasing by 676% on average. Even if the effect of the global crisis leads to an FDI inflows’ average loss in 2009 equal to 32.5%(respect to 2008 level), BRICs currently have highest inflows than the pre-crisis period.

Source: authors’ elaboration UNCTAD dataset
1.2 Outward FDI from emerging markets: a strategy technological catch-up

The investigation of foreign direct investments’ motives, locations and kinds is one of the most explored international business topics. The economists’ attention often has been directed on FDI originated in developed countries but, in recent times, companies from emerging markets are becoming international and they are making significant investments abroad. In particular, FDI outflows from Brazil, Russia, India, and China (BRICs) but also from Hong Kong, Taiwan, Singapore, South Africa, Korea, Malaysia, Argentina, Russia, Chile and Mexico improved significantly during the last decade. Emerging multinational companies (EMNCs) invest, not only in other developing countries, but also in developed economies (the OECD classification is used to define “developed economies”).

Helped by economic liberalization and substantial variations in their foreign trade rules, emerging countries have augmented their attractive power for FDI inflows and also they facilitated local companies to invest abroad (Hoskisson et al., 2000). As the World Investment Report (UNCTAD, 2006) points out, the growth rate of outward FDI in emerging economies has overtaken the growth rate from developed countries.

McKinsey Global Institute 2013 indicates that the past two decades’ trade and capital flows from developed countries, supporting all parts of the global economies, are very similar to capital flows around the globe between the last decades of 1800 and the first one of 1900, in which substantial European overseas investments drove growth, urbanization and industrialization in colonies or former colonies such as USA, Canada, Australia and Argentina. The emergence of local companies in those places was a substantial part of this so called “Second Industrial Revolution”: taking advantage of an economic environment rich of opportunities, local companies quickly became giants in exporting and investing toward the entire world. Thinking the cycle of history could repeat in our times for developing and emerging markets is not unreasonable, because this vision is supported by data. In fact, looking at the outflow FDI world statistics, overseas investments from developing and transition countries, that at the beginning of 2000’ had a total value of US$926,595 million (12% of world outflows), at the end of 2012 they reached the highest level recorded US$4,920,116 million (21% of world outflows); whereas developed countries have a decreasing trend, losing 9% of world share in 12 years.
Among the growing national economies in the world landscape, BRICs: Brazil, China, India and Russia are worth a special mention. In BRIC countries, both FDI inflows and outflows have increased in the last 12 years, so, in effect, they have recently evolved from a situation in which they were just the main host countries of FDI flows to another in which they became significant outward investors. As the tables show, China and Russia are the largest outward investors among them in 2012 (US$84,220 million and US$51,058 million respectively). Even if, as we can note in the graph, the effect of the global crisis
around 2008-2012 has increased the volatility of BRICs outflows, with Brazil outflows producing negative
in 2009 and 2011, they seem to be more resilient to the crisis than the rest of the world, with outflows
dropping by only 26% in 2009, compared to 41% for the world as a whole. Brazilian outflows decreased
by 39% in 2009, increased by a strong 82% in 2010 and again it declined in 2011 by a 29%. According to
Global Investment Trend Monitor 2012, this high volatility is due in part to the prominence of the
region’s offshore financing: Brazilian affiliates abroad start to repay loans to their parent companies in
Brazil driving intra-company loans to a negative record in 2011. Repaying loan is a way for subsidiaries to
place their capital in Brazil, where the interest rate is high and they avoid paying taxes on foreign capital,
because intra-companies loans are not subject to these fees. Nevertheless Brazilian and Indian outward
stock of FDI still remains higher than the 2000’s levels. In fact, the outward FDI stock from the BRIC
countries has improved too, as the following table shows, the stock of outward FDI is starting to rise
sharply from 2005 onward and its value is particularly high for China (US $509,001million), followed by
Russia (US$413,159 million). Russia had the highest FDI outward stock among the BRICs up to 2010, with
a growth rate between 2000 and 2012 around 2,000% but the most surprising growth rate was scored
by India with 6717% growth, followed by Russia, China 1733% and Brazil 348%.

![Graph showing FDI outflows (US$ million) from 2000 to 2012 for Brazil, China, India, and Russia.](image)
FDI outward stock  
(US$ million)

Source: authors’ elaboration UNCTAD dataset
According to UNCTAD Global Investment Trend Monitor 2013, BRICS countries (including South Africa in the definition) are turning into important outward investors. Their outflow FDI increased from $7 billion in 2000 to US$146 billion in 2012 and from 1% to 10% of world flows. BRICS make overseas investment mostly in developed countries or in neighbouring economies with highly integrated regional setting, in fact 42% of their outward FDI stock is absorbed by developed countries (34% just in Europe) and 52% in developing countries in Latin America and the Caribbean, East Asia, South Asia and transition economies.

What are the EMNCs’ main drivers for investing abroad?

According to UCTAD 2006, 2007 and UNTAD Global Investment Trend Monitor 2013, thanks to their high growth rate and fast industrialization process, emerging markets reinvest their profits abroad mainly in two ways:

1. Investment outflow to other developing countries, like in regional or South-South cooperation arrangements, through green-field investment or by making joint ventures and acquisition with local players in natural resources rich countries. The purposes driving this typology of investment are mainly due to efficiency and market-seeking strategies, in fact, emerging economies ‘ MNCs are searching for competitive regions to regard of labour cost and labour force availability, resources availability, market size, access to regional market demand and fiscal or financial incentives.

2. Investment outflow to developed and industrialized countries is usually done through merger and acquisitions (M&A) and, during the 2010-2012 period, M&A purchases in developed countries amounted to US$105 billion. They are driven mostly by asset-seeking motives. Whit this strategy they are able to access technology, R&D and marketing capabilities, know-how, brands, skilled human capital, and managerial and organizational competencies.

The most explicative case is the Chinese one; following the technology catch-up model, described by Liu 2005, the Chinese strategy is composed by 2 steps:

1) Local firms acquire technology from abroad through imports or inward FDI offering lower production costs. Foreign firms were admitted only conditional on their signing up to joint-ventures with domestic firms, in order to benefit from the cooperation with more advanced technology suppliers

2) International technology alliances and M&A with firms in developed countries in order to have local specialization just in one of the part of the production process, outsourcing abroad the most skilled and technology-intensive activities for which they lack the necessary capabilities; i.e. R&D, marketing and after-sales services
Strategic FDI, in the form of M&A in developed countries, represents a direct transfer of very specialized knowledge and, thanks to this asset-seeking strategy, some developing countries MNCs are able to leapfrog technological stages of industrial development, acceding faster to advanced resources than building technological capability at home. Some examples are the Chinese electronic champion Lenovo taking over IBM’s PC business, Haier establishing R&D centres in Seoul, Tokyo, Milan and Los Angeles, the Mexican CEMEX’s takeover of large cement companies in Australia, UK and US or the Korean Samsung Electronics expanding its operations in Silicon Valley by investing more resources in its existing R&D centres and establishing new innovation centres. (Information provided by fDi tracker website: www.fditracker.com).

For this reason we can give credit to Peter Gammeltof’s theory about a “third wave” of investments flowing from emerging economies to developed ones. The author deduces in the period 1990-2000 the presence of a trend of outward investments from Asia, Latin America, Russia and South Africa to knowledge intensive sectors, in both developed and developing economies, Gammeltof calls it: third wave of investment flow. These investments are intended to take profit not only from usual advantages like market size, raw material availability and economies of scale but also technological, managerial and organizational capabilities highly present in industrial sectors of developed countries.

Dirk Holtbrügge and Heidi Kreppel, (2012), in a qualitative research, use case studies to detect the internationalization driver of eight major EMNCs in China, India, Brazil and Russian Federation belonging to the largest outward investors. The authors, using business reports, periodical articles and personal interviews with managers responsible for the internationalization, explore the three different levels of analysis: country-, industry-, and firm- level determinants. Industry-level determinants vary depending on industries’ peculiarities, competitive local pressure and strategic relevance for the government; firm-level determinants consider the specific resources owned by a firm, such as assets, capabilities, organizational processes, information and knowledge. On the other hand, the case study discloses that the choice of which foreign country invests in is defined by similar motives among different emerging economies. However, these determinants are different from what international economics theory usually suggests, because of the specific economic features of the countries under consideration. The classical theory explaining the substitution between trade and FDI fits just with developed countries: seeking cost advantage is not a leading motive for EMNCs. In fact multinational companies from OECD countries are usually featured by a backward integration of their activities, i.e. by selling products to customers in their home markets and producing and outsourcing processes to countries with low labour costs. Instead, the firms analysed here already benefit from low labour costs and low exploitation or procurement costs in their countries. What they often lack are:

- Home market capacity (even if these countries have a large population they are restricted in terms of low per-capita GDP)
- Up-to-date management/marketing know-how
- Skills and modern technological equipment
- Noticeable brand names
• Patent regulation

A tactic to bridge this gap can be working together or acquiring companies in developed countries which own these “critical assets”. They predominantly internationalize in the form of forward integration (selling to host countries costumers) for this reason the most important motives are market-seeking, but trying to obtain access to technological resources and management know-how is not at all a secondary driver. For example, Lenovo’s acquisition of IBM’s personal computing division was driven by asset seeking motivation. In fact, by doing this, it has been able to improve its technological capability and to procure marketing know-how, in way of building a global brand image. As the following case study explains, outward FDI from BRICs’ firms is more likely when the host country offers high levels of technology-based resources, as well as management know-how.

Summarizing the main finding of this explorative research:

### BOX 1: Chinese Gather Great Ocean Group and the South Australian Bio tech sector

This success story started thanks to the effort of Flinders University’s Centre for Marine Bioproducts Development to extract new and unstudied compounds from seaweeds in order to use and commercialize them as functional food, cosmetic and pharmaceutical products. Among the many known medical properties of chemicals extracted from seaweed there are treatments for cancer, immune dysfunction and coagulation, inflammation, high cholesterol as an anti-ageing effect, but other potential benefits have yet to be uncovered just as the biotechnology technique of chemical extraction can be improved and accelerated. South Australian waters have a huge variety of seaweeds and, during the last few years, Flinders University has worked in order to make the most of this great South Australia resource using biotech research for developing high-value products thanks to its industry partner Australian Kelp Products. When researchers from Flinders presented their project at the 8th Asia-Pacific Conference on Algal Biotechnology,(a four-day event in Adelaide, showing ideas and advancements in algal research, afores 300 delegates from 27 countries) something changed: GGOG, China’s second largest seaweed processing company, learnt about Flinders University’s technological competencies. Accordingly, the decision to establish a cooperation project involving GGOG the South Australian Government and Flinders University was made. Funding support was provided to the Centre for Marine Bioproducts Development by these institutions, over the next 3 years:
• GGOG AU$450,000 cash, AU$600,000 in-kind over the next three years and the new Flinders University - GGOG Advanced Macro Algae Biotechnology Joint Laboratory inaugurated in March 2013
• State Government, through its International Research Grant Program, provide fund to improve the cooperation between international partners and research centres in South Australia with the aim of valorising the potentiality of South Australia as a research base and an attractive destination for international investment. The Flinders’ Centre for Marine Bioproducts Development was one of the successful grant recipients with AU$300,000.
• Flinders University invested resources for the great success of this cooperation: AU$180,000 cash and AU$800,000 in-kind.

So an important aspect of the success of this operation is the leverage obtained through cooperation of different institutions such as the University, Industry and State Government: with the stimulus of AU$ 300,000 invested by the Government, the final value of the entire project became AU$2,330,000. Finally GGOG, in October 2013, has acquired and expanded the Australian Kelp Products, South Australian company, producing a liquid kelp fertilizers and dry seaweed based at Beachport: the only company with a commercial seaweed license in South Australia. The agreement provides for GGOG to commit AU$21 million over three years and an expected creation of about 200 jobs in the region.

