

Non-resident patent applications in the African Regional Intellectual Property Organization

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ABSTRACT

This thesis describes non-resident patent applications in the African Regional Intellectual Property Organization (ARIPO). All non-resident patent applicants are listed and divided between three different groups: private enterprises, single authors, universities and public bodies. ARIPO non-resident patent applications are classified according to the IPC symbols reported on the application documents and regrouped in specific technology fields in order to compare them with all other patent applications worldwide. From this comparison, it emerges that two technology fields are predominant in ARIPO non-resident patent applications: pharmaceuticals and organic fine chemistry. Then, a specific study on market interest highlights that 24 MNEs decide to file non-resident patent applications in conjunction with an actual commercial presence in the ARIPO membership. The affiliates of these companies are mainly localized in ARIPO low-income countries. This finding signals that ARIPO low-income Members stimulate a particular market interest even in R&D-based firms.

I would like to thank my supervisor, Dr. Sacha Wunsch-Vincent, whose expertise and patience made this thesis possible.

A very special thank goes out to my father and my mother, whose constant support has been vital throughout my academic career.

I would also like to thank my best friend and chosen brother Mirko and all my colleagues of the MILE programme.

This master thesis has been written in partial fulfilment of the Master of International Law and Economics Programme at the World Trade Institute. The ideas and opinions expressed in this paper are made independently, represent my own views and are based on my own research. I confirm that this work is my own and has not been submitted for academic credit in any other subject or course. I have acknowledged all material and sources used in this paper.

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LIST OF ABBREVIATIONS

| | |
|--------|--|
| ARIPO | African Regional Intellectual Property Organization |
| BRICS | Brazil, the Russian Federation, India, China, South Africa |
| EPO | European Patent Office |
| FDI | Foreign Direct Investment |
| IP | Intellectual Property |
| IPRs | Intellectual Property Rights |
| ITC | International Trade Centre |
| LDC | Least Developed Country |
| M&A | Merger and Acquisition |
| MNE | Multinational Enterprise |
| PCT | Patent Cooperation Treaty |
| R&D | Research and Development |
| SIPO | The State Intellectual Property Office of the People's Republic of China |
| TRIPS | Trade-Related Aspects of Intellectual Property Rights |
| UN | United Nations |
| UNCTAD | United Nations Conference on Trade and Development |
| WB | World Bank |
| WIPO | World Intellectual Property Organization |
| WTO | World Trade Organization |

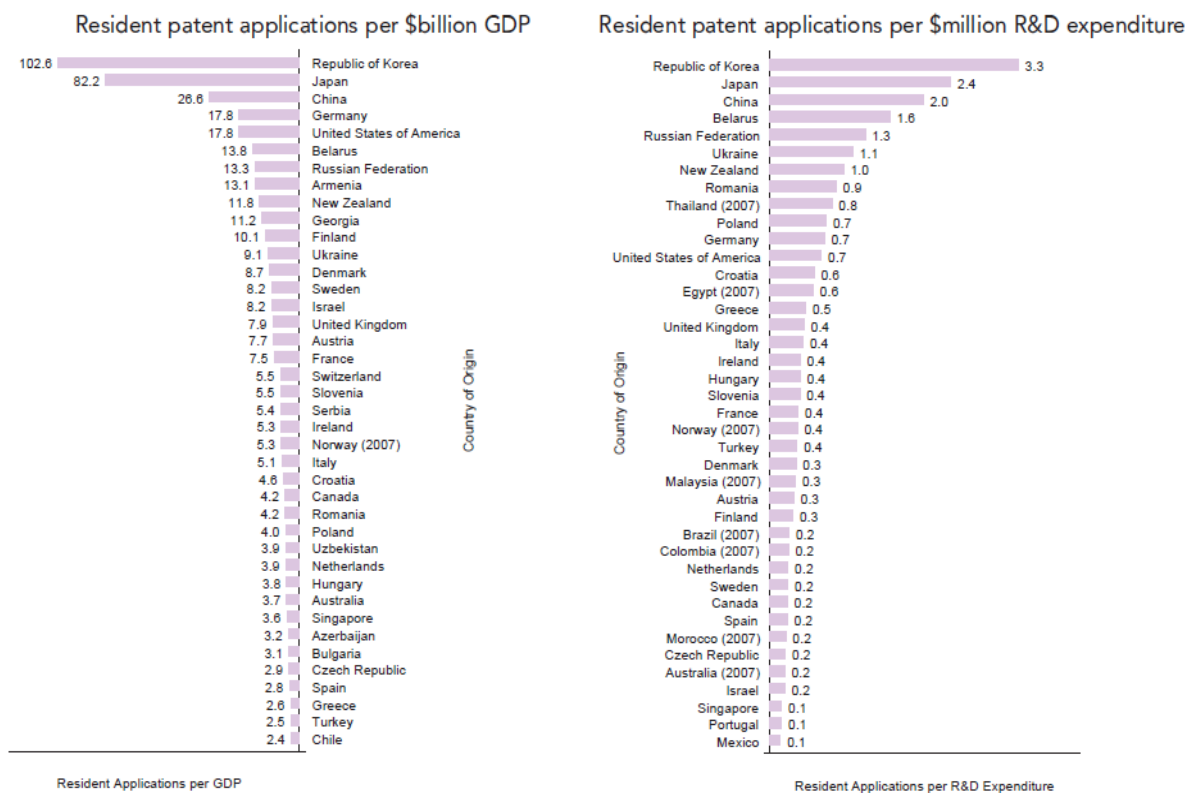
CHAPTER 1 INTRODUCTION

This introductory chapter aims at describing the general context in which the present research is collocated. First, international patent applications trends and patent filings in low and middle-income countries will be analysed under a quantitative perspective. Second, the conceptual framework will provide the necessary theoretical and empirical bases of this paper. Third, the specific subject of this study will be briefly described. Finally, research hypotheses and specific objectives of this study will be set in the last paragraph of this introduction.

1.1 INTERNATIONAL PATENT APPLICATIONS

The economic literature showed a great number of empirical researches on developed countries, both at macro and micro-level. On the contrary, micro-level studies in poor countries are lacking. The high concentration of patent filings in the richer countries is probably at the basis of this choice.

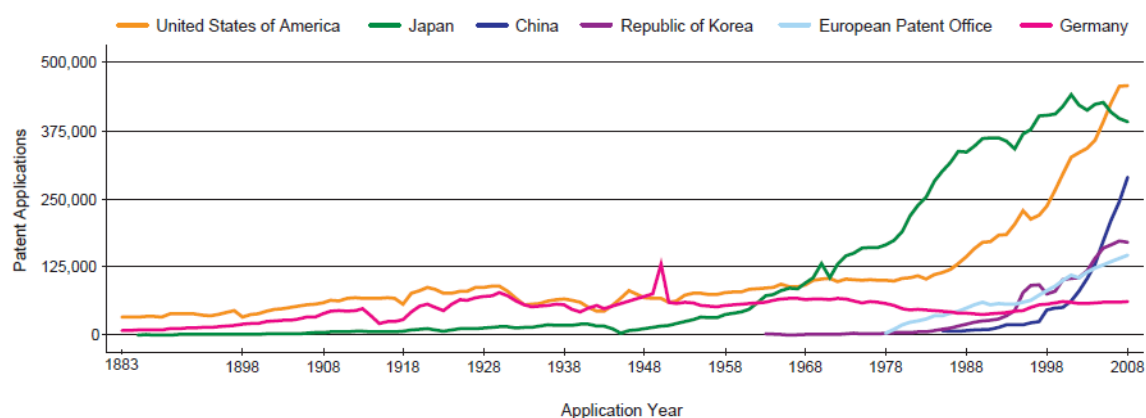
Figure 1.1 Patent intensity



Source: WIPO Statistics Database, June 2010

Innovation processes, IPRs protection, appropriability regimes and patent strategies are mainly a North-North issue still today (WIPO 2009 p.4). However, this scenario is evolving and new emerging actors are gaining significant relevance. In particular, China registered a real patent application explosion in the last few years. The State Intellectual Property Office of the People's Republic of China (SIPO) has become the third largest patent office in the world (WIPO 2010 p.37).

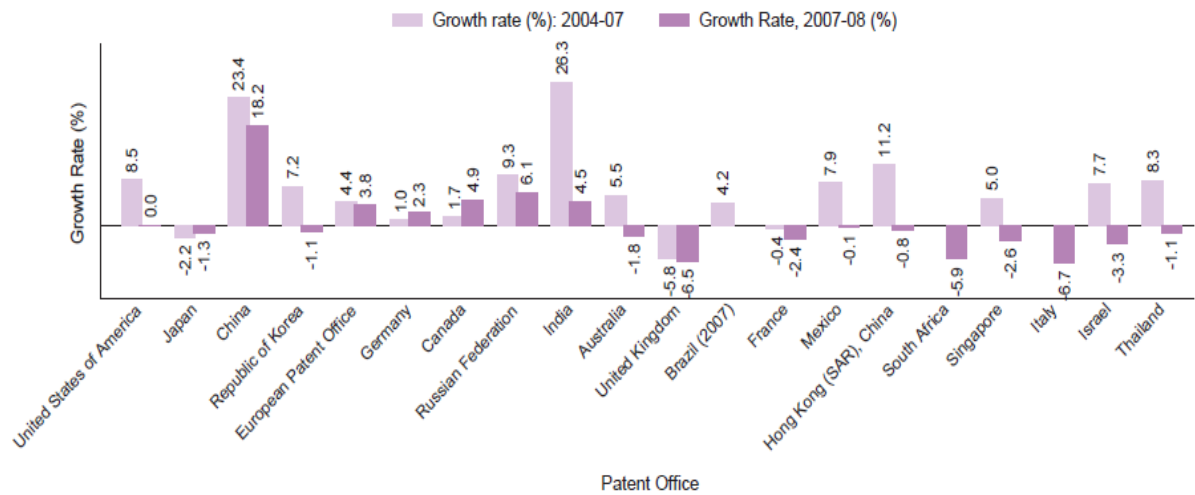
Figure 1.2 Trends in patent applications at selected patent offices



Source: WIPO Statistics Database, June 2010

In general, emerging countries show positive performances and increasing importance in patenting dynamics, but even within the BRICS economies (Brazil, the Russian Federation, India, China and South Africa) there are significant differences. In particular, a real application boom seems to involve solely some Asian economies, while other developing countries have not registered growth rate as remarkable as India and China. In particular, the African continent is still at the margin of the international patent applications patterns. Even South Africa saw its rate of patent applications decreased between 2004 and 2008.

Figure 1.3 Growth rate of patent applications

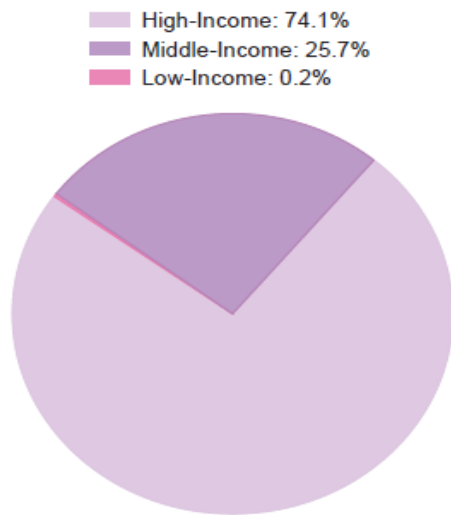


Source: WIPO Statistics Database, June 2010

1.2 PATENT FILINGS IN LOW AND MIDDLE-INCOME COUNTRIES

Patent applications in low and middle-income countries are significantly less numerous than in high-income countries (WIPO, 2010, pp.40-41). According to the World Intellectual Property Organization (WIPO), only 0.2% of the world patent applications are directed to low-income countries. Middle-income countries have a more relevant role in this field, representing 25.7% of global patent applications.

Figure 1.4 - Patent share by income group



Source: WIPO Statistics Database, June 2010

Another peculiar aspect is that the vast majority of patent applications in low-income countries are filed by non-resident applicants. The ratio between resident and non-resident patent demands is more balanced in middle and high-income countries (WIPO 2010 pp.40-41).

Figure 1.5 – Resident and non-resident patent applications (%)



Source: WIPO Statistics Database, June 2010

1.3 CONCEPTUAL FRAMEWORK

To understand the less numerous amount of patent applications in low and middle-income countries than in high-income ones, some fundamental economic concepts and several milestones in the IP literature should be recalled.

According to David J. Teece, patents may be defined as a regime of appropriability necessary for certain inventors to capture the profits of an innovation (Teece D.J. 1996 p.287). Hence, Teece describes profits as the main engine of every patent regime.

In order to gain profits, revenues must exceed all possible costs (Mankiw N.J.; Taylor M.P 2008 p.248). In 1996, Erwin F. Berrier called for a strong reduction of global patent costs, because the expensive procedures necessary to gain a patent protection prevented US inventors to apply worldwide (Berrier E.F. 1996 pp.473-475). In his famous example, Berrier estimated that a US company which desired to obtain a full global protection for one thousand inventions could have paid \$500 million a year for twenty years (Berrier E.F. 1996 p.474). Although this study is probably outdated, the lack of a global patent and the uneven distribution of patent applications between different groups of countries lead to the conclusion that patent costs are still extremely important nowadays.

Under this perspective, inventors can be considered rational economic agents. Assuming that a specific company would achieve the maximum level of satisfaction by protecting its inventions globally, three different variables should be considered in order to decide whether

to invest or not:

1. the inventions which deserve protection;
2. the patent-related costs;
3. the countries or regions that are applications worthwhile.

A company would decide to file a patent application only after considering the possible costs and revenues given by these three variables. In this context, patent applicants do not perceive low and middle-income countries sufficiently valuable. In striking the balance between possible lost profits and actual costs in these countries, many companies probably consider the former smaller than the latter ones. A great share of low and middle-income countries do not have a sufficient industrial capability to initiate imitation practices (WIPO 2009 p.5). It is a sensible assumption that, for this reason, lost profits are insignificant compared to the costs. Hence, companies may find inconvenient to invest financial resources to protect their inventions in these groups of countries.