So what were the attractive elements for China to invest in South Australia?
• Presence of natural resources which they are interested in (seaweed)
• Biotech centre highly specialized in research and development of commercial and sustainable uses for seaweed (Flinders University’s Centre for Marine Bioproducts Development)
• Convenient geographical position (South Australia as a hub for Asian Countries)
• State Government’s common interest in the improvement of research activities (International Research Grant Program)

We can interpret this case study using an innovation policy model: the Triple Helix Model (Etzkowitz 1993):
At first, multinational corporations such as GGOG are attracted by skilled employees, quality of public research centres and propensity to collaborate with the different agent of the national innovation system, specifically University and State. (Guimon 2008). Once a multinational company not only acquires a local firm, but also funds academic research, setting up a joint laboratory for development of applied research, the configuration of cooperation between State, University and Industry starts to look like a Triple Helix. This model is based on a deep cooperation between public spheres that become mutual transformation and hybridization. This structure, according to Ezkowitz allows the maximization of the productivity of the knowledge creation process, fostering economic growth and development. As soon as this approach succeeds in promoting innovation, the location becomes a magnet endowing the proper “critical mass” to attract capitals, partnership and talents from around the world. This final result is what Chief Scientist for South Australia Professor Don Bursill hoped when he stated: “This partnership demonstrates Flinders strengths in the commercialisation of technology and is a terrific example of the University research sector, government and industry working together to create new export streams, revenue and jobs for South Australia in the state priority area of advanced manufacturing”.
1.3 Global knowledge and S&T distribution: emerging economies’ policies, results and future goals in science, technology and innovation

The reality emerging is multifaceted because, the emergence of new economic powers in the world leads to high demand of skills and knowledge in developed countries for improving local emerging industries. On the other hand emerging countries too are applying effort in the creation of a higher-skilled labour force, high knowledge, academic and industrial research. For instance, according to McKinsey’s report “The world at work: jobs, pay and skills for 3.5 billion people” India and China are likely to provide more than half of the increase in the world’s supply of workers with some college education and two-thirds of the increase in science and engineering graduates expected by 2030. According to (OECD 2012) in 2000, there were 51 million 25-34 year-olds with tertiary education degrees in OECD countries, and 39 million in non-OECD G20 countries. During the last decade this gap has reduced, mostly because of the notable development of higher education in this latter group of countries: in 2010 there were 66 million 25-34 year-olds with a tertiary degree in OECD countries, compared to 64 million in non-OECD G20 countries. Forecasting this remarkable trend, the number of 25-34 year-olds from Argentina, Brazil, China, India, Indonesia, the Russian Federation, Saudi Arabia and South Africa with a higher education degree will be almost 40% higher than the number from all OECD countries by 2020.
In addition, Brazil, China and India, in the last few years, are largely committed to research, education and innovation improvement in their countries. In order to enhance their own competitiveness, each of these countries are giving a central role to innovation policies and long-medium term goals in terms of R&D expenditure, scientific output, publications and tertiary education enrolment.

**Brazilian, Chinese and Indian policies and targets**

**Brazil**

“Innovation is not an option, it is imperative. The future of our country depends on this creative effort.”

Marco Antonio Raupp, Brazil’s Minister of Science, Technology and Innovation January, 25 2012

In December 2010 the Ministry of Science and Technology released the first “Blue Book” stating the guideline for the national science policy, mostly focused on innovation and sustainable development and the use of science and technology to flatten out regional inequalities. The Blue Book was released at the end of President Luiz Lula da Silva’s term and the current President Dilma Rousseff, in spite of budgetary cuts needed to restore Brazil’s financial situation, has committed to maintain the expected level of investments and to continue her predecessor’s support for education, science, technology and innovation.

Among the main objectives there are investments for attracting young people to scientific careers. This means increasing the public funds devolved to education: public education expenditure as a percentage of GDP has increased between 2000 and 2010, from 3.5% to 5.6% but still below the OECD countries' average equal to 6.3% (Brazil education at glance, Country notes OECD 2013); their future goal is to raise expenditure in education to 10% of GDP by 2020. The National Fund for Science Development increased, from US$1.3 million in 2000 to US$1.8 billion in 2010, reaching about US$3.6 billion in 2012; they are also planning to achieve an annual budget for science, technology and innovation (STI) of 2.5 % of GDP by 2022. According to Thomson Reuters Essential Science Indicators for the period 2007-2011, the scientific production of the country has grown fast in the last number of years and Brazil was responsible for about 2.4% of the scientific output worldwide with 8.8% in agricultural sciences (Reuters 2013). In fact Brazil is a leading actor in Agricultural research and other technology intensive areas, such as Biofuels, Off-shore Oil Extraction, and ICT. Not just the good ranked federal Universities (see the “Top Universities” paragraph) have contributed to this result but also public research organizations accountable for strategic thematic areas, such as EMBRAPA, the Brazilian Agricultural Research Corporation world leader in tropical agricultural R&D and FIOCRUZ, the Oswaldo Cruz Foundation, the main public health research institution in Brazil.

**India**

In its new Science, Technology and Innovation (STI) Policy released in January 2013, India revealed its intention to create a “strong and visible Science, Research and Innovation System for High Technology for India (SRISHTI)”. The ultimate goal is to create a competitive R&D infrastructure in order to place India among the top five global scientific powers. India’s GERD accounts for about only 2.5 % of the world’s aggregate R&D spending. On more than one occasion, Prime Minister Manmohan Singh
declared 2010-20 as the “Decade of Innovations” and India is working to increase its GERD to 2% of the GDP by 2017. The STI Policy 2013 and its goals are not the first attempt to push India to a leading position in the R&D field. In 2003 the Science and Technology Policy (STP) was issued with the aim to increase S&T spending from less than 1% to 2% by 2007. Despite this, in 2013 India has not reached this goal, being that, its R&D expenditure on GDP is lower than 0.9% in 2013. In the last few years private investment in R&D expanded, mostly by knowledge-intensive companies and foreign R&D centres attracted by ITC Indian expertise (UNESCO Science report 2010). Nevertheless, GERD is mainly driven by Government. The total expenditure in 2009-10 as divided: Central Government 54.4%, State Governments 7.3%, Higher Education 4.1% and Public Sector Industries 5.3% with Private Sector Industries contributing 28.9%, (Government of India, September 2013). For this reason, as the STI Policy indicates, if India wants to achieve the 2% R&D expenditure on GDP in the next 5 years it is fundamental for private sector’s investments in R&D to rise to at least match the public sector investments. As reported in the STI Policy, even though global share in scientific publications has doubled from 1.8 % in 2001 to 3.5% in 2011, the share of Indian publications in the top 1% impact-making journals is still 2.5%, below the potential result that could be obtained by a nation producing 7,000 PhDs in science and engineering every year and having 155,000 full-time R&D personnel. One explanation for this poor outcome is the “brain drain” affecting this country, as shown in the GlobSci survey 2012 (a systematic study of the mobility of scientists in a large number of countries), India has the highest rate of scientists migration, around 40% of Indian born scientists in 2011 were working overseas. Reversing this trend by creating an attractive and competitive R&D sector is the only way to make researchers return home. The STI Policy 2013 underlines the necessity of improving the present capacity of R&D personnel by at least 66% by 2020 so India will be able to double its global share in publications, and quadruple the number of publications appearing in high-impact journals.

China
In the last ten years, the second largest national economy in the world has increased its R&D intensity by a factor of six, is the second ranked in the world for scientific articles publications, has been the third country to send astronauts into space and has built the first photonic telephone network. In spite of all these achievements, many Chinese scientists, analysts and especially China’s political leaders, remain perplexed: given the rising R&D/GDP, the growing pool of talent in science and engineering and the huge investments in advanced equipment and research infrastructures, China innovation should progress more quickly, home-grown Chinese scientists should be winning Nobel prizes and research should be better connected to the development of innovative technologies and products. Based on these ambitions, in 2006 political leaders had elaborated a “Medium to Long Term Plan for the development of Science and Technology”. The MLP Plan calls for China to become an “innovation-oriented society” by the year 2020 with the target of raising China’s GERD/GDP ratio to 2.50% and to turn into a world leader in S&T by 2050. In addition in its plans, China shows the intent to mainly rely on its local technology in the next few years and it is increasing investments in higher education in S&T for reducing imported technology to no more than 30%.
Trends, statistics and rankings in Science, Technology and Innovation in BRICs

The most common STI indicators, such as GERD/GDP, number of researchers, tertiary degrees, enrolments in tertiary education, number of scientific publications and citations and world university ranking, are useful to investigate the results currently reached by BRICs' national system of innovation.

**GERD: Gross expenditure in R&D**

According to the data released by UNESCO, the total financial resources devoted to R&D are increasing in all BRICs during the decade 2001-2011, with a surprising growth rate by China of almost 700% in 2011 to the value of US$207,418,014 the third highest amount in the world behind US (US$415,193,000) Japan (fourth if we consider the aggregate value of European Union). As the Table n.9 in the Annex shows, Russia, Brazil and India too are increasing their R&D expenditure by respectively 200%, 103% and 102%. Even if their trend is undeniably rising and despite the strong commitment to S&T improvement made by their Governments, their current expenditure (Brazil: US$25,292,076; India: US$24,305,900 and Russian Federation: US$35,045,145) is still lower than the leading European Countries in S&T such as Germany, France, UK and Italy. For information about their current GERD/GDP see Table n.2 in the Annex.
Top Universities

In the 2013 QS top university ranking, 7 universities from emerging economies are in the first 50 top positions, while just few years before in 2007 only 4 universities based in emerging markets were in the same range. These are the National University of Singapore (24th), University of Hong Kong(26th), the Hong Kong University of Science and Technology(34th), The Chinese University of Hong Kong (39th) Nanyang Technological University (41st) Peking University(46th), Tsinghua University(48th). Brazilian, Indian, South African and Russian universities do not rate in the first 50 but their climb between 2007 and 2013 is remarkable:

<table>
<thead>
<tr>
<th>University</th>
<th>2007 Position</th>
<th>2013 Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lomonosov Moscow State University</td>
<td>231st</td>
<td>120th</td>
</tr>
<tr>
<td>Universidade de Sao Paulo</td>
<td>127th new entry</td>
<td></td>
</tr>
<tr>
<td>University of Cape Town</td>
<td>145th new entry</td>
<td></td>
</tr>
<tr>
<td>Universidade Estatal de Campinas</td>
<td>215th new entry</td>
<td></td>
</tr>
<tr>
<td>Indian Institute of Technology Bombay</td>
<td>269th</td>
<td>233rd</td>
</tr>
<tr>
<td>Indian Institute of Technology Delhi</td>
<td>307th</td>
<td>222nd</td>
</tr>
<tr>
<td>Universidade Federal do Rio de Janeiro</td>
<td>338th</td>
<td>284th</td>
</tr>
</tbody>
</table>

Source: authors’ elaboration UNESCO and World Bank datasets
In the science field, dominant positions are held by US Universities (MIT, Cambridge and Harvard appear at the top positions of all ranking) nonetheless the 2013 top 100 ranked University in middle income countries by subject are:

<table>
<thead>
<tr>
<th>QS RANK 2013</th>
<th>ENGINEERING AND TECHNOLOGY</th>
<th>QS RANK 2013</th>
<th>NATURAL SCIENCE</th>
<th>QS RANK 2013</th>
<th>LIFE SCIENCES AND MEDICINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>National University of Singapore</td>
<td>11</td>
<td>National University of Singapore</td>
<td>41</td>
<td>University of Hong Kong</td>
</tr>
<tr>
<td>12</td>
<td>Tsinghua University</td>
<td>21</td>
<td>Peking University</td>
<td>91</td>
<td>National Taiwan University</td>
</tr>
<tr>
<td>14</td>
<td>Nanyang Technological University</td>
<td>33</td>
<td>Tsinghua University</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>The Hong Kong University of Science and Technology</td>
<td>44</td>
<td>The Hong Kong University of Science and Technology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>52</td>
<td>Indian Institute of Technology Delhi</td>
<td>47</td>
<td>Fudan University</td>
<td></td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>Indian Institute of Technology Bombay</td>
<td>55</td>
<td>Nanyang Technological University</td>
<td></td>
<td></td>
</tr>
<tr>
<td>57</td>
<td>National Taiwan University</td>
<td>57</td>
<td>National Taiwan University</td>
<td></td>
<td></td>
</tr>
<tr>
<td>66</td>
<td>Indian Institute of Technology Madras</td>
<td>57</td>
<td>University of Science and Technology of China</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>The Hong Kong Polytechnic University</td>
<td>65</td>
<td>University of Hong Kong</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>Zhejiang University</td>
<td>84</td>
<td>Lomonosov Moscow State University</td>
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<td></td>
</tr>
<tr>
<td>79</td>
<td>The Chinese University of Hong Kong</td>
<td>91</td>
<td>Nanjing University</td>
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<td></td>
</tr>
<tr>
<td>86</td>
<td>Fudan University</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>93</td>
<td>Indian Institute of Technology Kanpur</td>
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</tr>
<tr>
<td>95</td>
<td>University of Science and Technology of China</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>98</td>
<td>Indian Institute of Science</td>
<td></td>
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</tr>
</tbody>
</table>

The number of Nobel Prize winners is an important sign of research quality because it is an award of global significance, given to individuals who have distinguished themselves for advancing scientific research. Taking into account universities, research institutions or companies from India, China, Brazil and Russian Federation which Nobel Laureates were affiliated with, at the time of the Nobel Prize announcement in Physics, Chemistry and Physiology or Medicine, and Economic Sciences, 9 Nobel Prizes were won. Seven in Russia, mostly when it was URSS, one in Calcutta University in Physics in 1930 and one in Chinese University of Hong Kong in Physics in 2009. Nevertheless the growing massive investment...
in emerging economies, S&T in the last 10-15 years does not go hand in hand with globally recognized scientific discoveries.

**Tertiary degree**

According to OECD 2012, in the decade 2000-2010, due to the fast growth of higher education in G20 economies, the distribution of the global talent pool among countries has shifted; in fact, the largest shares of young people with a tertiary degree is still possessed by these same countries but the ranking has definitely changed. If, in 2000, the proportion of 25-34 year-olds with a tertiary degree was from China and USA (17%), 20% came from the Russian Federation; around 10% each were from Japan and India and 2% from Brazil. By 2010, China led the group accounting for 18% of 25-34 year-olds with a tertiary education, followed by United States with 14%, the Russian Federation and India each had 11% and Brazil had raised its share to 3%.

Source: authors’ reworking of Education Indicators in focus OECD 2012

Between 2000 and 2011 the enrolment ratio in tertiary education regardless of age, expressed as a percentage of the total population of the five-year age group following on from secondary school (TAB n. 3 in Annex), China has grown around 20% from 8% to 27%, in India from 9% to 18% and in Brazil from 16% in 2000 to 25% in 2005 (latest available data). Nevertheless, the percentage is also increasing in OECD countries (in average a 20% growth) and in the Euro area. For this reason, even if in the emerging markets the number of graduate students increase because of the population growth, the percentage of those who choose to enrol at the university, at least for the moment, remains low. (Data Source: UNESCO statistics)
Publications, citations and number of researchers

First of all we use one of the most reliable and commonly used dataset for scientific output: the Thomson Reuter’s Science Citation Index for comparing published papers and citations between the decade 1998-2008 and 2001-2011. Generally, global scientific output is measured as the number of published papers in peer-reviewed journals. Peer review means that the content of the research has been subjected to independent examination and approved by competent scientists, guaranteeing its credibility and quality. China has become the second global producer of scientific publications, while India and Brazil have greatly enhanced their scientific production reaching respectively the 11th and 15th position in the world rankings. While publications are a more quantitative index of scientific output, the number of citations in international journals is often used as a way of assessing the quality of publications, because the recognition by other authors indicates that the scientific community values the work that has been published. In fact it is a way to benchmark the research excellence of a country. Citations tend to be more concentrated than publications and, as we can see, the number of citations’ ranking is still dominated by the “Triad” (European Union, Japan and USA) and the performance of China, in 7th position, does not mirror the publication output, even if it has improved in comparison with the previous decade.

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<td>573,486</td>
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<td>18 TAIWAN</td>
<td>144,807</td>
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<td>19 POLAND</td>
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<td>125,520</td>
<td>20 TURKEY</td>
<td>819,071</td>
<td>20 POLAND</td>
<td>766,033</td>
</tr>
</tbody>
</table>


Using another dataset, The SCImago Journal & Country Rank, developed thanks to the information contained in the Scopus database, we can analyse the current condition of scientific production in the first 20 ranked nations.
The highest number of publications, citations and citation excluded self-citation (another quality and credibility check that we will call “net citations”) worldwide still belong to US. With regard to the Chinese performance, the disproportion among the 3 indicators is relevant, even if in this dataset China has the 3rd largest amount of citations. India, Russia and Brazil rank in the top 20 but their citations and “net citations “are clearly below the average.

We look at research output by scientific subjects, to receive a more complete picture of emerging economies’ strength in production of specific scientific knowledge. As shown in the Tables n.5-9 included in the Annex, the most relevant fact is the surprising outcome of China: in 2012 it ranks first for the number of publications with a remarkable detachment from the second producer of scientific output, US, in Engineering, Chemical Engineering and Chemistry. Citations and net citations lose the primacy, even if it still does better than all the European countries present in the top 20. In Chemical Engineering and Chemistry, India ranks 3rd but citations and net citations are under the top 20 average. Regarding the other subjects here analysed, such as immunology and microbiology, biochemistry, genetics and molecular biology only US does better than China for the number of publications but European countries like Germany and UK have a higher number of citations and net citations, due to the high reputation built over decades of production excellence in the scientific field. Brazil appears in all categories of the top 20 of global rankings but its main result comes from its area of excellence: Agronomy and Crop Science. In this field it is the second research producer behind US with 15,936 published documents in the period 1996-2012.

Jointly with publications the number of researchers too has been increasing in emerging markets in the last decade. Using data published by UNESCO, from 2000 to 2011 China has increased its number of researchers by 90%, (latest available data: researchers total = 1318086, researchers per total labour force=1.59) India by 34%( in last data year available: researchers total = 154827, researchers per total labour force=0.33) and Brazil by 88%,( latest available data: researchers total=138653 researchers per total labour force=1.36). However USA and UK, two big scientific powers in developed world, have a
rising trend too: USA increased in the period 2000-2011 by 9% (latest available data: researchers total=1412639, researchers per total labour force=8.96) and UK by 54%, (latest available data: researchers total= 262303 researchers per total labour force=8.11). For further information see Table n. 10, n. 11 and n. 12 in the Annex. So in emerging economies the research intensity, measured as the number of researchers on the total labour force, continues to remain low, but the number of researchers who compete on the global market, even if smaller than USA’s market, is significant and growing.

Drawing a conclusion about the S&T system in emerging markets:

<table>
<thead>
<tr>
<th>STRENGTHS</th>
<th>WEAKNESSES</th>
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<tbody>
<tr>
<td>• Large number of publications</td>
<td>• Few citations as a measure of quality of research</td>
</tr>
<tr>
<td>• Increasing GERD/GDP</td>
<td>• Few universities awarded with Nobel Prizes</td>
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<tr>
<td>• High number of researchers</td>
<td>• Brain drain</td>
</tr>
<tr>
<td>• New advanced facilities and universities</td>
<td>Thanks to:</td>
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<tr>
<td></td>
<td>• Fast growing GDP</td>
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<tr>
<td></td>
<td>• Government commitment in STI investments</td>
</tr>
<tr>
<td></td>
<td>• Large percentage of global population</td>
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<td></td>
<td>Caused by:</td>
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<td></td>
<td>• Young S&amp;T system</td>
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<td></td>
<td>• Few, even if growing, qualified positions’ opportunities in the field of scientific research</td>
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1.4 Global cities, competitiveness and FDI attraction

In order to see the big picture of the current and future distribution of economic power and opportunities all around the world, we need to consider the main role of global cities. In fact, as The Economist’s Intelligence Unit states in its website “over half of the world’s population lives in cities, generating more than 80 percent of global GDP. Already, global business is beginning to plan strategy from a city, rather than a country, perspective”. Being so relevant in the creation of global wealth and in terms of population, they are the real engine of competitiveness and growth of countries. For this reason the power of emerging markets is reflected in the economic strength of their major cities. Cities have a relevant role in competing for global investment flows and for talents; therefore, as the economic barycentre is shifting to emerging markets, new emerging cities too are competing with more developed cities to attract them. Following Saskia Sassen, the first researcher to give a narrowed definition of this notion in 1991, global cities are the nodes supporting the network of our globalized world, the places where economic and productive global systems are managed by a great number of economic and financial high-skilled people. Global cities are magnet able to attract innovative people, new ideas and outstanding companies from the entire world in the midst of the current global competition.
Global cities have a prominent competitive advantage; therefore a lot of institutes have tried to classify and to rank world cities according to different criteria. Here we are going to analyse what and why are the current best ranked global cities using various indexes: Global Cities Index 2012 (ATK, The Chicago Council on Global Affairs, and Foreign Policy magazine), Global Economic Power index (Richard Florida, Martin Prosperity Institute), Global Power City Ranking (The Mori Memorial Foundation) and, for a comparative current and prospective vision, Global City Competitiveness Index and Hot Spot 2025 (The Economist’s Intelligence Unit).

The Global Cities Index, released in 2008, 2010 and 2012, measures global engagement of cities across five areas: business activity, human capital, information exchange, cultural experience, and political engagement. By comparing the rankings we can conclude: that the first positions are stable (New York, London and Paris) achieving the highest level in almost all the categories; the highest level of Asian cities of emerging economies are Hong-Kong (5th stable), Seoul (8th gaining 2 positions from 2010), Singapore (11th, down 3 positions) and Beijing (14th down 1 position). The Asian cities have a distinctive trait: they achieve high scores in the business activity area and, at least Hong-Kong has a compatible score in human capital, so it appears that they could significantly compete against the leading cities in the next 10 to 20 years.

The Global Economic Power index 2012 is based on the idea that clustering and concentrating labour, capital, talented and ambitious people are the real engine for innovation and long-term growth. This index is built on 3 areas: economic power, financial power and innovation. For this reason the presence of emerging cities at the top positions is relevant: Hong-Kong, Singapore and Shanghai are in the top 10 and Seoul and Beijing are tied in the 11th position; New York, London and Tokyo are again dominant, because competition among global cities is highly resilient and huge economic centres can hold their competitiveness independently from national economics outcomes.

The Global Power City Ranking measures the “magnetism” or urban competitiveness of 35 of the world’s most leading, global cities. The six components of the index are: economy, R&D, cultural interaction, liveability, environment and accessibility. As expected New York, London and Paris dominate this ranking also and Singapore, Seoul and Hong-Kong are included in the top 10, while Beijing jumps six spots, mainly due to high marks in the economy and cultural interaction categories. The distinctiveness of this index is the unique presence of an actor-specific ranking: separate indexes that order each city’s magnetic power for five different types of users: Managers, Researchers, Artists, Visitors and Residents. Looking at the manager ranking, the impressive result of Singapore and Hong-Kong emerges: both outdo New York and rank in second and third position.