As a consequence, the intellectual property (IP) literature often underlines that patent applications follow different patterns in poor countries than in richer ones. For example, it is a well known assumption that R&D-based pharmaceutical firms do not seek patent protection in countries where low potential returns are expected (UNCTAD 2011 p.25).

Probably, these basic concepts are the most relevant to understand the small amount of patent applications in low and middle-income countries. However, the simple notion of economic profits do not encompass all existing motives for patent applications.

The economic literature has constantly inquired the particular reasons that lead to a protection demand. Since 1942, when Joseph Schumpeter described a patent system as a “restrictive practice”, the possibility to gain extra-profits by exploiting a monopoly power on new inventions is considered the main driver of the inventors decisions (Schumpeter J. 1942 pp.87-107). However, this theory has been gradually refined. Nowadays, the rationale underlying patent filings refers to the broader concept of strategic benefits, rather than the sole economic profits. Christine Greenhalgh and Mark Rogers listed six different strategies for benefiting from patents (Greenhalgh C.; Rogers M. 2010 p.163).

Table 1.1: Greenhalgh and Rogers' patent strategies

| Strategy | Description |
|--|--|
| Obtain market, or monopoly, power | Standard economic argument to increase profits. <i>Lipitor</i> , which is Pfizer's patented cholesterol-lowering drug, is estimated to have sales of \$12 billion in 2007. |
| To act as a signal | A patent may signal to financiers, granting agencies, customers, suppliers, universities or others that the firm is innovative. |
| To restrain power of suppliers | For example, Nokia has patents relating to loudspeakers and other components, even though these are manufactured by suppliers. |
| To build negotiating power | This relates to the idea of patent pools. Firms may need their own patents to enter cross-licensing. |
| To avoid being invented around | This is the idea of patent thickets. Having a number of patents covering similar areas makes it more difficult to invent around. |
| To prevent others from patenting ('blocking'), or developing certain technologies ('fencing'), or raise costs of entrants or rivals ('flooding' or 'blanketing') | These strategies are self explanatory. They result in patent thickets and/or act to change rival's costs or strategies. |

Source: Greenhalgh and Rogers, 2010

The Greenhalgh and Rogers patent strategies will be the basic conceptual framework of the present research. When market interest in ARIPO will be analysed, the specific reference will be the first patenting strategy listed by Greenhalgh and Rogers: market or monopoly power. The same considerations are valid when "flooding" and "blocking" patent activities will be discussed in the following chapters.

The existence of an efficient patent system is a crucial pre-condition to realize these strategies. Under this perspective, low and middle-income countries show a clear disadvantage compared to many developed countries. Although extensive intellectual property rights (IPRs) rules may be present, poor enforceability often damages the credibility of an IPRs regime. In his case study focused on trademarks in Lebanon, Keith E. Maskus demonstrated that a specific market interest can be frustrated by the weak enforcement of IPRs laws (Maskus K.E. 1997). For many poor countries this problem is more relevant. Ginarte and Park conducted one of the most important empirical research on the determinants of intellectual property protection. This study resulted in the index of patent rights for 110 countries for the period 1960-1990. The Ginarte-Park index clearly showed that stronger IPRs regimes are localized in richer countries, while middle-income and low-income countries have significantly weaker IPRs protection (Ginarte J.C.; Park W.G. 1997 p. 285).

Furthermore, the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) does not impose a uniform IPRs regime to all Members of the World Trade Organization (WTO). Articles 65 and 66 of the TRIPS Agreement establish different transitional periods for developing and least developed country Members (TRIPS 1994 p.349). Nowadays, the transitional period for developing countries has expired. On the contrary, a successive decision of the TRIPS Council and the Doha Declaration on the TRIPS Agreement and Public Health assigned extended transitional periods for Least-Developed Countries (LDCs). LDCs are exempted from adopting a strong IPRs protection system till 2013 (TRIPS Decision 2005 p.1). Moreover, LDCs are not required to comply with TRIPS provisions on pharmaceuticals till 2016 (Doha Declaration, 2001). Hence, non-uniform obligations for WTO Members will persist in the next future.

These considerations are useful to understand the reasons behind the uneven distribution of patent applications between different income groups of countries. On the contrary, these studies do not clarify why non-resident patent applications are predominant in low-income countries and in many middle-income nations. Given the lack of market interest, systemic weaknesses, poor enforcement of IPRs laws and low potential returns, we should expect very few non-resident patent filings and a prevalence of internal demandeurs in low and middle-income countries. As an example, we should expect local university to patent more than foreign ones in these groups of countries.

However, resident patent applications are a good proxy of knowledge production, as demonstrated by Jörn Kleiner (Kleiner J. 2001 p.13). Probably, many low and middle-income countries do not have sufficient industrial capabilities and financial resources to produce knowledge. Numerous studies on the relationship between patent applications and R&D expenditures constitute additional evidence to support this perspective. In an empirical research on the European Patent Office (EPO), Bernard Félix clearly demonstrated that high level of gross domestic expenditure on R&D leads to a higher number of patent filings (Félix B. 2006 p.2). At a firm-level, Ariel Pakes and Zvi Griliches demonstrated that patent grants are closely related to R&D expenditures at a cross-sectional level (Pakes A.; Griliches Z. 1984 p.61). Similar concepts are applicable also to university, that increasingly act as firms (Coupé T. 2003 p.16).

Resident patent applications should also comprise the demands of foreign companies' affiliates. According to Lopez and Orlicki, an actual commercial presence in developing countries is essential for the development of transnational corporations IP strategies. The results of a specific study on Argentina highlighted that local affiliates are more likely to apply for patent protection in developing countries in order to confirm protection rights obtained elsewhere (Lopez A.; Orlicki E. 2007).

Another important remark concerns the technology fields of patent applications. In 2008, Ulrich Schmoch published his “Concept of a Technology Classification for Country Comparisons”. This publication is the essential basis to categorize patent applications in accordance with their belonging technology field. In this study, Schmoch calculated the distribution of international patent applications in the priority year 2005. It resulted that pharmaceuticals is the main technology field of international patent applications, followed by computer technology (Schmoch U. 2008 pp.11-12).

After the publication of the Ginarte-Park index, a great share of empirical studies aimed at understanding the relationship between IPRs protection and development, technology transfers, growth and trade¹. Most of these researches inquired the causal nexus between a stronger IPRs regime and other economic phenomena. However, in many cases, the results could not provide more than a correlation between different variables. The causal nexus

¹ For a complete review of the most recent researches in these fields, consult Fink, C. and Maskus, K.E., *Intellectual Property and Development: Lessons from Recent Economic Research*, The World Bank/Oxford University, 2005.

between IPRs protection, growth, foreign direct investment (FDI) and trade remains unclear.

1.4 THE AFRICAN REGIONAL INTELLECTUAL PROPERTY ORGANIZATION

The African Regional Intellectual Property Organization (ARIPO) is the regional patent office for eighteen African countries, mainly English speaking nations and former colonies under the British Administration. ARIPO was established in 1976 through the adoption of the Agreement on the Creation of the African Regional Industrial Property Organization (Lusaka Agreement) by the Diplomatic Conference for the adoption of an Agreement on the Creation of an Industrial Property Organization for English-Speaking Africa. According to Article III of the Lusaka Agreement, the main objective of the organization is to harmonize and develop industrial property laws appropriate to the necessities of its Members (Lusaka Agreement, 1976, p.3).

A particular aspect of the ARIPO legal framework is that the national patent law of each ARIPO Member prevails over the regional regulations. National regulations determine the final extent of the ARIPO legal obligations in each ARIPO Member state (Kameri-Mbote P. 2005 pp.18-19).

With its eighteen Member States, ARIPO is the largest IP organization in Africa, given that the African Intellectual Property Organization (AIPO) accounts for sixteen Members. At present, ARIPO membership is composed by Botswana, Gambia, Ghana, Kenya, Lesotho, Liberia, Malawi, Mozambique, Namibia, Rwanda, Sierra Leone, Somalia, Sudan, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe.

ARIPO Members do not pertain all to the same income group. According to the World Bank (WB), eleven ARIPO Members are low-income countries, five are categorized as lower middle-income countries and two as upper middle-income countries (WB, 2011). Moreover, these countries did not achieve the same development status. According to the United Nations (UN), twelve ARIPO Members are LDCs, while the remaining six Members are developing countries (UN-OHRLLS, 2011). A specific income level does not correspond to a particular development stage for the ARIPO membership.

Table 1.2 ARIPO Membership by Income Group and Development Status

| Country | Income group | Development Status |
|----------------|---------------------|---------------------------|
| Botswana | Upper Middle Income | Developing Country |
| Gambia | Low Income | LDC |
| Ghana | Lower Middle Income | Developing Country |
| Kenya | Low Income | Developing Country |
| Lesotho | Lower Middle Income | LDC |
| Liberia | Low Income | LDC |
| Malawi | Low Income | LDC |
| Mozambique | Low Income | LDC |
| Namibia | Upper Middle Income | Developing Country |
| Rwanda | Low Income | LDC |
| Sierra Leone | Low Income | LDC |
| Somalia | Low Income | LDC |
| Sudan | Lower Middle Income | LDC |
| Swaziland | Lower Middle Income | Developing Country |
| Tanzania | Low Income | LDC |
| Uganda | Low Income | LDC |
| Zambia | Lower Middle Income | LDC |
| Zimbabwe | Low Income | Developing Country |

Source: World Bank, UN-OHRLLS, 2011

A common patent office for this mix of economies rise many empirical questions. This research will inquire only two of them:

- How patent filings happen in ARIPO, which patterns they follow and which patentees are applying. As part of this the question, whether or not non-resident patent filings in low-income countries are distributed between the various technological classes in a different way than in the rest of the world (Descriptive step).
- What drives patenting of multinational enterprises (MNEs) in ARIPO. In particular, this research aims at analysing whether MNEs have a market interest realized through patents and an actual commercial presence in the ARIPO membership (Analytical step).

Specifically, the objectives of this research are:

- To describe patent applications and patent applicants in ARIPO.
- To analyse whether or not non-resident patent filings in ARIPO are differently distributed between the various technology classes than in the rest of the world.
- To inquire whether non-resident patent applicants file their demands when they already have an affiliate in one or more ARIPO Member countries.
- To analyse in which ARIPO countries or group of countries the applicants have a strong market interest.
- To venture some hypothesis on possible future developments

CHAPTER 2 METHODOLOGY

2.1 RESEARCH METHOD AND APPROACH

The present research proposes a single case study on non-resident patent filings in ARIPO. This study can be defined as a descriptive case study aimed at providing a complete picture of non-resident patent applications in ARIPO. To describe the subject of this research, a quantitative approach will be adopted. Thanks to specific databases, the amount of non-resident patent applications between 2001 and 2008 will be calculated. Then, all patent applicants will be listed and categorized, in order to identify the main economic actors that decide to invest financial resources in order to protect their inventions in the ARIPO context.

When approaching this research, one element should be born in mind. Non-resident patent applications are not analysed solely on the aggregated level. On the contrary, most of this research is based on a detailed description of single patent documents, collected on proper databases. Aggregated data on non-resident patent applications are constructed and calculated starting from the single applications filed in ARIPO. Hence, this research is based on a “patent-specific” approach.

However, this research cannot be simply considered a quantitative case study. In fact, a more analytical analysis will be the main object of inquiry in the second part of the research. An experimental method will be adopted, in order to quantify the market interest relevance of non-resident patent applicants. In particular, non-resident patent applicants will be analysed in conjunction with their affiliates in the ARIPO region. A detailed analysis of the applicants' affiliates geographical distribution between different ARIPO Members is conducted in order to understand in which countries or group of countries is present a particular market interest.

Foreign affiliates are a good proxy of commercial presence, but no econometric studies can be operated with the data collected. For this reason, no correlation or regressive calculations will be conducted to link non-resident patent applications and applicants' affiliates. Moreover, this research will not inquire on the causal nexus between IP protection mechanisms and commercial presence. Affiliates are analysed solely to comprehend the non-resident patent applicants' IP strategies. In particular, affiliates are studied to quantify the share of non-resident patent applications driven by a market interest realized together with an actual

commercial presence in the ARIPO region.

The final end of the second part of the research is to infer some conclusions on the economic actors which show a particular market interest and on the countries that attract this interest. For this reason, this thesis is not only a descriptive case study but also an analysis that aims at inquiring a particular aspect of patenting activities. Given that possible future perspective will be discussed, this research can be described as an hypothesis generating case study.

A final remark on the methodological approach regards the real subject of the analysis. Although non-resident patent applications are the principal object of this study, the actual economic unit that links patenting activities and commercial presence are private firms. The bulk of this study is focused on non-resident patent applications demanded by private enterprises and not by single inventors, research institutes or public bodies. MNEs are the link between non-resident patent applicants and foreign affiliates. Thus, this research is basically a firm-level economic analysis. When aggregated data on foreign affiliates in ARIPO will be discussed, these data are calculated with a bottom-up approach, not *vice versa*. In the end, this research explores business choices decided by MNEs in the ARIPO region.

2.2 DATA COLLECTION AND ANTICIPATED PROBLEMS

Two main tools have been used in this study. In order to analyse the structure and nature of patent applications in ARIPO, the highly sophisticated patent database provided by WIPO, called PATENTSCOPE, will answer the first questions of this research. PATENTSCOPE data constitutes a vast source of information to identify the patentees and to describe patent trends in ARIPO in the last years. Looking at a period from 2001 to 2008 (hence, just before the financial crisis) it will be discussed whether non-resident patent applications in ARIPO concern different technology classes than the rest of the world.

With regard to the second part of the present research, firm-level data on commercial presence have been collected through the Investment Map, provided by the United Nations Conference on Trade and Development (UNCTAD) and the International Trade Centre (ITC). This large database registers a considerable amount of data on foreign affiliates in all ARIPO countries and on their parent companies.

Two additional considerations should be done on the possible weaknesses and obstacles concerning these data sources. First, PATENTSCOPE is surely an important tool in order to describe non-resident patent applications in the ARIPO countries. At the same time, this database is still in an embryonic stage, hence it cannot provide complete data compared to those registered by patent offices in many high-income countries. However, due to the lack of data in various low-income countries and LDCs, PATENTSCOPE proves to be an appropriate tool to use at present and, surely, for similar researches in the future, when more complete data will be available. Moreover, ARIPO is probably one of the best covered patent offices in this database.

Second, affiliates' data on a firm-level basis are quite rare, particularly in poor countries. Given the scarcity of information on many ARIPO Members, the Investment Map is probably one of the most advanced tools available nowadays. Moreover, other publications provide additional data on MNEs' commercial presence in the ARIPO region and they will be extensively used and discussed to reach satisfactory conclusions on the basis of sufficient evidence and findings. However, a complete coverage of all foreign affiliates does not exist at present.

Although these limits should always be born in mind while approaching this study, in the author's opinion PATENTSCOPE and the Investment Map provide the most detailed list of patentees and foreign affiliates available today.

CHAPTER 3 DESCRIPTIVE STEP

3.1 QUANTITATIVE ANALYSIS

3.1.1 NON-RESIDENT PATENT APPLICATIONS

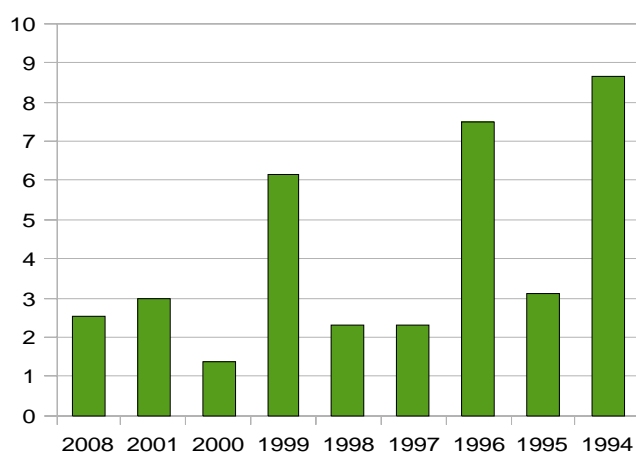
According to WIPO official statistics on patent applications by patent office, ARIPO has no records between 2002 and 2007. In this organization, patent applications have been regularly registered and published between 1994 and 2001. Official data were released again in 2008, a record year for patent filed in ARIPO.

Table 3.1 Patent applications in ARIPO broken down by resident and non-resident (1994-2008)

| Patent_Office | Applicant Type | 2008 | 2001 | 2000 | 1999 | 1998 | 1997 | 1996 | 1995 | 1994 |
|---------------|----------------|------|------|------|------|------|------|------|------|------|
| ARIPO | Resident | 11 | 2 | 4 | 4 | 6 | 6 | 10 | 2 | 9 |
| | Non resident | 424 | 65 | 293 | 61 | 255 | 255 | 123 | 62 | 95 |
| | Total | 435 | 67 | 297 | 65 | 261 | 261 | 133 | 64 | 104 |

Source: WIPO Statistics Database, January 2011

Figure 3.1 Resident patent applications in ARIPO between 1994 and 2008 (%)



Source: WIPO Statistics Database, January 2011

In all periods when official statistics were released, non-resident patent applications have been significantly more numerous than resident patent demands. On average, 187 patent

applications per-year were filed in ARIPO. On the sole basis of the official data collected on the WIPO Statistics Database, 1687 patent filings were registered in ARIPO between 1994 and 2008. Only 54 of them derived from resident applicants, equal to 3.2% of the total. Disaggregating total applications on a single year basis, resident applications never exceeded the 8.65% threshold registered in 1994 and a negative trend seems to emerge.

Given the specificities of the ARIPO legal framework, where national IP offices co-exist with the regional one and national IP laws prevail on international agreements, the collection of national data on resident and non-resident patent filings would be of immense importance. In fact, it is a reasonable assumption that non-resident applicants prefer to file just one request to contain the costs of applying in each ARIPO Member patent office. It would be extremely interesting to know whether resident patent applications exceed non-resident ones at the national level. If, at the national level, resident applications supersede non-resident patent applications, then the ARIPO patent patterns would be similar to those registered in Europe, where the European Patent Office (EPO) is the main receiver of non-resident patent applications, while national European IP offices collect a large number of resident patent applications. Unfortunately, only Kenya, Malawi, Mozambique, Sudan, Uganda, Zambia and Zimbabwe have very partial and fragmented data on the WIPO statistic database for the same period. These data seem insufficient to make a thorough analysis. However, the scarce data available show the regional trend not reversed and non-resident patent applications often seem to outnumber resident demands.

Table 3.2 Patent applications in selected ARIPO Members broken down by resident and non-resident (1994-2008)

| Patent Office | Applicant Type | 2007 | 2006 | 2005 | 2004 | 2003 | 2002 | 2001 | 2000 | 1999 | 1998 | 1997 | 1996 | 1995 | 1994 |
|---------------|----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Kenya | Resident | | 38 | | | | | | | 25 | 27 | 22 | 15 | | |
| | Non resident | | 33 | | | | | | | 30 | 34 | 40 | 38 | | |
| | Total | | 71 | | | | | | | 55 | 61 | 62 | 53 | | |
| Malawi | Resident | | | | | | | 3 | 1 | 2 | 2 | 2 | 1 | 1 | |
| | Non resident | | | | | | | 313 | 17 | | 18 | 26 | 30 | 33 | 12 |
| | Total | | | | | | | 313 | 20 | 1 | 20 | 28 | 32 | 34 | 13 |
| Mozambique | Resident | 18 | | | | | | | | 2 | | | | | |
| | Non resident | 22 | 21 | 14 | 5 | 15 | 9 | 1 | 6 | 18 | | | | | |
| | Total | 40 | 21 | 14 | 5 | 15 | 9 | 1 | 6 | 20 | | | | | |

| | | | | | | | | | | | | | | | |
|--------|--------------|----|----|----|----|----|----|----|----|---|--|--|--|--|--|
| Sudan | Resident | 3 | 3 | 6 | 4 | 6 | 2 | 1 | 6 | 2 | | | | | |
| | Non resident | 13 | 13 | 16 | 17 | 11 | 20 | 13 | 16 | 4 | | | | | |
| | Total | 16 | 16 | 22 | 21 | 17 | 22 | 14 | 22 | 6 | | | | | |
| Uganda | Resident | 6 | 11 | 3 | 12 | 5 | | | | | | | | | |
| | Non resident | 1 | | | 1 | | | | | | | | | | |
| | Total | 7 | 11 | 3 | 13 | 5 | | | | | | | | | |

Source: WIPO Statistics Database, January 2011

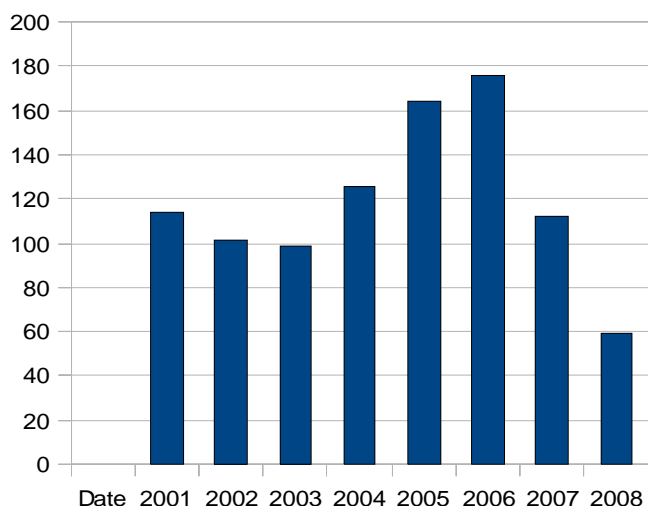
Turning back to the regional level, PATENTSCOPE is extremely important to fill the ARIPO data gap between 2002 and 2007. In fact, PATENTSCOPE registered patent applications during this period and corrected WIPO data on 2001. On the contrary, this database shows partial data for 2008. Relying on PATENTSCOPE, 981 patent applications were filed in ARIPO between 2001 and 2008.

Table 3.3: Number of patents per-year (2001-2008)

| Date | Number of Patents |
|-------------|--------------------------|
| 2001 | 114 |
| 2002 | 101 |
| 2003 | 99 |
| 2004 | 126 |
| 2005 | 164 |
| 2006 | 176 |
| 2007 | 112 |
| 2008 | 59 |
| Total | 951 |

Source: PATENTSCOPE, 2011

Figure 3.2 Patent applications by year of publication



Source: PATENTSCOPE, 2011

On the bases of PATENTSCOPE data, on average, 118 applications per-year were filed in ARIPO between 2001 and 2008, significantly less than the average between 1994 and 2008, recorded by the official WIPO statistics. However, if 2008 data are excluded both from PATENTSCOPE and WIPO official statistics, the averages divergence is not as significant as before.

Table 3.4 Per-year patent application averages (PATENTSCOPE; WIPO)

| Period | PATENTSCOPE | Period | WIPO |
|-----------|-------------|-----------|--------|
| 2001-2008 | 118,88 | 1994-2008 | 187,44 |
| 2001-2007 | 127,43 | 1994-2001 | 156,5 |

Source: PATENTSCOPE, 2011; WIPO Statistics Database, January 2011

Probably, the magnitude of this divergence will be reduced in the next years, when PATENTSCOPE will adjust and complete its data on 2008.

PATENTSCOPE does not provide a statistical breakdown between resident and non-resident patent applications. Each application registered in this database should report the origin of the applicant. Unfortunately, not all applications are complete and many filed documents do not inform about the residence of the patentee. For this reason, every applicant has been controlled to understand the country of origin. Surprisingly, all patentees resulted foreigners and can be considered of non-resident origin. No local affiliates and universities seem to use the ARIPO patent system. All ARIPO patent applications registered in PATENTSCOPE are

non-resident patent applications and only these data will be the subject of the present research. For this reason, when in the following chapters we will refer to “patent applications”, these terms should always be intended as non-resident patent applications, unless otherwise stated.

3.1.2 PATENT APPLICANTS

The vast majority of patent applicants in ARIPO are private enterprises, MNEs or business companies. However, single inventors and research centres constitute a relevant share of patentees². Specifically, over a total amount of 472 applicants, 75 are single inventors and 31 are universities, research institutes or public funded organizations. Inventors and research centres represent 15.89% and 6.36% of the total amount of applicants, respectively. Hence, 22.25% of patent applicants in ARIPO are not enterprises.

Table 3.5 Patent applicants in ARIPO

| Applicants | Total | % |
|-------------------|--------------|----------|
| Enterprises | 367 | 77.75% |
| Inventors | 75 | 15.89% |
| R&D centres | 30 | 6.36% |

Source: PATENTSCOPE, 2011

However, the role of private enterprises is more predominant if we consider the number of non-resident patent applications issued by each of the three applicant group. Over a total amount of 951 non-resident patent applications between 2001 and 2008, only 83 were demanded by a single author and 37 by R&D institutions or public bodies. Indeed, 87.38% of non-resident patent applications in ARIPO derived from private enterprises and MNEs.

² For a complete list of ARIPO patent applicants, see Appendix A

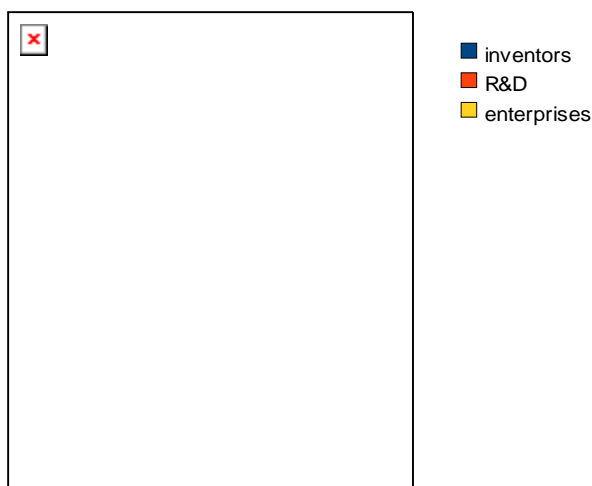


Figure 3.3 Non-resident patent applications by group of applicants (2001-2008)

Source: PATENTSCOPE, 2011

From the figure above, it is evident that private companies are the main subjects of patent activities in ARIPO. Furthermore, within the group of Universities that filed at least one patent application in ARIPO, only two of them are listed in the top Patent Cooperation Treaty (PCT) applicants (WIPO 2010 p.55). Specifically, New York University and the Regents of the University of California.

According to PATENTSCOPE, the main applicants in ARIPO are large pharmaceutical companies.

Table 3.6 Main non-resident patent applicants (2001-2008)

| Name | N° of Patents |
|--------------------------------|----------------------|
| PFIZER PRODUCTS INC | 58 |
| PFIZER INC | 47 |
| SMITHKLINE BEECHAM P.L.C. | 35 |
| GLAXO GROUP LIMITED | 26 |
| JANSSEN PHARMACEUTICA N.V. | 18 |
| AVENTIS PHARMA S.A. | 17 |
| SMITHKLINE BEECHAM CORPORATION | 15 |

| | |
|-------------------------------|----|
| AVENTIS PHARMACEUTICALS INC. | 14 |
| LES LABORATOIRES SERVIER | 11 |
| AGOURON PHARMACEUTICALS, INC. | 11 |

Source: *PATENTSCOPE, 2011*

The fact that the principal applicants in ARIPO are pharmaceutical companies is not sufficient to reach any definitive conclusion on the type of patent applications they decide to demand. Indeed, any enterprise belongs to a specific industry, but its inventions may concern different technology sectors not directly related to its sector. For this reason, a specific study is needed to analyse international patent classes and technology fields in ARIPO.