EIU defines competitiveness’ the demonstrated ability to attract capital, businesses, talent and tourists. They evaluated 120 cities across the world, analysing 31 indicators belonging to eight thematic categories: economic strength, human capital, institutional effectiveness, financial maturity, global appeal, physical capital, environment and natural hazards and social and cultural character. Singapore’s 3rd position and Hong-Kong’s 5th position, as the more attractive places than a lot of North American or European cities, is a clear sign of their countries’ fast growing economy. In fact, in the economic strength category Asian cities dominate and lead the rankings with Tianjin(1st), Shenzhen(2nd) and Dalian(3rd) and
the other 9 Chinese cities, listed in the top 20, while Singapore(15th), Bangalore(16th), Hanoi(20th), Mumbai(26th), Delhi(26th tie) and Taipei(29th) outdo an economic powerful city such as London in the same category. Comparing EIU 2013 with 2025, we can note that the top 10 is likely to have few changes, with the exception of Sydney and Stockholm. Chinese cities still remain the most competitive among the emerging markets but they are unlikely to gain further positions. It is also noted that the main improvement in ranking is not happening at the top. For instance, according to EIU projections, Sao Paolo (+25, ranked 36th) and Mumbai (+16, ranked 51st) Delhi (+13, ranked 56th) are among the main increasing cities. Among the global cities from developed countries, there will be an extraordinary progress for Stockholm (+12) and Sydney (+11) entering in the top ten in 2025.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Global Cities Index 2012</th>
<th>Global Economic Power Index 2012</th>
<th>Global Power City Ranking 2011</th>
<th>Global City Competitiveness Index 2012 (The Economist)</th>
<th>Global City Competitiveness Index 2025 (The Economist)</th>
</tr>
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<tbody>
<tr>
<td>3</td>
<td>Paris</td>
<td>London</td>
<td>Paris</td>
<td>Singapore</td>
<td>Singapore</td>
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<tr>
<td>4</td>
<td>Tokyo</td>
<td>Chicago</td>
<td>Tokyo</td>
<td>Paris</td>
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<tr>
<td>5</td>
<td>Hong Kong</td>
<td>Paris</td>
<td>Singapore</td>
<td>Hong Kong</td>
<td>Tokyo</td>
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<tr>
<td>6</td>
<td>Los Angeles</td>
<td>Boston</td>
<td>Berlin</td>
<td>Tokyo</td>
<td>Sydney</td>
</tr>
<tr>
<td>7</td>
<td>Chicago</td>
<td>Hong Kong</td>
<td>Seoul</td>
<td>Zurich</td>
<td>Paris</td>
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<tr>
<td>8</td>
<td>Seoul</td>
<td>Osaka</td>
<td>Hong Kong</td>
<td>Boston</td>
<td>Stockholm</td>
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<td>9</td>
<td>Brussels</td>
<td>Washington Dc</td>
<td>Amsterdam</td>
<td>Chicago</td>
<td>Chicago</td>
</tr>
<tr>
<td>10</td>
<td>Washington Dc</td>
<td>Seoul</td>
<td>Frankfurt</td>
<td>Washington Dc</td>
<td>Toronto</td>
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</tbody>
</table>

Source: authors’ elaboration; data source: Global Cities Index 2012 (ATK, The Chicago Council on Global Affairs, and Foreign Policy magazine), Global Economic Power Index (Richard Florida, Martin Prosperity Institute), Global Power City Ranking (The Mori Memorial Foundation), Global City Competitiveness Index and Hot Spot 2025(The Economist’s Intelligence Unit).

As we can see from the above table all the indices agree on 2 facts:

1. Among BRICs, Chinese global cities are the prominent ones in all different rankings leaving behind Moscow, Sao Paolo and Delhi. The main part of their competitiveness is due to economic indicators, corresponding to the high growth rate of the Chinese economy, the increasing urbanization and the favourable investment policies which make these global cities profitable for investors and rich in business opportunities.

2. Major western global cities retain their legacy advantages and, despite the effect of the economic crisis and the reduced growth rate, they are and will remain competitive thanks to the resilience of business reputation and softer elements of investment and talent attraction, such as environmental, cultural aspect, human capital and quality of life.
1.5 The future business landscape: a double edged sword for FDI location?

Twenty years ago very few would have been able to imagine that Lenovo (Beijing based company) would buy IBM’s PC business and that it would become one of the largest pc vendors by volume in the world. By 2025, it is likely that some of the leading global names in many industries could be unknown companies or based in cities that we cannot currently point out on a map. McKinsey Institute 2013 estimates that, by 2025, the amount of large companies will increase by 7,000 and 7/10 of these new entities will probably set in emerging regions, leading their share of large companies from ¼ to ½ of the world total. The more EMNCs keep on multiplying and enlarging their productive capacity, the more their regions and cities will become fundamental actors, because the rise of new global companies will promote opportunities for cities to acquire the role of hubs in the regional industrial networks. Moreover, emerging areas will be leading players in a globalized world, through international expansion and global integration that will bring new competition for incumbent and mature sectors of the developed world. So this shift in the business location will likely have deep repercussions in the geography of competition, foreign investment and talent attraction.

If in their process of internationalization, as we have seen, EMNCs direct their capitals to developed and mature economies for acquiring technologies, brand and for taking advantage of their scientific competence and know-how. On the other hand public and private institutions in emerging markets are fast improving their innovation system for becoming innovation-oriented societies.

In fact as Gert Bruche 2009 notes, after 2000 China and India became the favourite R&D destinations of multinational corporations (MNCs) outside of the USA, Europe and Japan and they are in competition with other emerging economies like Russia, Eastern Europe or Brazil for R&D FDI. Among the advantages they have for hosting R&D facilities there are: market size, the huge and cheap talent pool, English language (India) and very large qualified diaspora. Furthermore MNC R&D investments and offshoring to China and India are gathered in few regional clusters like Beijing, Shanghai and Bangalore. They are mainly limited to information and communication technologies and, in India, are concentrated on software and engineering R&D, with the remaining smaller portion pertaining to the health sector and automotive industry.

However, even if R&D and investment are moving towards those countries, currently their prevailing R&D FDI covers routine activities and adaptations of existing designs, practices or products processed in the higher order R&D centres based in developed countries. For this reason, it is still an open question whether there will be also a shift in the geographic positioning of centres for the production of real innovation.

Furthermore as The Economist Intelligence Unit (EIU) 2013 points out, a commitment in higher-education in the S&T field has a dead zone: in a globalized world, it is not sufficient to educate talents only, it is also necessary to retain them or attract others. In fact, despite the massive investments made in education, building high-quality institutions and sufficiently convincing settings to attract the highest skilled workers is hard and a long-term procedure. As the case of India shows, brain drain is high when this large number of scientists and engineers is not able to find qualified positions or attractive conditions at home. Trying to leapfrog stages of development, embarking on the path of global knowledge economy is a hard challenge: intense investments and strong capital attraction do not guarantee fast success. Developed regions have legacy advantage on education and infrastructure, built
up over decades, that can be overpassed if new industrialized countries start caring about not just economic growth but also about some softer and more qualitative aspects, such as institutional effectiveness, social and cultural appeal, environmental protection and quality of life. In fact as Richard Florida highlighted in his theory the “Creative Class”, investors are attracted by talents: high-skilled, innovative and creative people; those talents choose where to live or work according to their personal preferences. So to implement an effective investment attraction policy, policy makers should commit to make their city or region appealing for that class of people who, by definition, is looking for a creative, vibrant and tolerant place to live and to work. As Guimon explains, among the major deficiencies that developing and transition countries have in attracting R&D-intensive FDI, there is a lack of absorptive capacity, potential consumers’ pool and specialized clusters, which are fundamental requisites multinational companies searches through R&D potential location areas. Absorptive capacity refers to the firms’ ability to appreciate, interpret, integrate and use effectively any new set of information for commercial purposes.

Furthermore, other tendencies noticed by researchers in R&D internationalization are a strong inertia in keeping the most strategic R&D activities in places where they are already present, agglomeration economies and first mover advantages: all factors that certainly do not favour the internationalization of R&D activities in emerging economies. So, even if the high competition for obtaining future R&D FDI seems to be a real perspective, the global city of the developed countries with a long tradition of culture and higher standards of living will continue to have comparative advantages very difficult to imitate. Despite this, the only tool advanced economies have is to avoid resting on one's laurels and to develop a consistent response strategy suitable for endorsing their comparative advantage in the present and not losing appeal in the future.

These comparative advantages in attracting FDI fit particularly well with a specific category of FDI, the one in R&D; advantages particular beneficial and worthy to capitalize because R&D will be sector of the future, with the greatest economic returns. In fact the importance of knowledge economy gives no sign of stopping and in the future legacy advantage like presence of centres of excellence, leading universities, highly-skilled worker pool, liveability, strengthened infrastructure and institutional stability will be crucial for the economic growth of cities, regions and countries. This overview shows that globalization offers and will offer a large number of opportunities but, at the same time, stronger prospective competition for advanced economies that needs to figure out the most powerful leverages for attracting FDI, mostly -knowledge intensive FDI, and consequently the beneficial effects they bring

Summarizing:

<table>
<thead>
<tr>
<th></th>
<th>PRESENT</th>
<th>FUTURE (up to 12 years)</th>
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<tbody>
<tr>
<td>Emerging Economies</td>
<td>-High growth &lt;br&gt;-Global integration &lt;br&gt;-R&amp;D FDI outflow to developed countries</td>
<td>-Co-Leading business position &lt;br&gt;- Spread of wealth, more people in the global consumer class &lt;br&gt;- S&amp;T convergence</td>
</tr>
<tr>
<td>Developed Countries</td>
<td>-Leading position &lt;br&gt;-Dominance in high-knowledge sectors</td>
<td>New business opportunities but higher competition</td>
</tr>
<tr>
<td>Strategies for cities in Developed Countries</td>
<td>Profit by and strengthen their own position, <strong>BUT HOW?</strong></td>
<td></td>
</tr>
</tbody>
</table>

32
2. How to be competitive and attractive in the next future: strategies and best practice

2.1 Growing population and talent attraction: the advantage of a larger highly-skilled workers pool

Multinational companies plan their future internationalization through strategic countries and key cities’ lenses, thus cities and regions compete to become competitive and attractive globally for gaining both investment flows and mobile talents. Having great and varied local urban economies and favourable business settings is a valuable advantage for attracting new firms and to make the entire industrial system to flourish and grow. Local business needs a solid economic growth to thrive, mainly resulting from expanding populations and rising incomes. Indeed pro-population-growth policies, including those focused on attracting highly skilled migrants are central components of economic growth strategies. In densely inhabited locations, firms have a larger and more assorted labour force as well as greater demand for their products and services. According to Mr Stolarick at the Martin Prosperity Institute, the advantages of the size are relevant for a city. The more a city grows in population, the more they acquire increasing returns to scale, in terms of patents, productivity and per capita income (EIU 2013). In fact, research made by Bettencourt, Lobo, Strumsky about the relation between inventory activity and population size among metropolitan areas in the United States during the period 1980–2001, shows that larger metropolitan areas are more productive in innovation compared with smaller ones. They found a statistical robust super linear effect (i.e. more than linear relation) in terms of inventors, patents, R&D establishments and employment in creative professions per inhabitant; firms display increasing returns in inventing activity with respect to population size. About the benefits of size it is useful to introduce the concept of agglomeration economies: the positive externalities and economies of scale associated with spatial concentration of activities. One of the variables related to agglomeration economies is population density that has a significant and positive role on FDI attraction. Attractive power is likely to increase thanks to agglomeration effects linked to the easy accessibility to specialized service suppliers; skilled labour; and the development of industrial clusters. Size is an advantage but undervaluing the importance of infrastructure quality is a serious mistake. In this regard, policy makers should consider that size can also hamper competitiveness, particularly when the structure and the functioning of the city are not appropriately organized. The most significant example is transport: if a city is extremely populated and needs an extensive, well-functioning public transport network and, even if, it has large resources to spend, it has also greater portion of users to satisfy and wider physical space to be covered. So economies of scale can also turn into diseconomies of scale when congestion and gridlocks bring high cost for competitiveness. In fact, size is not the crucial goal, the most important and useful advantage for triggering competitiveness is developing an efficient way to manage the large amount of resources and the population. Human resources and efficiency, jointly considered, is the key to take advantage of the agglomeration economies.

The availability of a world-class labour force is one of the main competitive advantages of populated cities; so cities that cannot rely on a huge worker pool, given by the population size, should promote their attractive capacity of highly-skilled workers, scientists and researchers and, as important, their retention. For FDI attraction and, mostly for R&D-intensive FDI, the presence of scientists and
researchers is a critical driver, thus, proper strategies for building a strong human capital base has to be contemplated. As Guimon 2009 states, one of the key strategies to be implemented is boosting the interest of the younger generation in careers in the science field, by offering scholarships or by augmenting the financial resources held by universities and research centres. Another one is developing the ability of fostering foreign talents’ inflow as an undeniable critical asset. It can be enhanced in different ways, first of all the presence of strong and excellent reputation centres of research and universities play a crucial role in this process; then some policies might be applied, like making the conditions of local researchers and university professors more desirable to foreign candidates, rearranging the immigration legislation and procedures, decreasing income taxation for highly-skilled immigrants or facilitating the accreditation of foreign qualifications. Other policies should also deal with the incentives for the return of national researchers sited abroad, with the goal of turning a brain draining process in a brain circulation one, which is very beneficial for the improvement of the local innovation system.