3.2 IPC AND TECHNOLOGY FIELDS

Each patent registered into the PATENTSCOPE system reports the international class to which it pertains. International classes are categorized according to the International Patent Classification (IPC), established in 1971 by the Strasbourg Agreement Concerning the International Patent Classification. The current IPC classifies patents in 8 main sections³:

- Section a — human necessities
- Section b — performing operations; transporting
- Section c — chemistry; metallurgy
- Section d — textiles; paper
- Section e — fixed constructions
- Section f — mechanical engineering; lighting; heating; weapons; blasting
- Section g — physics
- Section h — electricity

Each main section is divided into several subsections, identified by progressive numbers and letters. Hence, a specific IPC symbol appears on a patent application document as a code composed by one letter corresponding to one of the main sections, one number and one letter (e.g. G06F).

³ <http://www.wipo.int/ipcpub/#refresh=page> (last accessed 24/09/2011).

All ARIPO patent demands have a main international class inscribed on the published application. In several occasions, an invention can belong to different IPC that should be duly registered in the patent application. PATENTSCOPE reports at least one principal IPC symbol on each ARIPO application document and this is the subject of this part of the present research.

According to PATENTSCOPE, the majority of non-resident patent applications in ARIPO concern 7 IPC⁴:

- preparations for medical, dental or toilet purposes (A61K);
- heterocyclic compounds (C07D);
- biocides, pest repellents or attractants, preservation agents (A01N);
- production or refining of metals, pretreatment of raw materials (C22B);
- acyclic or carbocyclic compounds (C07C);
- containers for storage or transport of articles or materials, packages (B65D);
- peptides (C07K).

Table 3.7 Main IPC (number of patent applications, 2001-2008)

| IPC | N° patents |
|------------|-------------------|
| A61K | 210 |
| C07D | 162 |
| A01N | 52 |
| C22B | 37 |
| C07C | 34 |
| B65D | 29 |
| C07K | 22 |

Source: PATENTSCOPE, 2011

Every international class, identified through the IPC symbols, corresponds to a particular technological field. Each year, WIPO links all IPC symbols assigned to a specific patent document to their technology field thanks to a specific table of concordance. The result is a classification in which all patent applications are categorized into 5 technology sectors and 35

⁴ For a complete list of all IPC in ARIPO see Appendix B.

technology fields (Schmoch U. 2008 pp.9-10).

All ARIPO non-resident patent applications have been linked to their technology field in order to understand the relative value of each technology field. Furthermore, the same operation was applied to global patent applications, relying on WIPO official statistics. The rationale behind these calculations is the idea of comparing the distribution of patent applications between the different technology sectors in ARIPO and in the rest of the world.

Thus, the global amount of patent applications between 2001 and 2007 and their technology fields were analysed. All patent applications worldwide between 2001 and 2008 have been summed and distributed into their specific technology fields. Then, it was calculated the ratio between the number of applications of a specific technology field and the total amount of global patent applications. Finally, the relative weight of each technology class was expressed in percentage. The same calculations were conducted on ARIPO non-resident patent applications for the period 2001-2008. From these operations it resulted that ARIPO non-resident patent applications' distribution between the different technology fields does not follow the international trends.

Table 3.8: World and ARIPO patent applications by technology field

| WORLD | | | ARIPO | | |
|---|--------|------|---|-----|------|
| | TOT | % | | TOT | % |
| I - Electrical engineering | | | I - Electrical engineering | | |
| Electrical machinery, apparatus, energy | 691593 | 6,13 | Electrical machinery, apparatus, energy | 18 | 1,89 |
| Audio-visual technology | 541697 | 4,8 | Audio-visual technology | 3 | 0,32 |
| Telecommunications | 556772 | 4,93 | Telecommunications | 11 | 1,16 |
| Digital communication | 349571 | 3,1 | Digital communication | 9 | 0,95 |
| Basic communication processes | 123741 | 1,1 | Basic communication processes | 0 | 0 |
| Computer technology | 798752 | 7,07 | Computer technology | 5 | 0,53 |
| IT methods for management | 148672 | 1,32 | IT methods for management | 1 | 0,11 |
| Semiconductors | 512310 | 4,54 | Semiconductors | 2 | 0,21 |
| II - Instruments | | | II - Instruments | | |

| | | | | | |
|--------------------------------------|--------|------|--------------------------------------|-----|-------|
| Optics | 518520 | 4,59 | Optics | 5 | 0,53 |
| Measurement | 448805 | 3,97 | Measurement | 7 | 0,74 |
| Analysis of biological materials | 75930 | 0,67 | Analysis of biological materials | 6 | 0,63 |
| Control | 196688 | 1,74 | Control | 11 | 1,16 |
| Medical technology | 472018 | 4,18 | Medical technology | 27 | 2,84 |
| III - Chemistry | | | III - Chemistry | | |
| Organic fine chemistry | 342471 | 3,03 | Organic fine chemistry | 220 | 23,13 |
| Biotechnology | 244494 | 2,17 | Biotechnology | 45 | 4,73 |
| Pharmaceuticals | 436226 | 3,86 | Pharmaceuticals | 216 | 22,71 |
| Macromolecular chemistry, polymers | 189268 | 1,68 | Macromolecular chemistry, polymers | 4 | 0,42 |
| Food chemistry | 156446 | 1,39 | Food chemistry | 24 | 2,52 |
| Basic materials chemistry | 258949 | 2,29 | Basic materials chemistry | 65 | 6,83 |
| Materials, metallurgy | 211409 | 1,87 | Materials, metallurgy | 53 | 5,57 |
| Surface technology, coating | 200059 | 1,77 | Surface technology, coating | 6 | 0,63 |
| Micro-structural and nano-technology | 14366 | 0,13 | Micro-structural and nano-technology | 0 | 0 |
| Chemical engineering | 234707 | 2,08 | Chemical engineering | 23 | 2,42 |
| Environmental technology | 153198 | 1,36 | Environmental technology | 18 | 1,89 |
| IV - Mechanical engineering | | | IV - Mechanical engineering | | |
| Handling | 312405 | 2,77 | Handling | 33 | 3,47 |
| Machine tools | 269099 | 2,38 | Machine tools | 10 | 1,05 |
| Engines, pumps, turbines | 304306 | 2,7 | Engines, pumps, turbines | 12 | 1,26 |
| Textile and paper machines | 268508 | 2,38 | Textile and paper machines | 2 | 0,21 |
| Other special machines | 334692 | 2,96 | Other special machines | 35 | 3,68 |
| Thermal processes and apparatus | 179846 | 1,59 | Thermal processes and apparatus | 8 | 0,84 |
| Mechanical elements | 321833 | 2,85 | Mechanical elements | 5 | 0,53 |
| Transport | 481634 | 4,27 | Transport | 16 | 1,68 |
| V - Other fields | | | V - Other fields | | |
| Furniture, games | 320979 | 2,84 | Furniture, games | 8 | 0,84 |
| Other consumer goods | 233935 | 2,07 | Other consumer goods | 10 | 1,05 |

| | | | | | |
|-------------------|----------|------|-------------------|-----|------|
| Civil engineering | 387164 | 3,43 | Civil engineering | 33 | 3,47 |
| TOT | 11291063 | | | 951 | |

Source: WIPO Statistics Database, September 2010; PATENTSCOPE, 2011

Relying on PATENTSCOPE data, pharmaceuticals and organic fine chemistry are the dominant technology fields of non-resident patent applications in ARIPO. These two fields represent 45.8% of all non-resident patent applications in this patent office. On the contrary, ARIPO Members do not attract patent applications in the principal global technology fields. In fact, electrical machinery, apparatus, energy and computer technology represent 2.82% of non-resident patent applications in ARIPO, while these two fields amount to 13.2% of patent applications worldwide.

With regard to the main global technology fields, the results of this study confute those obtained by Schmoch in 2008. Pharmaceuticals do not represent the main technology field of patent applications worldwide. However, Schmoch's findings suggested that the pharmaceutical field reached less than 7% of global patent applications in 2005, a share significantly smaller than that registered in ARIPO.

The fact that WIPO statistics on patent applications by field of technology consider multiple IPC per patent application document, while this study takes into account the main IPC for ARIPO non-resident patent applications, is relevant. Further researches should be conducted to refine these findings. However, the divergence is unlikely to diminish. Indeed, the difference between ARIPO and the rest of the world patenting trends would probably increase.

PATENTSCOPE is apt to register the main IPC symbols including multiple IPC applications. According to this data source, the first 7 IPC between 2001 and 2008 are similar to those previously identified.

Table 3.9 Main IPC (multiple IPC per patent included)

| IPC | N° of Patents |
|------|---------------|
| A61K | 382 |
| C07D | 176 |

| | |
|------|----|
| A61P | 74 |
| A01N | 56 |
| C07C | 44 |
| C22B | 37 |
| B65D | 34 |

Source: PATENTSCOPE, 2011

In this additional ranking, 6 IPC out of 7 are the same as in the previous classification when multiple IPC were excluded. IPC A61K is the main source of ARIPO non-resident patent applications in the pharmaceutical field and its weight almost doubles if multiple IPC applications are taken into account. The only relevant difference between excluding and including multiple IPC applications is that IPC A61P is now in the top 7 IPC. However, IPC A61P pertains to the pharmaceutical technology field, that would probably increase in importance with regard to its relative value. The same considerations apply to IPC C07D and C07C, which are the main sources of the organic fine chemistry technology field. For these reasons, it is foreseeable that the divergence between world application trends and non-resident patent applications in ARIPO would increase if multiple IPC applications were taken into account. Unfortunately, PATENTSCOPE does not provide a complete list of multiple IPC applications to prove this intuition only based on the top 7 multiple IPC.

CHAPTER 4 ANALYTICAL STEP

4.1 COMMERCIAL PRESENCE

Within the conceptual framework provided by Greenhalgh and Rogers on patent strategies, market interest is the classic standard economic argument for patenting⁵. Moreover, according to Lopez and Orlicki, MNEs patenting activities are largely realized through an actual commercial presence in many developing countries (Lopez A.; Orlicki E. 2007). This part of the present research aims at understanding how relevant this appropriability strategy is in the context of ARIPO. For this purpose, foreign affiliates into ARIPO countries have been chosen as a proxy of commercial presence.

4.1.1 AFFILIATES AND MARKET INTEREST

The Investment Map, provided by ITC and UNCTAD, registers 1145 foreign affiliates in the ARIPO region. Thanks to this database, it is possible to list all parent companies of these affiliates. Relying on the Investment Map, 841 companies decided to have at least one affiliate into one of the ARIPO Members⁶.

To understand how many MNEs invest financial resources for patenting in ARIPO in conjunction with an active commercial presence, all patent applicants have been confronted with the parent companies of ARIPO affiliates. From this operation, it results that 24 MNEs are both patent applicants and parent companies of foreign affiliates in ARIPO:

| | |
|----------------------------|---------------------------|
| ABB BC (ASEA BROWN BOVERI) | MONSANTO |
| ANGLO AMERICAN CORPORATION | NOVARTIS |
| ASTRAZENECA AB | PFIZER INC |
| BASF | S.C. JOHNSON & SON |
| BAYER | SANOFI-AVENTIS |
| BHP BILLITON | SASOL |
| BRITISH AMERICAN TOBACCO | SHELL |
| CADBURY | SOCIETE DE PRODUIT NESTLE |
| FIRSTSTRAND BANK | SYNGENTA |
| GLAXOSMITHKLINE | TETRA LAVAL |
| GREIF | UNILEVER |
| MERCK | WEIR |

⁵ See before, Table 1.1.

⁶ For a complete list of parent companies, see Appendix C.

In the rest of the present research, these 24 companies will be identified as “parent-applicant” MNEs, signifying that these enterprises decided to file patent applications in conjunction with an actual commercial presence in at least one ARIPO Member.

Given that 367 non-resident patent applicants are private enterprises, it results that 6.54% of them are both applicants and parent companies of local affiliates. Thus, a significant share of companies decides to apply for patents in ARIPO as a profit appropriability mechanism in conjunction with an active commercial presence in this region. This finding increases the perception that a relevant part of patenting activities in ARIPO are driven by market interest. To have a clear picture on how relevant this market interest is, it would be important to analyse whether patents generate market income or not. Unfortunately, no data are available to have a complete scenario.

4.1.2 CROSS ANALYSIS OF APPLICANT-PARENT COMPANIES

Confronting the top 10 patent applicants⁷ and the list of applicants with one foreign affiliate in the ARIPO membership, only 3 companies are present in both. However, the list of top 10 patent applicants does not take into account the mergers and acquisitions occurred between the listed MNEs. In fact, in the period 2001-2008, Smithkline Beecham and Glaxo Group merged to form GlaxoSmithKline and Pfizer acquired Agouron Pharmaceuticals. In this context, the merger between Aventis Pharma and Sanofi-Synthélabo is less relevant, considering that Sanofi filed only two patent applications in ARIPO during the analysed period. Hence, a refined list of top applicants should comprise only 5 companies. The first three applicants in ARIPO own at least one foreign affiliate in the region, while Janssen Pharmaceutica and Les Laboratoires Serviers do not possess any affiliate. This is a clear signal that applying for patents in conjunction with an actual commercial presence is a relevant practice for the most active patent demandeurs in ARIPO.

⁷ See table 3.6.

Table 4.1 List of main parent-applicants

| Name | N° of Patents |
|----------------------------|---------------|
| PFIZER INC | 116 |
| GLAXOSMITHKLINE | 76 |
| SANOFI-AVENTIS | 33 |
| JANSSEN PHARMACEUTICA N.V. | 18 |
| LES LABORATOIRES SERVIER | 11 |

Source: PATENTSCOPE, 2011

From the table above, it emerges that a large share of non-resident patent applications derive from companies with a certified market interest in the ARIPO region. Alone, the top 3 non-resident patent applicants account for 225 non-resident patent applications. Given that 831 non-resident patent applications are demanded by private enterprises, it results that at least 27.07% of these applications originate from companies with a certified market interest in the ARIPO countries.