An example of this strategy has been established by the Government of South Australia The crucial importance of people and talent attraction is included in one of the “Seven Strategic Priorities for South Australia”: Creating a vibrant city. Adelaide is not just a well know international benchmark in the field of liveability, culture, festivals, food and art, but it has other relevant resources, such as multiculturalism and world-class universities. Despite this, young people are leaving the State. Priorities such as new jobs and economic opportunities and offering a pleasant and stimulating environment should be considered, enticing people to live, work, invest and visit South Australia. The city and the State are working on these goals by enhancing the advanced and diversified State economy, by providing interesting educational opportunities and careers for local people and by attracting talents from all over the world.

**BOX 2: How to attract the “creative class” and to make your city “smarter”, strategies for stimulating foreign investments**

As explained previously, one of the most relevant strategies to attract FDI in the high-knowledge sector is attracting highly-skilled workers, a very similar theory, that achieved resounding success and is still an effective reference point for many cities, which was created by Richard Florida in 2003. In the book “The Rise of The Creative Class” Richard Florida describes his approach to make a city successful, vibrant and appealing. Due to globalization in communication and technologies, workforce is no longer obliged to follow companies but creative workers decide where they want to live and work and then companies must follow. So human capital attracts investment and the policies implemented to foster FDI and growth should be targeted to make a city as appealing as possible for these people. As the amount of available choices very large, cities must compete with each other to entice and hold investments and highly-skilled human capital. The creative class consists of two groups the creative professionals, who are people employed in fields such as health care, financial services, and high-tech sectors and the super-creative core, composed of people working in deeply creative jobs such as scientists, artists, architects and writers. In the modern and globalized world, cities need to allure these categories and retain them, in order to bring about economic vibrancy, creation of new companies and investments. This result can be obtained by implementing policies apt to develop what Richard Florida calls the 3T, which are Technology, Talent and Tolerance. These elements are practically represented by concentration and innovation in local higher-technology industries, the number of bachelor’s graduates and openness to new ideas, migrants and the whole community
without any prejudice. If those elements work in synergy they represent the required intermediate step to attract high-technology industries and producing higher incomes.

As the World Bank 2006 points out, the presence of jobs ensuring high wages, public-service delivery, public safety issues, available career opportunities, natural environment and cultural alternatives are important factors in the decision of where highly-skilled workers want to live. Sometimes, living conditions and an extremely functional city arrangement are more influential than earning in the migrants’ decision. In order to ensure public safety, to provide water, electricity, transportation and other services, institutions are forced to manage with an ever-increasing amount of information. In fact, prospering as a first class cultural, economic and social centre means dealing with complexity and achieving synergy among the different departments responsible for a wide range of essential functions (water, electricity, tourism, transport, logistics, etc.). Collaboration and intensive use of shared and integrated information among the different agencies may help, not only to anticipate problems and to solve them proactively, but also for successfully completing projects and for improving the efficiency of daily operations. In other words, competitive cities need to be “smarter”. A “smarter city” uses new technologies to plan for growth and to more efficiently deliver critical infrastructure and services. A lot of service providers are supplying high-technology instruments to cities wanting to improve their infrastructural system. Essentially they furnish a way to detect and collect in real time information about the conditions of any aspect of the city. This huge amount of data is shared and analysed in a single view, allowing decision makers to create the big picture and to make decisions targeted and smart on different time scales for optimally managing and planning the city system. In the end, this is a new tool of which cities can take advantage for managing present and future administration and coordination challenges and for improving their ability to attract, support and retain highly-skilled workers as one of the most valuable assets for a competitive city.

2.2 The relevant factors for the FDI location: MNCs “funnel” decision-making

According to McKinsey Institute 2013, the general strategy to be a competitive and attractive place for business starts with the awareness of two elements:

A) The current and future most profitable business sectors and the local present advantages and available resources

B) The central characteristics that the perfect FDI location should have in the opinion of multinational companies

The implementation of action for being more attractive and competitive should begin with the identification of the most profitable and suitable path to follow, which one is able to stimulate economic growth and to ensure that a country achieves success in FDI attraction.

Different locations as different industrial sectors have their own peculiarities; this uniqueness makes it difficult to identify recipes suitable to be universally applied. This means that even if a country has identified what the more profitable sectors will be in the future and it is determined to pursue the development of these areas, the final result will not be necessarily a success: comparative advantages should guide the decision to focus on a specific industry. In fact, cities, regions and countries should
make realistic development plans and direct their attention on industries that match with their own strengths. An effective FDI attraction strategy is focused on making the most of the main resources present in its own endowment such as cheap land, high consumer population, low labour cost and great reputation for innovation or high quality education. Investing in its own strengths leads to future economic growth resulting from development of local excellences and thereby attracting companies worldwide in the same sectors. An interesting example of this approach has been undertaken in South Australia by Deloitte in the report “Positioning for prosperity? Catching the next wave”, belonging to the third edition of the “Building the Lucky Country” series. This report contains a detailed analysis of Australia’s future business position in order to ride the wave that brings prosperity; it focuses on finding a match between global future opportunities of growth and unique Australian and South Australian advantages.

BOX 3: Deloitte’s “Positioning for prosperity? Catching the next wave”: Australian and South Australian business perspectives

In the last two decades Australia has an uninterrupted economic growth that has not been affected by the 2009 global crisis. This result was achieved because half the world, led by China, began a sort of new industrial revolution. In actual fact, what they needed and still need is industrial commodities, one of Australia’s comparative advantages. However the mining boom, very important for Australian prosperity in the past decades, is now slowing down; this does not mean that the boom is at its end, in fact it will still remain a prominent part of Australian economy even if it will no longer be the dominant driver. On the contrary, South Australia missed many of the benefits of the resource boom and of emerging Asia economic development, because the higher interest rate and exchange rate caused by the strong export of Australian raw materials, hurt South Australian manufacturing and agribusiness industries, like the hard hit winemakers sector. So, it becomes necessary to ask what the next global opportunities for growth and prosperity will be. First of all, the authors class the most profitable industrial sectors over the next 10 or 20 years, those ones having an expected growth higher than the Global Gross Domestic Product (GGDP). The resulting industries that are likely to grow faster than any other are gas, tourism, agribusiness, health and international education, each of them forecast to grow 10% faster than GGDP. The other sectors that, potentially, will grow in line with the global GDP are banking, mining, oil, construction, business and property services, and transport and logistics, while industries such as technology, media and manufacturing are expected to grow 10% less than GGDP. Once the targeted sectors, are defined, the following steps made in this report determined Australia’s unique comparative advantage. They are:

- High value natural resources such as land, minerals and energy
- Geographic closeness to the fast growing Asian markets
- Use of English, the global common business language
- Temperate climate
- Well-understood tax and regulatory regimes

The following figures show the match between where global growth and Australia’s advantage overlap, revealing 3 waves: the current, the next and the future waves of prosperity for Australia and South Australia.
During the previous decades the dominant wave has been mining and, because of the future global demand of commodities, its prominence is not intended to stop for many years to come. The intended goal is ensuring that the boom will continue for as long as possible.

The next wave of prosperity is represented by those sectors appearing at the top of both lists: the industrial sectors representing the best opportunity because of their 10% higher of global GDP growth and the greatest Australian comparative advantages- gas, agribusiness, tourism, international education and wealth management. The extraordinary growth in these sectors, mainly driven by Asian consumption of these types of goods and services, has jointly the potential to be as important as mining for Australian economy. Essentially it could bring AU$250 billion to the economy between 2013 and 2033 equal to AU$25 billion added to national GDP by 2033. Also Asia’s impact on South Australia is changing in a favourable way for the State, by being very suitable with its strengths. In fact for South Australia the five sectors belonging to the next wave will not be jointly just as big as mining, as for the entire nation, but almost one and a half times the size of mining. The main developing opportunities for South Australia are in agribusiness and education. The business of foreign students in South Australia is currently worth a billion dollars and is a rising share of the entire Australian international education sector because of the presence of its world class universities and education institutes. South Australian agribusiness will be greatly boosted by the Asian growing middle class, which will become an ever more conspicuous part of the South Australia’s wine and food consumers.

The international students sector deserves a special mention: students from fast-growing China and India will be more crucial in the future development of this sector, thanks to the Australia’s strengths in attracting students, that are: cost competitiveness, geographical closeness, presence of valued business and management courses, political stability, democratic regime with rule of law enforcement, free speech and expression and a multicultural environment. The future wave of prosperity constitutes 14 other major sectors, among them banking, health, construction, business and property services, transportation and logistics, public administration, education and training, retail and wholesale, water and waste services, technology and telecommunications with future returns in line with global GDP or higher, that for the moment still do not match Australia’s unique strengths. According to the authors, these sectors represent a big potential for Australia and they need to be strengthened and developed to ride the future wave of prosperity; especially the health sector, that has a current relevant dimension in South Australian economy (like its size in the figure shows), is included in the group of sectors with the perspective highest economic returns.

Understanding how companies make their FDI location choice is part of the strategy suitable for a territory willing to be attractive and competitive. The McKinsey Global Institute argues that a lot of companies use a “funnel” decision-making approach consisting of 3 steps, when they choose the location of their subsidiaries. Unveiling the crucial determinants that allow potential localities to move to the next level of the funnel and that lead to the final success can be a good way for a country, region or city to identify what their own strengths and weaknesses are and to design proper and tailored attraction policies.

The funnel approach consists of 3 steps:

1. A long list of potential locations based on industrial and innovation reputation
2. Potential locations’ ranking according to objective factors dictated by convenience and efficiency motivation and narrowing the available options to the top of the list
3. The remaining competing areas are evaluated based on how much living and working in those areas is pleasant and stimulating. In fact, economic determinants are not the only ones considered important in this decision-making approach: also soft characteristics such as quality of life matter.

2.2.1 First step: Reputation and “critical mass”, how building an effective innovation system

When a multinational company decides to internationalize part of its value chain in a foreign country, the classic first step is detecting a long list of prospective host locations according to a reputation criterion. Localities renowned for having a strong and effective industrial structure for a determined activity are included, for example, just to mention two of the most blatant cases, if the multinational company wants to expand its facilities in the high-tech sector, in its list will include a high-profile location such as Silicon Valley or if the aim is to find a place to develop its research-intensive infrastructures it is highly probable that Boston will be included in the list, because of its world-class universities and its prosperous R&D environment.

The two cases mentioned above are typical examples of areas benefiting from agglomeration economies that are the positive externalities and economies of scale resulting from the spatial concentration and joint use of different activities and associated production facilities. Density delivers benefits of size and scope for specialization, creative interaction, collaboration and innovation that assist a local industry to reach critical mass. The critical mass is a condition whereby a location is able to become a magnet for other firms in the same sector, new investments, capitals and talents. Reaching critical mass means having a global reputation in innovation, specialization and strong competences in a specific field and it is one of the main determinants for FDI attraction. In fact the existence of a local innovation system, for example, in the form of a cluster is a good indicator for multinational which interprets this situation as a signal of favourable conditions mostly in terms of specialized labour force, suppliers and infrastructures of which it may benefit too. A cluster, quoting the words of Michael Porter, the economist who made this concept famous, is “a geographically proximate group of interconnected companies and associated institution in a particular field, linked by commonalities and complementarities.” According to Guimon to attract R&D intensive FDI the role of innovation policy is crucial and it consists in potentiating the
investment climate and the opportunities for R&D, working on the strengths and weaknesses of a local innovation system: for doing so, a strategy can be the implementation of policies for building clusters and consequently for fuelling useful connection within and between local firms and foreign subsidiaries. Multinational companies interested in investing capital for building R&D laboratories abroad are attracted by the quality and effectiveness of the local innovation system and clusters are not the only way to organize the local industry to achieve the maximum of creativity and innovation. In fact as Tortorici and Serrao 2013 point out other innovation policy tools in addition to clusters are:

- Creation of Science and Technology Parks
- Support for innovative SMEs and start ups
- Innovation Vouchers
- Talent Attraction, that affects FDI attraction in a direct way luring MNCs subsidiaries and in an indirect way stimulating the creation of innovation that makes the local industrial system more appealing for investors
- World class research infrastructures

So boosting the local innovation system seems to be not just a goal per se but also an intermediate step for FDI attraction especially high-intensive R&D FDI.