However, the fact that the main applicants established their affiliates in the ARIPO region does not mean that these MNEs have the highest number of affiliates. Indeed, other companies have a more significant commercial presence on the field. In the following table, the MNEs with a positive normalized value are those companies with a number of affiliates over the average.

Table 4.2 Number of affiliates for parent-applicants (normalized values)

| COMPANY | N° AFFILIATES | NORMALIZED |
|----------------------------|---------------|------------|
| ABB (ASEA BROWN BOVERI) | 9 | 1,02 |
| ANGLO AMERICAN CORPORATION | 1 | -0,77 |
| ASTRAZENECA AB | 5 | 0,12 |
| BASF | 2 | -0,55 |
| BAYER AG | 9 | 1,02 |
| BHP BILLITON | 1 | -0,77 |

| | | |
|----------------------------|----|-------|
| BRITISH AMERICAN TOBACCO | 4 | -0,1 |
| CADBURY | 3 | -0,33 |
| FIRSTRAND BANK | 2 | -0,55 |
| GLAXOSMITHKLINE | 6 | 0,34 |
| GREIF | 4 | -0,1 |
| MERCK | 2 | -0,55 |
| MONSANTO | 3 | -0,33 |
| NOVARTIS | 2 | -0,55 |
| PFIZER | 3 | -0,33 |
| S.C. JOHNSON & SON | 3 | -0,33 |
| SANOFI-AVENTIS | 2 | -0,55 |
| SASOL | 1 | -0,77 |
| SHELL | 10 | 1,24 |
| SOCIETE DE PRODUITS NESTLE | 8 | 0,79 |
| SYNGENTA | 4 | -0,1 |
| TETRA LAVAL | 1 | -0,77 |
| UNILEVER | 21 | 3,7 |
| WEIR | 1 | -0,77 |

Source: Investment Map, 2011

Only one of the top 3 applicants have a number of affiliates over the average in the ARIPO region (GlaxoSmithKline). The other applicants with a relevant commercial presence in the ARIPO countries are Unilever, Société de Produits Nestlé, Shell, Bayer AG, AstraZeneca AB, and ABB. While the top 3 applicants derive from a very specific economic sector, the pharmaceutical industry, the applicants with more commercial presence show a greater variety. Unilever, the MNE with more affiliates in the ARIPO region, is one of the leader enterprises in the food and beverage sector, exactly as Société de Produits Nestlé. Shell, the second most present parent-applicant, is a global oil and gas company while ABB operates in the energy and automation technology sector.

Within the group of applicants with more affiliates in the ARIPO region, only Bayer AG, AstraZeneca and GlaxoSmithKline are firms in the pharmaceutical sector. On the contrary, Pfizer Inc, the principal applicant in ARIPO, does not result within the group of applicants with a number of affiliates over the average. The same consideration applies to Sanofi-Aventis. From these finding it emerges that the outlook of market interest in the ARIPO countries is probably larger than the one described solely on the bases of patent applications.

Another important remark is the apparent irrelevance of companies in the mining sector. Only BHP Billiton and Anglo American Corporation secure their investments by patenting. However, this finding should not lead to exaggerated conclusions on the importance of these MNEs in the ARIPO countries. These companies are important actors in the field of resource-seeking foreign direct investments (FDI) (Dunning J. 1980 p.13). Resource-seeking FDI aim at having access to more efficient factors of production than those available in the country of origin of the MNE. In this case, the localization of the investment depends on the availability and the costs of extraction of natural resources and raw materials. Hence, resource-seeking affiliates are linked to the characteristics of specific geographical areas and we cannot expect a great amount of affiliates outside of these regions. Moreover, it is reasonable to infer that many resource-seeking MNEs are not within the main demandeurs of patents because of their scarce innovation activities. For these reasons it is not surprising that mining companies do not figure within the top applicants and have a small amount of affiliates in the ARIPO region.

4.2 GEOGRAPHICAL DISTRIBUTION

Another important research question concerns the geographical distribution of the identified affiliates. Relying on the Investment Map data, it results that the majority of parent-applicant companies are present in more than one ARIPO country. Apart from the above mentioned BHP Billiton and Anglo American, only 4 more companies have affiliates just in one ARIPO Member: Weir, Tetra Laval, Sasol and Sanofi-Aventis.

Table 4.3 Country coverage

| COMPANY | ARIPO COUNTRIES |
|----------------|------------------------|
| ABB BC | 8 |

| | |
|----------------------------------|-------------|
| ANGLO AMERICAN | 1 |
| ASTRAZENECA | 5 |
| BASF | 2 |
| BAYER AG | 5 |
| BHP BILLITON | 1 |
| BRITISH AMERICAN TOBACCO | 4 |
| CADBURY | 3 |
| FIRSTRAND BANK | 2 |
| GLAXOSMITHKLINE | 3 |
| GREIF | 2 |
| MERCK | 2 |
| MONSANTO | 3 |
| NOVARTIS | 2 |
| PFIZER | 3 |
| S.C. JOHNSON & SON | 2 |
| SANOFI-AVENTIS | 1 |
| SASOL | 1 |
| SHELL | 6 |
| SOCIETE DE PRODUIT NESTLE | 4 |
| SYNGENTA | 4 |
| TETRA LAVAL | 1 |
| UNILEVER | 7 |
| WEIR | 1 |
| AVERAGE | 3,04 |

Source: Investment Map, 2011

When country coverage is analysed, one relevant finding emerges: none of the top 3 applicants is present in more than three ARIPO countries. GlaxoSmithkline, Pfizer and

Sanofi-Aventis are all below the ARIPO countries commercial presence average. However, two pharmaceutical companies report a significant commercial presence: Bayer AG and AstraZeneca. Bayer AG, in particular, is probably the foreign pharmaceutical firm with the most relevant commercial presence in the ARIPO region, given that its 9 affiliates are distributed between 5 different Members.

From these findings, some considerations can be inferred on the top 3 applicants patenting activities. The first consideration is that Pfizer, GlaxoSmithKline and Sanofi-Aventis have direct competitors in the ARIPO region. Second, Bayer AG and AstraZeneca probably have sufficient industrial capabilities to imitate the top 3 applicants' technologies and innovations. For these reasons, the high number of patent applications filed by Pfizer, GlaxoSmithKline and Sanofi-Aventis cannot be explained solely by market interest. Within the Greenhalgh and Rogers' conceptual framework on patent strategies⁸ it seems reasonable to infer that at least a part of patents demanded by the the top 3 applicants are driven by a “flooding” and “blocking” strategy.

Five ARIPO Members do not host any affiliate from patent applicants: Lesotho, Liberia, Rwanda, Somalia and Swaziland. All other ARIPO countries host at least one affiliate.

Table 4.4 Parent-applicants in the ARIPO membership

| ARIPO countries | N° of Parent-Applicants |
|------------------------|--------------------------------|
| Botswana | 2 |
| Gambia | 2 |
| Ghana | 11 |
| Kenya | 16 |
| Malawi | 4 |
| Mozambique | 8 |
| Namibia | 3 |
| Sierra Leone | 1 |
| Sudan | 3 |

⁸ See table 1.1.

| | |
|----------|---|
| Tanzania | 6 |
| Uganda | 6 |
| Zambia | 5 |
| Zimbabwe | 5 |

Source: *Investment Map, 2011*

The fact that only 5 ARIPO Members do not host any affiliate of the parent-applicant companies signals an extended market interest, not focused solely on the ARIPO countries with better economic outlooks. However, Kenya and Ghana seem to rise more interests than all other Members, hosting affiliates from 16 and 11 parent-applicant MNEs respectively.

When only the absolute number of affiliates from patent applicants is taken into account, the role of Kenya becomes predominant. In fact, Kenya hosts 38 affiliates of parent-applicant firms. From this finding, it emerges that Kenya is the main affiliate hub in the ARIPO region. To a large extent, this country probably attracts parent-applicants' market interests more than any other ARIPO Member.

Table 4.5 Number of affiliates per ARIPO Member

| ARIPO countries | N° affiliates |
|------------------------|----------------------|
| Botswana | 2 |
| Gambia | 2 |
| Ghana | 14 |
| Kenya | 38 |
| Malawi | 5 |
| Mozambique | 10 |
| Namibia | 3 |
| Sierra Leone | 1 |

| | |
|----------|----|
| Sudan | 3 |
| Tanzania | 11 |
| Uganda | 6 |
| Zambia | 6 |
| Zimbabwe | 6 |

Source: *Investment Map, 2011*

4.2.1 ANALYSIS BY GROUP OF COUNTRIES

When affiliates' geographical distribution is analysed country by country, the dominant role held by Kenya is evident. However, when different country groups are taken into account, some relevant remarks should be done. As already noticed, ARIPO is composed by countries with different income levels and at different development stages. Relying on the different income classification, ARIPO countries which host at least one affiliate of a parent-applicant can be categorized into three groups: low-income countries, lower middle-income countries and upper middle-income countries.

Table 4.6 *Income groups*

| Income Group | Countries | N° Affiliates |
|---------------------|---|----------------------|
| Low-Income | Gambia, Kenya, Malawi, Mozambique, Sierra Leone, Tanzania, Uganda, Zimbabwe | 79 |
| Lower Middle-Income | Ghana, Sudan, Zambia | 23 |
| Upper Middle-Income | Botswana, Namibia | 5 |

Source: *Investment Map, World Bank*

From the table above, it emerges that patent applicants normally decide to have a more relevant commercial presence in low-income ARIPO Members. Given that patent applications are significantly more numerous into middle-income countries than in low-income ones, this result is a veritable surprise. This finding signals that, in the ARIPO membership, low-income countries are the main subjects of a market interest realized through patenting and commercial presence by several MNEs.

The perception of a relevant role for low-income countries is increased when the affiliates of

the top 3 applicants are analysed. GlaxoSmithkline, Pfizer and Sanofi-Aventis localized their affiliates into three different low-income countries and only one affiliate is in a lower middle-income country.

Table 4.7 Top 3 applicants' affiliates

| APPLICANT | KENYA | TANZANIA | ZAMBIA | ZIMBABWE |
|------------------|--------------|-----------------|---------------|-----------------|
| GLAXOSMITHKLINE | 3 | 2 | | 1 |
| PFIZER | 1 | 1 | 1 | |
| SANOFI-AVENTIS | 2 | | | |

Source: Investment Map, 2011

Although a share of patents demanded by the top 3 applicants seems to be driven by a flooding strategy⁹, it appears reasonable to remark that these companies probably have a market interest localized into low-income ARIPO Members.

An obvious objection to these findings is that Kenya, a low-income ARIPO Member, is crucial to determine the prevalence of the low-income group in attracting market interest. However, even if Kenya should be considered as an anomaly and eliminated from the income group classification, low-income countries still attract the majority of affiliates derived from patent applicant MNEs. In fact, without all Kenyan affiliates, low-income countries host 41 affiliates from parent-applicant companies; on the contrary, all middle-income countries together, without distinction between upper and lower middle-income groups, attract 28 affiliates from parent-applicant MNEs.

Different and even more surprising considerations arise when development status is used to categorize the countries subject of the analysis. The ARIPO countries which host at least one affiliate of a parent-applicant company can be classified into two different groups: developing countries and LDCs. The first group is composed by 5 States, the second comprises the remaining 8 countries.

Table 4.8 Development groups

| Development Group | Countries | N° Affiliates |
|--------------------------|-------------------------|----------------------|
| Developing countries | Botswana, Ghana, Kenya, | 63 |

⁹ See para. 1.3 and table 1.1.

| | | |
|------|---|----|
| | Namibia, Zimbabwe | |
| LDCs | Gambia, Malawi, Mozambique, Sierra Leone, Sudan, Tanzania, Uganda, Zambia | 44 |

Source: Investment Map, 2011

When ARIPO Members are classified according to their development stage, it emerges that developing countries attract more affiliates from parent-applicant companies than LDCs. However, the divergence between these two groups has a smaller magnitude than the one registered when income levels are taken into account. It is surprising that 41% of the total amount of parent-applicants' affiliates is localized in LDC ARIPO Members.

The top 3 non-resident patent applicants localize their affiliates in line with these findings. In fact, GlaxoSmithKline, Pfizer and Sanofi-Aventis have 4 affiliates between Tanzania and Zambia, over a total amount of 11 affiliates in the ARIPO countries. Thus, the top 3 applicants localize 36% of their affiliates in LDC Members.

In addition, if Kenya is considered an anomaly and excluded from the developing countries' group, LDCs would result the most appealing group of countries for parent-applicant companies. In fact, developing countries would host only 25 parent-applicants' affiliates, 19 affiliates less than those hosted by LDC Members. Thus, Kenya represents the decisive factor of the developing countries' predominance in the attraction of parent-applicants' affiliates when the development stage is taken into account.

Setting the research agenda on innovation and appropriability mechanisms, Andrés Lopez called for more detailed studies on the role of MNEs affiliates in developing countries, with a special regard on the use of patents (Lopez A. 2009 p.25). In 2007, Lopez and Orlicki analysed patenting activities in Argentina. One of the main results of this research was that MNEs affiliates are likely to apply for patents in developing countries (Lopez A.; Orlicki E. 2007). The present findings on MNEs affiliates in ARIPO developing countries and LDCs seem to be a humble contribute towards a more complete understanding of the role of foreign firms' affiliates in the patenting context.

First, non-resident patent applications in the ARIPO region often involve parent companies of local affiliates. On the contrary, local affiliates do not demand patents in ARIPO, given that all

patents registered between 2001 and 2008 in this patent office derive from non-resident applicants¹⁰. Second, MNEs affiliates in the ARIPO region are predominant in developing country Members, but LDCs play a significant role in attracting affiliates of parent-applicant companies. Understanding the reasons behind these decisions is not an easy challenge, however the differences between Argentina and the ARIPO Members seem evident. The parent-affiliates patenting relationship seem reversed, with the parent companies as applicants and the affiliates not involved in the demand for protection. Furthermore, the presence of applicants' foreign affiliates is also relevant in LDCs and not only in the ARIPO developing countries. Hence, the role of MNEs affiliates in the ARIPO region should necessarily be different than the one identified by Lopez and Orlicki in South America.