BOX 4: The South Australian knowledge-based hubs: Tonsley Park and SAMHRI

Tonsley Park is a good example of a potentially successful strategy, which uses spatial concentration of firms and academic facilities to generate cooperation, innovation, agglomeration economies and a good strength for R&D FDI attraction. This project has been undertaken by the South Australian Government to foster vibrancy, innovation and international competitiveness in the State. The Tonsley Park is a high-value manufacturing and knowledge-based industry hub, where manufacturing, research and training capabilities work in synergy. It is the result of the redevelopment of a site used previously for vehicle production by Mitsubishi Motors Australia Limited until 2008, it occupies an area around 64 hectares and is placed 10km south of the Adelaide CBD. The target sectors for establishing industrial collaborations, to take advantage of local assets and which will turn Tonsley Park into a catalytic agent for South Australian economic success, are:

- Clean tech
- Health and medical products and manufacturing
- Sustainable construction
- Mining industry technologies

The focus on these sectors reflects the South Australian awareness that the development of industry clusters is the path of greatest prosperity for Tonsley investors, occupants, workers, and for the South Australian economy.

This collaborative cluster benefits from:

- South Australia’s highly skilled and talented labour,
- the presence of Flinders University’s School of Computer Science, Engineering and Mathematics and the New Venture Institute in the park
- TAFE SA’s Sustainable Industries Education Centre (SIEC) with more than 8,000 students trained in sustainable building and construction occupations every year
- The presence of international high-tech company such as Siemens
These elements will encourage prolific links between business, education and research, leading to knowledge and innovation production joined with product commercialization through a variety of crucial and strategic industries.

The South Australian Health and Medical Research Institute (SAHMRI) commissioned by the South Australia’s Government in 2008, as a strategy to face the challenge of becoming a global leading region in medical and health research, is a 25,000 sqm, iconic building, sited in the northern part of Adelaide CBD and recently open. It will employ more than 600 prominent researchers working together, for seeking more effective cures for some of the most challenging diseases. The project was founded by the South Australian Treasurer, the South Australian Minister for Health, the Department of Further Education, Employment, Science and Technology (DFEEST), the University of Adelaide, Flinders University and the University of South Australia, reaffirming the joint commitment, public and academic, for the development of science and technology in South Australia. SAHMRI represents an innovative model of cooperation, first time used in Australia, in which researchers from all of South Australia’s universities will work jointly on 7 research themes: Aboriginal Health; Cancer; Healthy Mothers, Babies and Children; Heart Health; Infection and Immunity; Mind and Brain; and Nutrition and Metabolism.

According to a report elaborated by Ernst and Young on the economic impact of SAHMRI, during the first seven years of operation, the projected return for the State would be AU$277 million but it is just the direct effect on the South Australian economy. In fact, as David Cochrane, Ernst and Young partner, affirms, a more complete calculation should consider all the social and economic effect like the attraction of convention to Adelaide, the attraction of new business, the commercialization of the research outcomes, the retention of talents in South Australia, the improvement of knowledge and community growth. Adding all these variables, they are likely to be worth even more than the direct economic contribution.

In addition, in the next five years SAHMRI will be fused with the New Royal Adelaide Hospital hosted in a new research building for medical research and training. In that way jointly they will be the largest health and biomedical research district in the Southern Hemisphere.

2.2.2 Second step: quantitative factors
The second step of this selection process consists of ranking all the localities according to quantitative and objective criteria, which differ depending on the type of business and production phase the companies want to internationalize. These quantifiable criteria correspond to the most relevant determinants of FDI found in the economic literature, such as:

- Local market size and potential
- Resources
- Wages
- Costs including corporate taxes
- Talent pool
- Infrastructures
- Regulatory law
- Political stability
- Risk
- Technology availability
- Multiculturalism

Ranking the potential location according to these criteria is useful to narrow down the previous long list based on reputation into the top two to four locations.
Multicultural society is a criteria that needs to be explained, in fact being an open and tolerant country, where the presence of different cultures is considered an asset, is not only important for attracting the creative class and investments, according to Richard Florida’s theory, but also through two more direct mechanisms:

1) The presence of people from different nationalities and mostly the presence of international students and highly-skilled workers allows the creation of networks and bridges through different cultures and mutual familiarity that is a strong incentive for setting up a subsidiary in a foreign country

2) Thanks to the attraction of foreign researchers and students it is possible to take advantage of the positive effect of brain circulation, in fact moving talents from a country to another means spreading, transferring and sharing knowledge.

Depending on different business needs, multinational companies give different weight and importance to each variable. For example a manufacturing multinational company, aiming to move part of its production abroad, has not among its priorities the presence of highly-skilled labour force. It will instead give importance to other factors, such as lower labour costs or market potential; whereas a pharmaceutical company will take into account factors such as education, talent pool, patent regulation, presence of centres of excellence in research and opportunity of cooperation with the academic institutions. In fact, MCNs in high-knowledge sectors, which choose to create new subsidiaries or to merge and acquire local enterprise with technical expertise or to move their R&D activities abroad, give particular importance to the presence of highly skilled labour force, common local knowledge and strong research commitment at firm and academic level. However, according to Guimon (2009) also inside the R&D FDI field there are different priorities for the companies, depending on the nature of the investment they want to implement; in fact it is necessary operating a distinction between:

- Market-seeking (or asset-exploiting) → motivated by supply side features, which means that MNCs want to augment their technological knowledge or capability over a process so they move to location where there are proper resources to create their own competence.
- Technology-seeking (or asset augmenting) → operated as a support device of a manufacturing offshored plant within a “global localization strategy”. R&D activities are used to adapt and to fit multinational corporations’ products, services or processes to the needs of local demand.

The differences in priorities between these two different categories basically is that the first ones are motivated by supply side characteristics, which means that the number of potential consumers is not as crucial as the presence of technological resources, excellence in research, know-how and talent pool. Instead, in the knowledge-extensive FDI category, in addition to the presence of a highly-skilled labour force, among the most relevant selection criteria there is the market size in terms of potential consumers’ pool.

Market size is a notion wider that the number of potential consumers present in the country’s local market. In fact in this globalized world, it is appropriate to give an extended definition that includes also the consumers’ pool in all the other foreign countries able to be accessed easily and at a low cost. This concept implies that if a place has strong comparative advantage in R&D and a strategic geographical position that enables it to be easily connected to foreign populous countries, even if it is not densely inhabited it does not lose its advantage because it could work as a hub.

In the following BOX is presented the role of South Australia as Asian hub.
BOX 5: South Australia as Asian hub

As Bezzi (July 2012) underlines, Australia and South Australia have great advantages from the proximity with the fast growing Asia-Pacific region.¹

“Few other countries have taken advantage of the remarkable growth of the Chinese economy over the last twenty years as Australia has. China is Australia’s top two-way trading partner and top import source: Australia is China’s main supplier of raw materials and minerals, such as iron and coal. The demand for raw materials in China is so great that China is now one of the world’s main importers. There is no doubt that the partnership between Australia and China has positively affected the economic growth of Australia, which is one of the few developed countries that were not too adversely affected by the global financial crisis (GFC). For example, Australia maintained unemployment under 6%. Australia’s protection from the GFC has been explained by “the great wall”, referring to the role played by the Chinese important involvement in supporting Australia’s economy.

With the projected economic growth in the Asia-Pacific region (including ASEAN and Oceania, China, Japan, South Korea and India), South Australia and Australia are geographically placed to take full advantage of the extraordinary economic development. This region, with a total GDP of almost 20,000 billion US dollars and a population of about 3.3 billion, is now the most important geopolitical area of the world in terms of economic and social development, as well as a breeding ground of new ideas and extraordinary opportunities. Historically Australia has seen the potential of the Asia-Pacific region - Australia was the first dialogue partner of ASEAN in 1974 and a key factor was the geographic proximity of this area, which now represents a significant asset. Thus Australia is ideally placed to continue to benefit from the economic growth that is taking place on its doorstep. The importance of Australia’s geographic proximity to the Asia-Pacific region and its economic benefits is more evident when considering sea freight services between Australia and most Asian ports, which are regular and direct. Sailings take less than a half time compared to the average time between Asia and Europe: air freight services from Australia to Asia are typically twice as fast as from the USA to Asia. This short travel time results in highly competitive export rates. For European and American multinational companies who want to reach the Asian market while retaining officers in a western society, these competitive rates increase Australia’s attractiveness. The same considerations apply to Asian countries wishing to access the USA and Europe - for example India’s biggest global outsourcing companies have established offices in Australia mainly to service European and American clients. The geographic position of Australia has other implications that usually are underrated or seen as disadvantages. For instance, while being extremely linked to western society and economy, Australia can take advantage of its remoteness, avoiding the economic instability experienced by the West during the last couple of years. Another example is the counter-seasonality to the northern hemisphere, which is especially important for food production and agro-business. South Australia, for example, enjoys a climate much more regular over the year than southern Europe, which is the main producer of food goods in the EU region. Moreover, the time zone of Australia presents advantages in the Asia-Pacific (Australian Trade Commission 2012). This time zone is particularly significant for financial markets, customer services and many other critical activities. Companies can benefit from the so called “follow-the-sun” or “pass-the-book” operations, which become an important tool to compete in such a global dynamic economic environment. In addition to the advantages associated with Australia’s geographical position, the economic and fiscal robustness of Australia, combined with the increasing integration with the emerging Asian economies and the strengthening of the Australian dollar compared with other currencies, make Australia one of the most advanced countries in the world:

- the IMF, at the end of 2011, placed Australia 13th in the nominal GDP rating and 5th in the GDP per capita rating,
- Fitch, Standard and Poor’s and Moody’s upgraded Australia to the AAA category due to the low debit level, political and monetary flexibility, despite the downturn in growth in 2011.

¹ Contents of this paragraph are based on the work of Bezzi (2012)
Thus Australia is ideally placed to become an economic hub of the world.”

Moreover, the reason why being a hub for the neighbouring regions is so important for FDI is linked to the notion of global and regional integration. As United Nations Conference on Trade and Development (2012) affirms “The experience of long-established and successful regional groups such as the European Union (EU) and the North-American Free Trade Agreement suggests that regional economic integration provides a strong boost to intraregional cross-border investment linkages”. In other words the presence of free trade agreements (FTAs) among countries generates a network that encourages FDI inflows, from countries that are located outside, to all the countries participating in this network and especially to its hub. It is possible considering R&D FDI as an internationalization of the production of an intermediate product, namely innovation, which needs to be assembled and integrated to the other products of different phases; if the production of the other complementary intermediate inputs is deployed in different countries, the presence of FTAs, linking subsidiaries which belong to the same value chain, from ideation to commercialization, is an important advantage for FDI attraction.