However, other data are needed to comprehend the magnitude of these differences between the present research and other empirical studies. A fundamental step would be to collect data on patents at the national patent offices of the ARIPO Members. In fact, foreign affiliates may prefer to file patent applications only in the specific country of residence, leaving the regional office practices to the parent companies. As previously noted, these data are lacking, but the small amount of patents registered into selected national offices¹¹ suggests that these findings would not be completely reversed.

4.3 FUTURE DEVELOPMENTS: AN ANALYSIS OF THE PHARMACEUTICAL AND CHEMICAL SECTORS

Linking technology fields and FDI is extremely difficult and a dangerous conceptual hazard. In fact, technology fields are derived from the IPC classification, while FDI are categorized according to their pertaining economic sectors. However, linking specific non-resident patent applicants and parent companies to their economic sector seems a viable method to overcome this problem.

Through the analysis of non-resident patent applicants it was possible to identify a restricted number of MNEs which decide to protect their inventions in the ARIPO countries. As already extensively described, all top non-resident patent applicants in the ARIPO are private enterprises belonging to very specific economic sectors: the pharmaceutical and chemicals industries¹². Pharmaceutical firms are also relevant when parent-applicant MNEs are taken

¹⁰ See para. 3.1.1.

¹¹ See table 3.2.

¹² See table 4.1.

into account, given that 7 pharmaceutical enterprises are comprised in the list of parent-applicant MNEs in the ARIPO region¹³. The patenting activities of non-resident companies mainly concern two technology fields, pharmaceuticals and organic fine chemistry.

Pharmaceuticals and organic fine chemistry are technology fields that can be associated to specific economic sectors. In particular, pharmaceutical companies are clearly categorized in the pharmaceutical sector, while the organic fine chemistry roughly corresponds to the sector of manufacture of chemicals and chemical products. However, the chemicals sector is surely broader than the organic fine chemistry technology field (UNSD 2008 p.48). Indeed, this sector comprises:

- Manufacture of basic chemicals, fertilizers and nitrogen compounds, plastics and synthetic rubber in primary forms;
- Manufacture of pesticides and other agrochemical products;
- Manufacture of paints, varnishes and similar coatings, printing ink and mastics;
- Manufacture of soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations;

However, a detailed analysis of the chemicals sector seems an appropriate term of comparison to develop some hypothesis on the future of patenting activities in the ARIPO region.

UNCTAD published in 2011 a specific research on FDI in LDCs (UNCTAD, 2011b). For each LDC UNCTAD reported the largest cross-border M&A deals. Three cases should be remarked. In 2008, in Rwanda, a large M&A deal was concluded between SOPRA and the Norwegian Norfund SA in the pesticides and agri-chemicals industry. In Tanzania, Sekab Bioenergy Tanzania Ltd was acquired by the Swedish Ecodevelopment in Europe, a company operating in the industrial organic chemicals industry. These acquisitions highlight the interest of enterprises from developed countries to invest financial resources in the chemical sector in ARIPO LDCs. However, probably the most relevant M&A has occurred in Uganda, where Kampala Pharmaceutical Ind was acquired by the Indian Investor Group. This industrial operation seems to signal a new interest in the pharmaceutical sector derived from

¹³ See Table 4.2.

pharmaceutical companies originated in emerging economies. Should this interest gain importance in the future, and should pharmaceutical companies from developing countries penetrate the ARIPO markets, it is foreseeable that the major parent-applicant MNEs will increase their efforts to secure the profits of their inventions in the ARIPO countries. Hence, blocking and flooding patenting strategies may rise, as well as the commercial presence of pharmaceutical MNEs from richer countries.

The perception of a changing landscape is confirmed by the analysis of greenfield FDI projects that should be realized in the next years. From the information collected by UNCTAD, the ARIPO LDCs scenario should sensibly change in the future, with regard to the chemical sector.

Table 4.9 Greenfield FDI Projects announced in 2003-2010

| Host Country | Company | Home Country | Sector |
|--------------|-----------------------------------|------------------|-----------|
| Mozambique | Rashtryia Chemicals & Fertilizers | India | Chemicals |
| Rwanda | Crown-Berger | Kenya | Chemicals |
| Sudan | Emirates Bio Fertilizer Factory | United Arab Emir | Chemicals |
| Tanzania | Liming Chemical Industrial | China | Chemicals |
| Zambia | Furnace Fabrica | India | Chemicals |

Source: UNCTAD, April 2011

MNEs from emerging economies seem remarkably interested in penetrating the ARIPO markets through FDI in the chemical sector localized in several LDCs. New actors may revitalize the patenting activity in ARIPO, in particular by stimulating a defensive reaction of direct competitors from developed countries. In the end, it seems reasonable to assert that the patent demand is likely to increase in the next years.

CONCLUSIONS AND SUGGESTIONS FOR FUTURE RESEARCHES

This research described the patenting activities in the ARIPO context and highlighted their particular aspects. In particular, non-resident patent applications represent the vast majority of patent filings in ARIPO. Relying on WIPO official statistics, non-resident patent applications represented, on average, 96.8% of all patent demands between 1994 and 2008. However, WIPO statistics showed an important limitation: the lack of data coverage in the period 2002 - 2007. PATENTSCOPE data were crucial to fill this information gap and to correct the official statistics for 2001. Relying on PATENTSCOPE, the breakdown between resident and non-resident patent filings in ARIPO is even more impressive. In fact, all patent applications registered by PATENTSCOPE resulted of non-resident origin after an internet-based control of all patent applicants. However, if this finding was easily reached for enterprises, universities and public bodies patent applications, the same cannot be said when single inventors demanded a patent application. For this reason, a deeper analysis on single inventors should be conducted, in order to have a clear breakdown and confirm that the total amount of patent applications received by ARIPO in the period 2001-2008 are of non-resident origin.

The absolutely predominant role of non-resident patent applications in ARIPO can be considered an anomaly. Given that ARIPO Members are a mix of low and middle-income countries, it was reasonable to expect a resident patent rate between 20% and 50%, the world averages of low and middle-income countries non-resident patent rates. However, the relevance of this anomaly should not lead to excessive conclusions. In fact, resident applicants may prefer to file patent applications in their national patent offices instead of having recourse to a regional patent organization. This is the case of the European Patent Office, that receives only non-resident patent applications, while European resident patent applications are filed to the specific national patent offices. If the same rationale applies to ARIPO, the “anomaly” would not be so significant. Unfortunately, at present, no sufficient data are available to have a definitive answer to this hypothesis and further analyses are needed.

From an accurate analysis of patent applicants, it results that private enterprises are the main demandeurs of non-resident patent applications in ARIPO. Indeed, 77.75% of non-resident patent applicants are private companies, while single inventors represent 15.89% of applicants. Universities, research centres and public bodies account only for 6.36% of non-resident patent applicants. The role of private companies is even more relevant if we consider

that 87.38% of non-resident patent applications derive from this specific group of applicants.

The list of top applicants reports that the 5 most active non-resident patent applicants are pharmaceutical firms. All of them have their headquarters in developed countries.

A real divergence between ARIPO and the rest of the world patenting trends concerns the technology fields of ARIPO non-resident patent applications. Non-resident patent applications in ARIPO are concentrated in two technology fields: pharmaceuticals and organic fine chemistry. These two classes account for 45.8% of all non-resident patent applications in ARIPO. The same two technology fields represent on average 6.89% of patent applications worldwide. However, this comparison should be refined with further studies. First, global patents should be divided according to their resident or non-resident origin and only after this partition a specific classification on global non-resident patent applications by technology field should be operated. This classification would facilitate the comparison between two homogeneous subjects: non-resident patent applications in ARIPO and non-resident patent filings worldwide. Second, multiple IPC in ARIPO should be taken into account when calculating non-resident patent applications' pertaining field of technology.

The finding that pharmaceuticals and organic fine chemistry are the dominant technology fields of non-resident patent applications in ARIPO may signal that pharmaceutical firms have a market interest in some ARIPO countries. This consideration is strengthened by the fact that pharmaceutical firms are the main applicants in the ARIPO region. These results seem to contradict part of the empirical literature that described R&D-based pharmaceutical firms scarcely interested to most of the African countries (UNCTAD 2011a p.25).

The second part of the present research was devoted to understand which companies show a particular market interest in the ARIPO region and which Member States attract it. Specifically, this study inquired which MNEs realize their market interests through patenting activities in conjunction with an actual commercial presence in the ARIPO region. The result of a cross study of patent applicants and foreign affiliates in the ARIPO countries highlighted that 6.54% of non-resident patent applicants own at least one affiliate in the ARIPO region. The list of parent-applicant MNEs comprises the top 3 applicants. Hence, at least 27.07% of non-resident patent applications derives from companies with a certified market interest.

However, the top 3 applicants are not the companies with the most significant commercial presence in the ARIPO Members. Other enterprises, belonging to different industries than the top 3 applicants, have more affiliates in the ARIPO region and in more ARIPO countries. For this reason, it seems reasonable to infer that not only pharmaceutical companies play a major role in this context. In particular, companies involved in food and beverage productions, energy and automation technology or oil and gas provision have a more extended commercial presence in the ARIPO region. On the contrary, the role of companies pertaining to the mining sector is less relevant.

Some direct competitors of the top 3 non-resident patent applicants have a more extended commercial presence in the ARIPO region. For this reason, it seems reasonable to infer that at least a share of the top 3 non-resident patent applicants IP activities are driven by a flooding and blocking strategy.

The geographical distribution of parent-applicants' affiliates indicates that Kenya attracts most of the market interest of parent-applicant MNEs. However, the dominant Kenyan position blurs when specific group of countries are analysed. In particular, low-income countries seem to polarize the parent-applicants' market interest. If Kenyan affiliates are excluded, ARIPO low-income countries still account more affiliates than ARIPO lower and middle-income countries taken together. On the contrary, ARIPO developing countries have a weaker predominance over LDCs in attracting parent-applicants' market interest. Indeed, developing countries host more patent applicants' affiliates than LDCs, but Kenya is crucial to assure this predominance. If Kenyan affiliates are excluded from the computation, LDCs would attract more affiliates than ARIPO developing Members.

These results seem to widen the horizons of previous empirical studies. In particular, the role of MNEs affiliates in the ARIPO region seems different than the one identified by Lopez and Orlicki in South America (Lopez A.; Orlicki E. 2007). First, MNEs affiliates are passive subjects of the parent companies' patenting activities. Affiliates do not file patent applications in the ARIPO region, otherwise these applications would be registered as resident patent demands. Second, foreign affiliates seem to be more sensible to the income level of the host countries, rather than to their development status. When development stage is taken into account, specific studies on foreign affiliates should be focused not only on developing countries, but on LDCs too. In this context, future researches should aim at understanding

whether ARIPO is just an anomaly or not.

However, these findings on non-resident patent applicants should be approached as a partial analysis on market interest and patenting strategies in the ARIPO region. To have a more complete picture, it would be necessary to collect data on non-resident patent returns to the patentees. This study would be of crucial importance to identify the exact relevance of market interest in MNEs patenting decisions. Unfortunately, data are completely missing and, in the author's opinion, information on this matter will probably lack for many years.

Finally, an analysis of future greenfield FDI projects and M&A's already realized in ARIPO LDC countries seem to prospect a more dynamic scenario. Companies from emerging economies seem particularly interested in investing financial resources in the chemical and pharmaceutical sector. As a consequence, parent-applicant MNEs may react increasing their patenting activities in ARIPO.

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APPENDIX A LIST OF APPLICANTS

| | | |
|--|---|--|
| 22ND CENTURY LIMITED, LLC | BAYER CROPSCIENCE AG | CARBON RESOURCES LIMITED |
| 6282261 CANADA INC. | BB-DATA GESELLSCHAFT FUR INFORMATIONSSYSTEME MBH | CARNEGIE MELLON UNIVERSITY |
| ABB AB | | CARROLL Robert W. |
| ABDELRAHMAN Layla Zakaria | BECKMANN Alexander | CASE WESTERN RESERVE UNIVERSITY |
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| ADCOCK INGRAM LIMITED | BERKMANN Eliezer | |
| AECI LIMITED | BHARAT ELECTRONICS LTD | CAVIDI TECH AB |
| AGBEGNENOU Victor Kossikouma | BHP BILLITON INNOVATION PTY LIMITED | CELL-SHACK COMMUNICATIONS (PTY) LIMITED |
| AGOURON PHARMACEUTICALS, INC. | BHP BILLITON SA LIMITED | CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE (C.N.R.S.) |
| AL AMRI, Moosa Eisa | BILLITON INTELLECTUAL PROPERTY B.V. | CENTRO NACIONAL DE INVESTIGACIONES CIENTIFICAS (CNIC) |
| ALLAN JAMES YEOMANS | BILLITON SA LIMITED | |
| ALNET (PROPRIETARY) LIMITED | BIOCHEM PHARMA INC | CHEMICAL HOLDINGS INT. LTD |
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| AMERICAN ENERGY GROUP, INC | BIOPHARM GMBH | CHIRON CORPORATION |
| AMIDEX COUPLING SYSTEMS (PTY) LTD | BIOTICA TECHNOLOGY LIMITED | COFFOR INTERNACIONAL EXPLORAÇÃO DE PATENTES LDA |
| ANGLO AMERICAN CORPORATION OF SOUTH AFRICA LIMITED | BISCHOFF Gerlinde | COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION |
| ANGLO AMERICAN RESEARCH LABORATORIES (PTY) LIMITED | BLACK LIGHT POWER, INC. | |
| ANHYDRO LIMITED | BOARD OF TRUSTEES OF THE UNIVERSITY OF KENTUCKY | COMPACTGTL PLC |
| AnorMED INC. | BOART LONGYEAR INTERNATIONAL HOLDINGS, INC | COMPOSITE TECHNOLOGY CORPORATION |
| ANYWAY SOLID ENVIRONMENTAL SOLUTIONS (BARBADOS) LIMITED | BOEHRINGER INGELHEIM PHARMA GmbH & CO. KG | CONOCOPHILLIPS COMPANY |
| ARK THERAPEUTICS LTD | BONGJEONG CANTECH CO., LTD | CONSTRUCTION RESEARCH & TECHNOLOGY GMBH |
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| ASTRAZENECA AB | BRISTOL-MYERS SQUIBB COMPANY | CONTROLLED ENVIROMENTAL SYSTEMS CORPORATION |
| AUSMELT LIMITED | BRITANITE S/A- INDUSTRIAS QUIMACAS | CONVE LTD |
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| BAYER AKTIENGESELLSCHAFT | | |

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| D & E CRYO CC | FLEURFONTEIN MOUNTAIN ESTATES (PROPRIETARY) LIMITED | HARRIS Cecil Lionel |
| DAVY PROCESS TECHNOLOGY LIMITED | FLS AUTOMATION SOUTH AFRICA (PROPRIETARY) LIMITED | HEALTHPOINT, LTD |
| DEGUSSA AKTIENGESELLSCHAFT | FOURIEEugene | HEINEKEN TECHNICAL SERVICES B.V. |
| DEL ESTAL VILLARJose Maria | FRAUNHOFER -GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V | HELENLEE |
| DEMOLEFrédéric Jean-Pierre | FRIEDSHELF 339 (PROPRIETARY) LIMITED | HOECHST SCHERING AGREVO GMBH |
| DETON ENGINEERING (PROPRIETARY) LIMITED | FRYCO LTD | HÖGLUNDLennart |
| DIABETIC TRUST AG | FUGORichard J | HOLLIS-EDEN PHARMACEUTICALS, INC. |
| DIAMONDGeorge B. | FUNDAÇÃO OSWALDO CRUZ- FIOCRUZ | HOOREMANMichel |
| DIGOL INTERNATIONAL LTD | G.D. SEARLE & CO | HUHM Myung Ho |
| DISEASE CONTROL TEXTILES SA | GALLIONHerve | HUHTAMAKI RONSBERG Zweigniederlassund der Huhtamaki Deutschland GmbH & Co.KG |
| DR. ZWANEPinkie | GARFIELD INTERNATIONAL INVESTMENTS LIMITED | HUNTER PAINE ENTERPRISES, LLC |
| DRESSER INDUSTRIES, INC | GARNETT, INC. | ICAgen INC |
| DYNAMIC TELECOMMUNICATIONS, INC, | GAZALNabil Nasri | IDEC PHARMACEUTICALS CORPORATION |
| E. I. DU PONT DE NEMOURS AND COMPANY | GENEART AG | IDENIX (CAYMAN) LIMITED |
| ECODOSE HOLDINGS (PROPRIETARY) LTD | GENENTECH, INC | IMC-AGRICO COMPANY |
| ELAN PHARMACEUTICALS, INC | GENETIC IMMUNITY, LLC | IMPERIAL TOBACCO LIMITED |
| ELECTRICITE DE FRANCE (SERVICE NATIONAL) | GEOBIOTICS, LLC | INDIAN OCEAN MEDICAL INC. |
| ELECTRO-CHEMICAL TECHNOLOGIES LIMITED | GEORGIEFFMichael | INEOS USA LLC |
| ELECTROMETALS TECHNOLOGIES LIMITED | GEOX S.P.A. | INFECTIO RECHERCHE INC. |
| ELI LILLY AND COMPANY | GIBSONGeorge Desmond Orr | INFLAZYME PHARMACEUTICALS LIMITED |
| ENHOLD B.V. | GILEAD SCIENCES, INC | INHALE THERAPEUTIC SYSTEMS, INC. |
| ENVIRO OPTIONS (PROPRIETARY) LIMITED | GLAXO GROUP LIMITED | INNOVATIVE MEDICAL SERVICES. |
| EORIGINAL INC | GLAXO WELLCOME INC. | INNOVATIVE MET PRODUCTS (PTY) LIMITED. |
| ESCO CORPORATION | GLAXOSMITHKLINE BIOLOGICALS S.A | INOVAT S. AR.L. |
| ESKOM | GLEWWayne K | INSTITUT CURIE |
| ESSA AUSTRALIA LIMITED | GLOBAL DIE CASTING (PTY) LTD | INSTITUT DE RECHERCHE POUR LE DEVELOPPEMENT (IRD) |
| ESTABLECIMIENTO LAS MARIAS S. A. C. I. F. A | GOLDEN BRIDGE TECHNOLOGY INC | INSTITUTE OF ORGANIC CHEMISTRY AND BIOCHEMISTRY OF THE ACADEMY OF SCIENCES OF THE CZECH REPUBLIC |
| ETS A. DESCHAMPS ET FILS | GONZÁLEZ SALAZARJosé Luis | INSTITUUT VOOR AGROTECHNOLOGISCH ONDERZOEK (ATO-DLO) |
| EUGEN-OLSENJesper | GRABHERWolfgang | INTEC LTD |
| EURO-CELTIQUE, S. A | GRADING SYSTEMS (UK) LIMITED | INTERLAB CORP |
| EUROGENE LIMITED | GRAVESON ENERGY MANAGEMENT LTD | INTERNATIONAL FURAN TECHNOLOGY (PTY) LIMITED |
| EXPERT EXPLOSIVES (PROPRIETARY) LIMITED | GRAVITEC INSTRUMENTS LIMITED | INTERNATIONAL TECHNOLOGIES, LLC |
| EYETECH PHARMACEUTICALS | GREIF SOUTH AFRICA (PROPRIETARY) LIMITED | |
| FACEBradbury R | GTC BIOTHERAPEUTICS, INC | |
| FERONPATENT LIMITED | HANS MERENSKY HOLDINGS (PTY) LIMITED | |
| FIELDTURF TARKETT INC. | | |

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| IPCOR NV | LIMITED. | NORTH CAROLINA STATE UNIVERSITY |
| ISABIRYEMuranga Florence | MALTINChristopher | NORTHFIELD LABORATORIES, INC |
| ISAGRO S.P.A. | MANUEL BARRETOAVERO | NOVARTIS AG |
| ISHIHARA SANGYO KAISHA LTD | MANUEL DOS SANTOSDA PONTE | NOVARTIS INTERNATIONAL PHARMACEUTICAL LTD |
| IVAX DRUG RESEARCH INSTITUTE LTD | MARA - INSTITUT D. O. O. MBX SYSTEMS, INC. | NOVELIS, INC. |
| JACKSONEdward | McALPINEGilroy Clements | NOVELOS THERAPEUTICS, INC |
| JAGOTEC AG | McROBERTI Ian | NOVEXEL |
| JANSSEN PHARMACEUTICA N.V. | MEGAMEC.COM BENEFICIAL TRUST. | NVB INTERNATIONAL |
| JELAVICIvan | MERCK SANTE | NYCOMED IMAGING A/S |
| JENEIL BIOTECH, INC. | MERIAL LIMITED | O-STABLE PANEL SDN BHD. |
| JERVENT MINING & INDUSTRIAL SUPPLIES CC | MERLIN GERIN S.A. (PROPRIETARY) LIMITED | O'BRIENRobert Neville |
| JURA-TRADE KERESKEDELMI KFT. | MHATRE Ramesh Nana | OLOVSONGudmar |
| KARAMAY JINSHAN PETROCHEMICAL LIMITED COMPANY | MICROSCIENCE LIMITED | OMG CAUSE PTY LTD |
| KEBONY ASA | MINERALS TECHNOLOGIES INC | ORESUNDSDHOJ MEDICO APS |
| KENTAINERS LIMITED | MINTEK | ORTHO-MCNEIL PHARMACEUTICAL, INC |
| KHOURIAnthony | MOLEKULARE ENERGIETECHNIK AG | OSCILLATING SYSTEMS (PTY) LIMITED |
| KICKSTART-INTERNATIONAL, INC. | MONOTECH INTERNATIONAL, INC | OSI PHARMACEUTICALS INC., |
| KLAYMANAvi | MONSANTO EUROPE S.A | OSI PHARMACEUTICALS, INC. |
| KRONE GMBH | MULLERLance John | OTSUKA PHARMACEUTICAL CO., LTD. |
| KURTMehmet | MÜLLERNorbert | OUTOKUMPU OYJ |
| LABORATOIRE THERAMEX | MULTI OPERATIONAL SERVICE TANKERS INC | OXIANA LIMITED |
| LABORATOIRE THERAMEX S.A. | MWI CORPORATION | OY KWH PIPE AB |
| LABORATORIOS S. A. L. V. A. T., S. A | N.V. BELGACOM MOBILE S.A | PAGTER & PARTNERS INTERNATIONAL B.V. |
| LABORATORIOS VITA, S. A. | NAGRAVISION S. A. | PANACEA BIOTEC LIMITED |
| LACER, S.A. | NAMPAK PRODUCTS LIMITED | PATCHETT AG AIR LIMITED |
| LAURAS AS | NEED PHARMACEUTICALS S.R.L. | PENWEST PHARMACEUTICALS CO. |
| LAXARCO HOLDING LIMITED | NEGREGuy | PERCIVALDavid Richard |
| LEEHa Gon | NEKTAR THERAPEUTICS | PETROLEO BRASILEIRO S.A. - PETROBRAS |
| LES LABORATOIRES SERVIER | NESTLÉ WATERS MT | PFIZER INC |
| LG LIFE SCIENCES LTD | NET-RAC INVESTMENTS NO. 60 (PROPRIETARY) LIMITED | PFIZER IRELAND PHARMACEUTICALS |
| LIESvein Olaf | NEUROCRINE BIOSCIENCES, INC | PFIZER LIMITED |
| LIPOMEDICA EHF. | NEUROGEN CORPORATION | PFIZER PRODUCTS INC |
| LISZIEWICZJulianna | NEW YORK UNIVERSITY | PFIZER PRODUCTS INC and OSI PHARMACEUTICALS, INC. |
| LUPIN LIMITED | NEWBUILD LTD. | PHARMACIA & UPJOHN AB |
| M-I L. L. C. | NEXUS CORPORATION S.A | PHARMACIA & UPJOHN COMPANY |
| MADRIGAL CHAVARRIAAna Lidieth | NICASIO PAULINOMORA VALLEJO | PHARMACIA AB |
| MAERSK OLIE & GAS A/S Et al. | NICHOLAS PIRAMAL INDIA LIMITED | PHARMACIA CORPORATION |
| MAINLINE CORPORATE HOLDINGS LIMITED | NIPPON SODA | PHARMACIA ITALIA S.p.A. |
| MAKHTESHIM CHEMICAL WORKS LTD | NORDWAY LIMITED | |
| MAKKINKTECH (PROPRIETARY) | | |

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| PHELPS DODGE CORPORATION | ROMARK LABORATORIES, L.C. | SOLUTIA INC. |
| PHILLIPS PETROLEUM COMPANY | RONGVEDPaul | SONPaul |
| PHOENIX BIOSCIENCES, INC, | ROTHSCHILD'S ORTHOPEDICS, INC | SQUIRESMeryl |
| PICHLERAlois | S. C. JOHNSON & SON, INC | ST. JUDE CHILDRENS RESEARCH HOSPITAL |
| PIQUANTE BRANDS INTERNATIONAL (PROPRIETARY) LIMITED | SALAMAAmir | STANFORD ROOK LIMITED |
| PIRELLI CAVI E SISTEMI S.P.A. | SALBU RESEARCH AND DEVELOPMENT(PROPRIETARY) LIMITED | STAR SCIENTIFIC, INC |
| PLAASKEM (PROPRIETARY) LIMITED | SANOFI-AVENTIS | STAR SYRINGE LIMITED |
| PLACER DOME TECHNICAL SERVICES LIMITED. | SANOFI-SYNTHELABO | STATENS INSTITUTT FOR FOLKEHELSE |
| PLAN DESIGN INTERNATIONAL LLC | SARDARYANEDUARD | STYROPHEN INTERNATIONAL PTY LTD |
| PLATTECH PTY LTD | SASOL DYNO NOBEL (PTY) LIMITED | SUGEN, INC |
| POLYMER CONCRETE INDUSTRIES (PROPRIETARY) LIMITED | SBL VACCIN AB | SYNAPSE INTERNATIONAL S.A. |
| POWER TECHNOLOGIES INVESTMENT LIMITED. | SCHNEIDER ELECTRIC INDUSTRIES S. A | SYNGENTA LIMITED |
| PROMETIC BIOSCIENCES, INC. | SCHOELLER WAVIN SYSTEMS SERVICES GmbH | SYNGENTA PARTICIPATIONS AG |
| PROTOPAPAEvangelia | SCP EMBIU | TAKSeung - Ho |
| PROVITOLAAAnthony I | SCR PHARMATOP | TECSEC, INCORPORATED |
| PUBLIC WAREHOUSING COMPANY KSC | SERRASEdouard | TETRA LAVAL HOLDINGS & FINANCE S.A. |
| PUREUV (PROPRIETARY) LIMITED | SHAWThomas Jefferson | TEVA PHARMACEUTICAL INDUSTRIES LTD |
| QUEENSLAND UNIVERSITY OF TECHNOLOGY | SHELL INTERNATIONALE RESEARCH MAATSCHAPPIJ B.V. | THE COCA-COLA COMPANY |
| RANBAXY LABORATORIES LIMITED | SHIN POONG PHARMACEUTICAL CO. LTD. | THE DOE RUN COMPANY |
| RECORDATI IRELAND LIMITED | SHIRE CANADA INC. | THE REGENTS OF THE UNIVERSITY OF CALIFORNIA |
| REDMONDSanford | SIC SKAGEN INNOVATIONS CENTRE. | THE SCRIPPS RESEARCH INSTITUTE |
| REGENT COURT TECHNOLOGIES, LLC. | SILVERBarnard Stewart | THE UNIVERSITY OF MELBOURNE |
| REGENT COURT TECHNOLOGIES. | SILVERDavid Joshua | THERAVANCE, INC |
| RETRACTABLE TECHNOLOGIES INC. | SISTERS OF PROVIDENCE IN OREGON | TIBOTEC PHARMACEUTICALS LTD |
| RHODIA ACETOW GmbH | SMITHKLINE BEECHAM BIOLOGICALS S.A. | TOBIANSKYWilfred |
| RHONE - POULENC AGRO | SMITHKLINE BEECHAM CONSUMER HEALTHCARE GMBH | TRANSOCEAN OFFSHORE DEEPWATER DRILLING INC. |
| RHONE -POULENC RORER S.A | SMITHKLINE BEECHAM CORPORATION | TRANSPAC N.V. |
| RHONE-POULENC AGROCHIMIE | SMITHKLINE BEECHAM LABORATOIRES PHARMACEUTIQUES | TRE SIGMA S.R.L. |
| RHONE-POULENC JARDIN | SMITHKLINE BEECHAM P.L.C. | TST BIOMETRICS HOLDING AG |
| RICEPeter A. | SMITHNigel Paul Andrew | U.C. COATINGS CORPORATION |
| RICHTER GEDEON VEGYESZETI GYAR RT. | SNIECHOWSKIHugo José | UNILEVER PLC |
| RICKERJonathan C | SOCIETE DES PRODUITS NESTLE S.A. | UNION ESPANOLA DE EXPLOSIVOS, S.A. |
| RJR POLYMERS, INC. | SODA CLUB (CO2) SA | UNITED NATIONS DEVELOPMENT PROGRAMME (UNDP) |
| ROCKTEK LIMITED | SOLAR SOLUTIONS LLC | UNIVERSAL SAFETY RESPONSE, INC. |
| RODNEY WALTERBROUARD | | UNIVERSITA DEGLI STUDI DI CAGLIARI |
| | | UNIVERSITE DES SCIENCES ET |