A very explicative big picture about the different FTAs that Australia entered into with Asia-Pacific Countries is identified in Bezzi (2012): “Many of Australia’s Free Trade Agreements (FTAs) have resulted from Australia’s proximity to the Asia-Pacific markets. FTAs represent one of the most important tools in promoting internationalisation by creating areas where goods and services can circulate without (or with low) import/export tariffs. They are one of the key factors that allow firms to expand their business into foreign markets, particularly for small and medium businesses whose size and lack of resources prevent them from accessing markets with high export tariffs. Furthermore, FTAs represent an economic prerequisite to long term cooperation and peaceful political relationships between two countries (Longinotti 2010). The Asia-Pacific region is endeavouring to reach a stable economic position in the international environment through FTAs. It is anticipated that FTAs will enable the Asia-Pacific markets to compete on a worldwide scale. For example, one of the main FTAs that Australia subscribed to (and the first multi-country Australian FTA) was named AANZFTA (ASEAN – Australia – New Zealand Free Trade Agreement) and took effect on 1 January 2010. Covering all sectors including goods, services, investment and intellectual property, it is the most comprehensive trade agreement that ASEAN has ever negotiated (Longinotti 2010). Apart from this agreement, Australia has another five FTAs currently in force with New Zealand, Singapore, Thailand, US and Chile (the last two representing the exception in regards to geographic proximity). The countries covered by these FTAs account for 28% of Australia’s total trade. Nine more FTAs are under negotiation, including with China, Japan, India and the Republic of Korea. The countries covered by these negotiations account for a further 44% of Australia’s trade (Longinotti 2010) … The number of agreements shows that, in light of the central role that the South Pacific region will play in over the coming years, every country is striving to set up close economic relationships in order to take advantage of a joint growth. Thus the South Pacific region can be the next economic hub for global trade, due to the number of FTAs that are already effective and the rapid GDP growth. However, ASEAN has internal problems that could prevent it from becoming the new central hub for global economy. Instability, diversity within the trade area, as well as social imbalances are issues that affect the capacity of the group to act in a unidirectional way in an international context all undermine ASEAN’s reliability. Each member country insists on its own independent law policies, legal system, and sovereignty. Furthermore cultural differences and lack of cultural understanding and sensitivities result in misunderstandings and non-willingness to accept compromises or to set uniform policies. This can result in the ASEAN region becoming difficult to conduct business within a political and economically reliable environment. With these concerns in mind, Australia emerges as a reliable, stable Asia-Pacific country that is well-connected with the rest of the world, especially with Western economies with which it shares a historical, cultural and economic background. In addition, Asian countries don’t see Australia as a part of the West, which is far away and a different reality (such as Europe or USA), because of its geographical proximity and the consolidated ties due to immigration, students’ presence and trade (Longinotti 2010). “
As is pointed out in the 2.3 paragraph the legacy advantages in education and research field possessed by developed countries is and will be still crucial for R&D FDI attraction and mostly for intensive R&D FDI. In the last decade South Australia has planned the development of its S&T system as a strategic priority, engaging in the boost of research and innovation for offering it to global market as one of its critical assets. Using data from: 2012 South Australian Strategic Plan, Annual Report of the Department of Further Education, Employment, Science and Technology and Australian Bureau of Statistics we map the current level of South Australian Gross Expenditure on Research and Development.

**Gross Expenditure on Research and Development**\(^2\) (GERD) in South Australia in 2009 reached AU$1.9 billion and the ratio of GERD to GDP was 2.38% in 2008-09. This value was above the national average in Australia in 2008-09, which amounted to 2.21%, and was the third highest value among all Australian States, higher than the ratio of New South Wales and Queensland. The South Australia expenditure on R&D is comparable to those of countries that are recognised for their commitment to R&D such as the United Kingdom (1.77%), Canada (1.84%), France (2.02%), Germany (2.64%) and the U.S. (2.77%).

**Public R&D expenditure** for the last available period, 2008-09, was AU$945 million, or 1.18% of Gross State Product in 2008–09. South Australia’s public expenditure as a proportion of GSP was higher than national expenditure in 2008–09 (1.18% compared to 0.81%); the strategic goal for the future is to maintain it around 1.2% by 2020.

**Business expenditure on R&D** was higher in 2009–10 (0.94%) than 2000–01 (0.50%), even if the 2009–10 is lower than the peak of 1.16% in 2007–08.

**Australian Government expenditure in R&D** activities for South Australia in 2011-12 was (AU$526 million) showing an increase of 19% in R&D activity compared to 2008-09, the third largest amount after Victoria ($852 million) and New South Wales ($669 million), which jointly accounted for 43% of total expenditure.\(^3\)

**South Australian Universities.**

South Australia boasts the presence of 3 local universities, The University of Adelaide, Flinders University and the University of South Australia and 3 foreign universities Carnegie Mellon University, from USA, University College of London and Torrens University.

The University of Adelaide is consistently ranked in the top 1% of universities worldwide and is member of the Group of Eight: a coalition of prominent Australian universities, with intensive commitment in research. In fact, it is associated with 5 Nobel Prize winners and its strengths in intensive research include: bio-medical sciences, physical sciences, engineering, IT, food & wine and social sciences. The university account for 25,000 students including over 6,500 international students from over 90 countries.

The University of South Australia, having more than 33,000 students, is the largest university in South Australia, It has been named in the top 50 of 2013 The Times Higher Education’s Top 100 global universities aged under 50. It has a strong reputation in conducting research in partnership with industry and it has the State’s largest share of international students.

Flinders University is a noted institution for its excellent research and student satisfaction therefore it has been awarded in 2004 and 2006 with the Prime Minister’s Award for University Teaching. Thus Flinders University account for 21,787 students of which 3,798 are overseas students and the full-time employment rate of Flinders graduates is higher than the national average.

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\(^2\) The Data Source of “Gross Expenditure on Research and Development” paragraph is the work of Bezzi (2012)

\(^3\) Data Source: Australian Bureau of Statistics
Torrens University Australia is a private university operated by Laureate Education, a global network of universities. This is the first Australian university opened in more than 20 years, with teaching to start in January 2014.

Carnegie Mellon University is a prominent American University renowned for its educational and research programs, with a history of 113 years of experience and a good reputation. It has an excellent source of innovation in its leading areas: IT, Business and Public Policy Management.

University College of London is one of the chief academic institutions in the world, ranked 4th in the QS World University Rankings 2012 and with a total of 21 Nobel Prize winners within its community. Noted for its tolerance and the high value it gives to diversity, it was the first British university to establish a campus in Australia. Its world-class research is focused in resources and energies.

The total gross value of university research income increased from 17.7% in 2008 to 24.7% in 2010 above South Australia’s per capita share. The target is a total gross value of university research income 20% above South Australia’s per capita share by 2014 and maintaining it afterwards. Since the 20% target level was exceeded in 2010, in 2011 it was 20.6% above South Australia’s per capita share.

Learning or earning
The proportion of 15-24 year olds engaged full-time in school, post-school education, training or employment was 78.6% in June 2003, and 79.0% in May 2013; the expected target is 85% by 2020.

Tertiary education and training
The proportion of South Australians aged 15-64 participating in tertiary education and training was 15.8% in 2009 and 18.0% in 2012; the target for 2016 is 17% and for the moment this level has exceeded.

STEM qualifications
The number of domestic students completing undergraduate tertiary qualifications in science, technology, engineering and mathematics fields was 3129 in 2009 and 3089 in 2011; the target amount is 3600 students per annum by 2020.

International student attraction
The number of overseas students across all education and training sectors was 13 737 in 2003, 28 191 in 2012 and 21 861 in 2013. The majority of students (58%) are studying in South Australia’s universities; an 18% spread across Vocational, Educational and Training (VET), the English Language Intensive Courses for Overseas Students has 10% of foreign students, the schools and other courses account for the remaining.

The total target amount by 2014 is 45 000. International students, mostly from China and India, decide to come to South Australia, as it is a close English-speaking country, with excellent universities, cost effectiveness and a very desirable high quality of life.

2.2.3 Third step: the importance of livability
The funnel process ends with companies evaluating the localities contained in the list resulting from the previous steps according to more qualitative and subjective criteria. Cities, regions and countries with high likelihood to be selected as FDI hosts are those which managers want to visit regularly or where their family would like to live; a place in which to raise their children and to ensure them a good education and a vibrant cultural environment; where safety, presence of green spaces and efficient
public transport make life more comfortable and enjoyable. This does not mean that quality of life is the fundamental determinant of FDI flows but, once a solid innovation system is built and significant factors such as skilled labour-force and centres of excellence are present, localities with good environment quality and high grade of liability have an absolutely relevant comparative advantage.

**Quality of life in Australia and around the world**

**OECD’s Better Life Index**

According to OECD staff, quality of life is a better indicator for comparison across countries of well-being than simple economic statistics like GDP. For this reason they develop the “Better Life Index” based on 11 critical topics identifying living condition and quality of life. The topics used for analysing the 36 OECD countries are: Housing, Income, Jobs, Community, Education, Environment, Civic Engagement, Health, Life Satisfaction, Safety, and Work-Life Balance. Here is a summary table of the categories with the scores of the top 10 countries and it is very important to note that, applying the same weight to all 11 indicators, Australia is the first one in the OECD Better Life Ranking.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Housing</th>
<th>Income</th>
<th>Jobs</th>
<th>Community</th>
<th>Education</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-house with basic facilities, -rooms per person - % housing expenditure on household gross adjusted disposable income</td>
<td>-the household net-adjusted disposable income -household net financial wealth -social inequality</td>
<td>-job security -average annual earning -long term unemployment rate -employment rate</td>
<td>- minutes per day in volunteering activities -knowing someone they could rely on in time of need</td>
<td>-percentage of people having an upper-secondary degree - Programme for International Student Assessment (PISA) results</td>
</tr>
<tr>
<td>Top 10</td>
<td></td>
<td></td>
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City Liveability index (EIU 2013)

Every year, The Economist Intelligence Unit produces the City Liveability index assigning cities a score over 30 qualitative and quantitative variables included in 5 comprehensive categories: Stability, Healthcare, Culture, Environment, Education and Infrastructure. In the 2013 Index, four Australian cities appear in the top 10 and Adelaide ranks as the 5th most liveable city in the world, particularly significant is the maximum score it has obtained in Healthcare and Education.
My City: The People’s Verdict 2012, report prepared by the Property Council of Australia.

In 2012, for the third year, the Property Council of Australia asks Auspoll to conduct a survey to understand what Australians think about the quality of life in the city in which they live. In this research a city is considered “liveable” when it meets the needs of its inhabitants. The evaluation is made by ranking a series of attributes per relevance and then judging if they are present or not in their own city. The attributes are: attractive design of the city, cleanliness and pollution, recreational outdoor environment, vibrant cultural entertainment scene, quality of the public transport service, traffic congestion, attractiveness of natural environment, quality of healthcare services, quality of educational facilities, quality of housing, employment and economic opportunities, affordability of a good standard of living, varied range of people with good standard of life. The results show that Adelaide is the city considered most liveable by its inhabitants in Australia for the 3rd year in a row. The rankings are: Adelaide, Canberra, Hobart, Newcastle, Geelong, Brisbane, Melbourne, Wollongong, Perth, Sydney, and Darwin.

BOX 7: Singapore, quality of life as attractiveness strategy

Liveability of a territory is very important for business, competiveness and attractive power. As such, Singapore has chosen a sustainable way for its economic development. According to Ms Khoo Teng Chye, executive director of Singapore’s Centre for Liveable Cities, the strategy used by other emergent economic powers “grow first and clean up later” has a poor result, in fact “beyond a certain point, they realize there is too much pollution, and they end up turning away people and investors.” (EIU 2013) However environmental sustainability is not the only aspect of quality of life perception. Singapore’s effort to improve the quality of life offered to citizens, investors and tourists spreads over diverse fields. This city has a particular feature: has a population density of over 7,000 persons per square kilometre. Fewer disposable space and high density are harder to manage in terms of liveability and, the likelihood to suffer for overcrowding, crime, disease, pollution, poverty, and high living costs is very high. Nevertheless it has been ranked 20th in the 2012 EIU liveability ranking with an excellent score in “green space” and “pollution” categories. In addition, according to the global ranking made by Mercer: 2012 Quality of Living Survey, Singapore steps up from 32nd in 2008 to 25th in 2012, gaining 8 points in 4 years. In its strategy for long-run growth and for enhancing competiveness, it focuses on the three aspects of liveability: quality of life (safety, good schools and so on), competitive economy (high quality jobs) and environmental sustainability. The actions conducted for environment protection in its “people first” strategy are: using green and efficient public transport to reduce pollution and congestion, having a resource conscious growth strategy and choosing low-energy systems for its building and industries. In fact, incentive schemes and certification programs are suitable for companies using green technologies, while factories that are not able to meet its stringent environmental regulation are turned away. A lot of green spaces are provided and Singapore is considered a “city in a garden”. This is not just aesthetically pleasing but also a way for improving the quality of the air and for allaying the heat of its tropical climate. The city uses “pervasive greenery”, that is green spots are in every disposable place, like on rooftops, on the pavement, on road dividers and on building façade. Safety and security are other important aspects of quality of life and Singapore has avoided being a high dense and unsafe city through a particular urban design that provide the best visual access on urban spaces encouraging the community to watch their streets.
In addition the transport system was made “smarter” by the Singapore’s Land Transport Authority (LTA) in order to intensify ridership and to decrease traffic congestion. Specifically a single card was created allowing to pay any kind of transport option from car parking to public transport and a system was developed that collect data on time and places of travel for optimizing the travel experience. As a result LTA reported a reduction of missing revenue due to system problems, there was a decrease in delays and congestion even though the number of users increased. If one of the most competitive states in the world puts a lot of effort and resources in trying to achieve a high grade of liveability, it appears that, from Singapore’s experience, quality of life is an asset for investment attraction and a competitive advantage that all regions interested in receiving FDI should endorse.

**BOX 8: Grater Stockholm: the European region of the future.**

Stockholm’s case study is a good and complete example for understanding how all the advice, so far presented, have been implemented in a location which has been defined, by fDi Intelligence of The Financial Times, European Region of the Future 2012/2013. Every year, fDi Intelligence of The Financial Times, benchmarks 253 European cities and 110 European regions using an independent collection of data. Cities and regions are evaluated according to six categories: economic potential, human resources, cost effectiveness, quality of life, infrastructure and business friendliness. In the end, another criterion is added to the score: FDI promotion strategy, using detailed information about promotion strategy.

The ranking is:

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<tr>
<td>1 London (UK)</td>
<td>Greater Stockholm (Sweden)</td>
</tr>
<tr>
<td>2 Paris (France)</td>
<td>South-east (UK)</td>
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<td>3 Vienna (Austria)</td>
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<tr>
<td>7 Cambridge (UK)</td>
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<tr>
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<td>9 Berlin (Germany)</td>
<td>Greater Dublin (Ireland)</td>
</tr>
<tr>
<td>10 Stockholm (Sweden)</td>
<td>Thames Valley (UK)</td>
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</tbody>
</table>
Sweden’s Greater Stockholm, the region surrounding Stockholm, was ranked 1st overall, 1st in the human resource category, 2nd in the business friendliness category, 2nd for infrastructures and 3rd for economic potential among the European regions. The EIU Competitive City Index 2025 positions this city as 5th in a global ranking, giving it the highest projected improvement in the top 10 (+14positions) in respect to 2012; for all these reasons its strategy to achieve competitiveness deserves to be analysed.

The Stockholm region overview:
Inhabitants: 3.4 million
Workforce: 1.8 million
Universities: 28
Researchers: 8,400
Students: 108,000
Companies: 360,000
RGDP: €130 billion
RGDP / GDP: 40.7%. EU 31.6%, Germany 38%.

Among its leading industries, 4 are particularly relevant in terms of global competitiveness and FDI attraction: ITC, life science, clean-tech and creative industry.

ITC cluster
“This shows that Stockholm is an attractive region for the ICT sector regardless of the economic situation. This is thanks to the transparent and creative business environment that exists in Stockholm and Kista Science City”
Sten Nordin Mayor of Stockholm
Stockholm succeeds in building a critical mass and reputation for its regional innovation system in ITC. In 2012 Stockholm ranked no 1 in intellectual capital and innovation according to the ranking by PWC Cities of Opportunity; in fact it is home to Kista Science City, one of the biggest ICT clusters in Europe, 4.1 square kilometres of advanced digital development. This cluster benefits from the presence of 1,100 companies and departments of 2 local universities: The Royal Institute of Technology and Stockholm University with a total amount of 6,800 university students and 1,100 researchers. It includes diversified business activities, products and services in software, content, hardware, telecommunications and research. The main firm in the ICT cluster is Ericsson but other major ITC companies have built subsidiaries here, such as Nokia, HP, Microsoft, Sun Microsystems, Intel Apple, IBM and Oracle. Moreover, Stockholm is a leader in telecommunication innovation being the birthplace of the mobile phone and having pioneered the first 4G network in 2009.

Stockholm-Uppsala Life Science
Stockholm-Uppsala is Scandinavia’s leading life-science cluster, where researchers, universities, big and small companies work together. Innovation is helped by unique legislative advantages: researchers employed at a Swedish university own the rights to all intellectual property generated by their findings. For this reason, academic research and industry become close in the region and transforming life-science research into healthcare products was relatively easy. During the last decade more than 15 new life science companies were formed each year, which make this region one of the strongest in the world for number of life science start-ups on par with important life science regions such as Boston. Among the big pharmaceutical companies 2 need to be mentioned: AstraZeneca and Pharmacia, both born in this cluster. AstraZeneca moved its headquarters to London but is still having its major production facilities and a global site for pre-clinical neuroscience research in this cluster. Pharmacia in 2002 was acquired by Pfizer but the major part of the company’s business is still located in Stockholm Uppsala. Lately this region has received a big amount of relevant company investment: GE Healthcare has invested 350 million Euros in
its Uppsala facilities and Pfizer 150 million Euros in a new production facility in Strängnäs. The Indian contract manufacturer Kemwell acquired a production facility in Uppsala in 2006, an investment that followed in 2010 by an expansion of production capacity. Similarly, the Swiss company Octapharma recently expanded its production capabilities in Stockholm.

Part of the credit for the success of this cluster belongs to its strong academic presence: Karolinska Institute (10th in the QS top Universities ranking in Life Sciences and Medicine), Uppsala University, Stockholm University and Royal Institute of Technology-KTH, which foster research and innovation. The research activities made in this cluster are first-class, in fact 6/16 Nobel Prizes gained by Swedish researchers have been awarded for study conducted in the Stockholm-Uppsala region in Physiology or Medicine. Other important characteristic of its life-science sector is the geographical proximity with ICT clusters which allow a prolific cooperation for advanced research in med tech and IT medicine. As the Government is committed to invest in advanced and modern health care systems, the construction of new facilities, the New Karolinska Solna University Hospital, is under development and will be complete in 2015. The area surrounding this new hospital is called Hagastaden and it is an entire suburb under construction between the cities of Stockholm and Solna that is scheduled to be completed in 2025. Once finished, it will comprise 5,000 new residences and about 50,000 work spaces and both the world leading education and research institutions Karolinska Institute and Karolinska University Hospital. The funding partners belong to academic, public and private sphere of this project and they are City of Stockholm, the City of Solna, New Karolinska Solna, Karolinska Institutet, Akademiska Hus and Locum, the Swedish Transport Administration and Stockholm Science City Foundation and a number of private property developers.

Clean-tech
OECD 2011 stresses the necessity of a more green approach: “Strategies to achieve greener growth are needed. If we want to make sure that the progress in living standards we have seen these past fifty years does not grind to a halt, we have to find new ways of producing and consuming things”. Great efforts in this sense have been made by the Stockholm City; in fact Stockholm has been defined as the Europe's first Green Capital. The Stockholm region has also planned to reach an ambitious environmental goal-being fossil-fuel free by 2050. Gas emissions have already dropped by 25% since 1990 and now 95% of the municipal waste is used for energy production or recycled. The Great Stockholm Region is home to the leading and one of the most innovative clean-tech cluster in Europe, it has the largest number of clean-tech companies in Scandinavia which are involved in the development of new fuels like bio-gas, ocean power and smart grid (an electrical grid using ITC to make electricity supply more efficient and sustainable). The Högadalens district is a new cluster operating in the field of waste management, recycling and power generation. It has been built thanks to the cooperation between academy, Royal Institute of Technology (KTH), Stockholm University, IVL Swedish Environmental Institute, and 50 clean-tech companies, which work together in a modern R&D centre for attracting and promoting international cooperation in innovative green technology research.

Creative industries
Stockholm is a well-known city in Europe for culture, fashion, design, music, computer games, films and advertising. Some of the brands belonging to its creative industries are used worldwide and they range from H&M (fashion retailer) to Skype (computer program for free voice and video calling), from Minecraft (popular video game) to Spotify (computer and mobile phone program for listening, streaming and sharing free music). Furthermore the presence of the Nobel prize have helped Stockholm to become one of the most innovative and creative regions worldwide. Given its small dimension, creativity is not clustered in a specific area, but spread all over the city making it vibrant, modern and open. The determinants behind this creative approach can be searched in their education system and open and free democracy encouraging young people to be self-confident,
to follow their dreams and to pursue their natural strengths. This lifestyle prone to creativity, in a highly cultural environment, fosters the blossoming of new start-ups and the production of innovation.

In conclusion, the creation of pulsating innovation clusters and relevant FDI attractive power has been achieved by Stockholm thanks to some characteristics which match with the advices for being competitive in the current and future global economic scenario provided by this paper.

Stockholm’s strengths:
- Strong academic base
- World-class research
- Strong universities
- Well-educated labour force
- Good knowledge of English
- Easy to start firms
- Rich natural and cultural amenities
- Vibrant cultural environment
- Good telecommunications infrastructure
- Access to co-funding and subsidies for R&D
- Strong regional innovation systems
- Strategic position in the Nordic countries and the Baltic Sea region

(Politecnico di Milano, Bocconi University, IGEAT – ULB 2009)
Conclusion and South Australian Assets

The future economic arrangement is almost upon us, bringing changes, risk and opportunities. Emerging economies are strengthening their economic position and on one hand developed countries’ resources in terms of experience, know-how, innovation and knowledge are a great comparative advantage for catching new opportunities and FDI flows from multinational companies located in these markets. On the other hand emerging markets’ economic growth allows them to invest huge resources in S&T aiming to become an innovation oriented society in the next few years. This will lead to an improvement in their capacity to attract foreign capitals and talents or at least retain the local ones. Cities, regions, countries from the developed world must get ready and develop strategies able to profit from their strengths, which are mostly represented by excellence in science and innovation. For this reason they have to determine their objective sectors, the ones matching the needs of economic growth and local assets. After this it is important to build a strong reputation in innovation able to attract capitals and talents. According to the sector in which multination companies operate and to different types of subsidiary they wish to establish abroad, when multinational companies decide the location for their FDI, they give diverse weights to factors such as market size, labour costs, talent pool and presence of centres of excellence in S&T. Attracting R&D intensive FDI, the one usually best suited to developed countries with comparative advantage in knowledge and innovation, requires particular effort in fostering local S&T system through the deep cooperation among University, Industry and Government. South Australia’s strategies for enhancing the advanced manufacturing sector, attracting talents worldwide and improving its FDI attraction capacity are going in the right direction. The example presented in this paper, Tonsley Park, and SAHMRI, are 2 of the main strategies able to bring to the State, jobs, talents and foreign capitals. As we have previously underlined, emerging economies are committed to become a knowledge-based society in the next few years, increasing the global competition considerably. A very effective response strategy to continue to attract international talents and investment is offering an innovative, vibrant, liveable and creative environment, where strong connection and cooperation between University, Industry and Government produce high-quality learning and working opportunities. South Australia is ready for new challenges brought by the economic shift in world of tomorrow, taking advantage of its rich and diversified local competitive system. In fact, South Australian strengths are all the features that so far have been defined fundamental for FDI and most of all R&D FDI attraction:

- Presence of natural resources (mining, sun, wind, biological diversity etc.)
- High quality of life
- English language
- Institutional and political stability
- High-skilled labour force and international talent pool
- Academic excellence and innovative R&D projects
- University, Industry and Government cooperation
- Potentiality as Asia-Pacific Hub
- Adelaide vibrant capital of the State
ANNEX

TAB n.1

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BRICs: Brazil, Russian Federation, India, China; N-11: Bangladesh, Egypt, Indonesia, Iran, Mexico, Nigeria, Pakistan, Philippines, Turkey, South Korea and Vietnam; G-7: U.S., U.K., France, Germany, Italy, Canada and Japan

Source: Authors elaboration of GS Global ECS Research, IMF

TAB n.2

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Source: authors' elaboration on UNESCO dataset.

TAB n.3

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Source: authors' elaboration on UNESCO dataset.

TAB n.4
Enrolment ratio in tertiary education

Source: Authors’ elaboration on data from WORLD BANK WEBSITE. Gross enrolment ratio. Tertiary (ISCED 5 and 6). Total is the total enrollment in tertiary education (ISCED 5 and 6), regardless of age, expressed as a percentage of the total population of the five-year age group following on from secondary school leaving. UNESCO Institute for Statistics

TAB n.5

IMMUNOLOGY AND MICROBIOLOGY 2012

TAB n.6

ENGINEERING 2012

TAB n.7
Source: authors’ elaboration on The SCImago Journal & Country Rank dataset.

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Source: authors’ elaboration on UNESCO dataset.

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