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| TECHNOLOGIES DE LILLE | VIROCHEM PHARMA INC. | WMC RESOURCES LIMITED |
| UNIVERSITI SAINS MALAYSIA | VIRODENE PHARMACEUTICAL HOLDINGS (PTY) LTD | WORLDSPACE ,INC |
| UNIVERSITY OF ARKANSAS | VITALNER SPORT D.O.O | WORSLEY ALUMINA PTY LTD |
| UNIVERSITY OF IOWA RESEARCH FOUNDATION. | VOLUMAX (PTY) LTD | WRAIR (WALTER REID ARMY INSTITUTE OF RESEARCH) |
| UNIVERSITY OF LEEDS INNOVATIONS LIMITED | WALK PAK HOLDINGS N.V | WYETH |
| UNIVERSITY OF PRETORIA | WARNER-LAMBERT COMPANY | XACT-DESIGN & ENGINEERING PTY LTD |
| UNIVERSITY OF WESTERN ONTARIO | WARNER-LAMBERT COMPANY LLC | XCELLINK CORPORATION |
| VAN ELSHans Josef | WATER POWER INDUSTRIES AS | XSTRATA QUEENSLAND LIMITED |
| VAN LEER SOUTH AFRICA (PROPRIETARY) LIMITED | WATER RESEARCH COMMISSION | XYLECO ,INC |
| VELZEN HOLDINGS LIMITED | WEIR WARMAN LTD | ZAMBON GROUP S.P.A |
| VERITY, INC | WEIR-ENVIROTECH (PROPRIETARY) LIMITED | ZELMANGary Martin |
| VERTEX PHARMACEUTICALS INCORPORATED | WHISENANTBlake | ZENECA LIMITED |
| VESTERGAARD SA | WHITLOCKDavid R | ZHAOChaoying |
| VIRBAC S.A. | WINLOC AG | ZIMPLOW LIMITED |
| | WISMETHWolfgang | |
| | WM INTERNATIONAL LIMITED | |

APPENDIX B

LIST OF ARIPO IPC (IPC – N° OF PATENTS 2001-2008)

| | | | | | | | | | | | | | | | |
|------|------|------|---|------|---|------|---|-------|------|------|---|------|---|------|-----|
| A61K | 210 | F04D | 5 | C25C | 3 | C10L | 2 | A61K8 | 1 | B61G | 1 | D05B | 1 | F28D | 1 |
| C07D | 162 | A01K | 4 | C07D | 3 | C12P | 2 | A63F | 1 | B62D | 1 | D21C | 1 | F42B | 1 |
| A01N | 52 | A24B | 4 | E01C | 3 | E04C | 2 | B01D | 45 1 | B65C | 1 | E01B | 1 | G01R | 1 |
| C22B | 37 | A47J | 4 | E02F | 3 | E04H | 2 | B03B | 1 | B65F | 1 | E01F | 1 | G05D | 1 |
| C07C | 34 | A61F | 4 | F04B | 3 | F24J | 2 | B03C | 1 | C01D | 1 | E02B | 1 | G06Q | 1 |
| B65D | 29 | C10G | 4 | G02B | 3 | F27D | 2 | B03D | 1 | C03F | 1 | E02D | 1 | G07C | 1 |
| C07K | 22 | E21C | 4 | G06K | 3 | G01N | 2 | B07B | 1 | C07B | 1 | E05B | 1 | G07K | 1 |
| C12N | 19 | G01V | 4 | H01B | 3 | G02C | 2 | B08B | 1 | C08B | 1 | E06B | 1 | G07Q | 1 |
| C02F | 15 | A23C | 3 | H01F | 3 | G06F | 2 | B09B | 1 | C08J | 1 | E21G | 1 | H02H | 1 |
| A23L | 14 | A46B | 3 | H04B | 3 | G09F | 2 | B21D | 1 | C09 | 1 | F02B | 1 | H02P | 1 |
| A61M | 14 | A61B | 3 | H04Q | 3 | H01H | 2 | B22D | 1 | C10B | 1 | F02M | 1 | H04C | 1 |
| C07H | 11 | A61L | 3 | A23F | 2 | H01L | 2 | B25B | 1 | C10J | 1 | F03B | 1 | H04K | 1 |
| B01J | 10 | B01D | 3 | A23K | 2 | H02G | 2 | B25D | 1 | C11D | 1 | F04 | 1 | H04N | 1 |
| H04L | 9 | B27K | 3 | A24C | 2 | H02J | 2 | B25F | 1 | C12M | 1 | F16C | 1 | H04N | 1 1 |
| A01G | 7 | B29C | 3 | A47K | 2 | H02K | 2 | B28B | 1 | C12Q | 1 | F16H | 1 | HO5 | 1 |
| G07F | 7 | B63B | 3 | A61J | 2 | H04M | 2 | B29B | 1 | C13D | 1 | F16J | 1 | | |
| A61P | 6 | B67D | 3 | B02C | 2 | A01B | 1 | B29D | 1 | C21B | 1 | F16K | 1 | | |
| B65B | 6 | C01B | 3 | B05B | 2 | A01D | 1 | B30B | 1 | C21C | 1 | F16L | 1 | | |
| E04B | 6 | C04B | 3 | B23B | 2 | A21D | 1 | B60K | 1 | C22G | 1 | F21S | 1 | | |
| E21B | 6 | C06B | 3 | B28C | 2 | A23G | 1 | B60P | 1 | C23C | 1 | F23D | 1 | | |
| F42D | 6 | C07F | 3 | B32B | 2 | A23N | 1 | B60Q | 1 | CO6B | 1 | F24F | 1 | | |
| G01N | 33 6 | C07J | 3 | C01C | 2 | A43B | 1 | B60T | 1 | CO7C | 1 | F24H | 1 | | |
| A01M | 5 | C08L | 3 | C01F | 2 | A47G | 1 | B61C | 1 | CO7H | 1 | F25J | 1 | | |

APPENDIX C

PARENT COMPANIES OF AFFILIATES IN ARIPO MEMBERS

BOTSWANA

TRACK INVESTMENTS (PTY) LTD

AVENG LTDPULA HOLDINGS (PTY) LTD

MASSMART HOLDINGS LTD

CLICKS GROUP LTD

BARLOWORLD LTD

WILSON BAYLY HOLMES OVCON LTD

D P I HOLDINGS (PTY) LTD

WEIR TECHN AFRICA (PTY) LTD

TOTAL SOUTH AFRICA (PTY) LTD

PRETORIA PORTLAND CEMENT COMPANY LTD

SCALES GROUP

ENGEN LTD

KOHLER PAPER MERCHANTING LTD

THE BIDVEST GROUP LTD

MURRAY & ROBERTS LTD

PGSI GROUP (PTY) LTD

CLOVER INDUSTRIES LTD

FIRSTSTRAND LTD

COLLECT-A-CAN (PTY) LTD

Persetech Ltd

PUMP BRANDS (PTY) LTD

CASHBUILD MANAGEMENT SERVICES (PTY) LTD

CB Richard Ellis Group, Inc.

Kraft Foods Inc.

Atlas Copco AB

Scania AB

AB Volvo

PORTUGAL TELECOM, SGPS, S.A.

BARCLAYS PLC

DIMENSION DATA HOLDINGS PLC

BABCOCK INTERNATIONAL GROUP PLC

THE BOC GROUP LTD

Siemens AG

GAMBIA

Hertz Global Holdings, Inc.

GALP ENERGIA, SGPS, S.A.

MGBOKO INVESTMENTS (NIGERIA) LTD

MOHAMMED ABDULMOHSIN AL-KHARAFI & SONS CO

ITALMOBILIARE SPA

GRIMALDI COMPAGNIA DI NAVIGAZIONE SPA

G4S PLC

STANDARD CHARTERED PLC

ROYAL DUTCH SHELL PLC

DIAGEO PLC

CFAO

FINANCIERE DE L ODET

A.P. Møller - Mærsk A/S

Deutsche Post AG

Georg von Holtzbrinck GmbH & Co.KG

ABB Ltd

SHS Trade AG

Panalpina Welttransport (Holding) AG

GHANA

Gold Fields of South Africa Ltd

BARNATO EXPLORATION LTD

Wishart Investments Inc.

H. J. Heinz Company

S. C. Johnson & Son, Inc.

Energizer Holdings, Inc.

Golden Star Resources Ltd.

The Interpublic Group of Companies Inc

Verizon Communications Inc.

Kraft Foods Inc.

Hertz Global Holdings, Inc.

Best Buddies International, Inc.

Ernst & Young LLP

Cummins Inc.

ECOBANK TOGO SA

Aarhuskarlshamn AB (Publ)

Modern Times Group MTG AB

Atlas Copco AB

SANDVIK AB

OLAM INTERNATIONAL LIMITED

Gamma Holding N.V.

Go Acquisition B.V.

HOUTHANDEL G. WIJMA & ZONEN B.V.

Stichting Administratiekantoor van Aandelen Grontmij N.V.

Koninklijke Haskoning Groep B.V.

Zuivelcoöperatie FrieslandCampina U.A.

Valcon Acquisition Holding (Luxembourg) SARL

GSM Gold SA

MARUBENI CORPORATION

EXCEL COURIER ITALIA SRL

GRIMALDI COMPAGNIA DI NAVIGAZIONE SPA

Gee Aar Lamocoat Private Limited

WPP PLC

G4S PLC

INTERTEK GROUP PLC

AEGIS GROUP PLC

PRICEWATERHOUSECOOPERS LLP

BARCLAYS PLC

EQUIPTECH LTD

THE SHELL TRANSPORT & TRADING CO LTD

CP HOLDINGS LTD

BT GROUP PLC

STANLEY PLUMBING LTD.

CLUFF RESOURCES LTD

OFFICE OF THE HIGH COMMISSIONER FOR GHANA

TAYLOR WIMPEY PLC

ASTRAZENECA PLC

PZ CUSSONS PLC

UNILEVER PLC

DIAGEO PLC

SABMILLER PLC

BRITISH AMERICAN TOBACCO (SOUTH AMERICA) LTD

CADBURY SCHWEPPE'S P L C

L'OREAL

AIR LIQUIDE SA ETU EXPLOIT PROCEDES GC

FINANCIERE DE L ODET

CFAO

PPR

TOTAL SA

SOCIETE GENERALE

WENDEL

VEOLIA ENVIRONNEMENT

AMADEUS IT HOLDING SA

A.P. Møller - Mærsk A/S

Hellmann Worldwide Logistics GmbH & Co. KG

Deutsche Post AG

HeidelbergCement AG

BASF SE

Allianz SE

Georg von Holtzbrinck GmbH & Co.KG

MERCK KG auf Aktien

Walther Schröter (GmbH &

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| Co.) | 411 The Gospel | Greif International Holding Supra II C.V. | RECKITT BENCKISER GROUP PLC |
| Münchener Rückversicherungs- Gesellschaft AG in München | Wm. Wrigley Jr. Company | Tetra Laval Holdings B.V. | UM & S HOLDINGS LTD |
| MAN SE | Corn Products International, Inc. | TNT N.V. | TATE & LYLE PLC |
| AIF VI Euro Holdings, L.P. | Colgate-Palmolive Company | Fatburen Investment B.V. | DIMENSION DATA HOLDINGS PLC |
| Chongqing Daxing Investment Co., Ltd. | Pfizer Inc. | Koninklijke Philips Electronics N.V. | GUINNESS PEAT GROUP PLC |
| Nestlé S.A. | S. C. Johnson & Son, Inc. | ESSAR TELECOM KENYA HOLDINGS LIMITED | COMPAIR HOLDINGS LTD |
| L'Arche Holding SA | Ecolab Inc. | DE CHAZAL DU MEE & COMPANY LIMITED | PZ CUSSONS PLC |
| Panalpina Welttransport (Holding) AG | International Flavors & Fragrances Inc. | BAI CO (MTIUS) LTD | GEORGE WILLIAMSON & CO. LTD |
| ABB Ltd | Illinois Tool Works Inc. | Valcon Acquisition Holding (Luxembourg) SARL | E D & F MAN HOLDINGS LTD |
| Dufry AG | Crown Holdings, Inc. | AGILITY PUBLIC WAREHOUSING CO. KSC | AVIS EUROPE PLC |
| SGS SA | Eaton Corporation | SUMITOMO CORPORATION | EXEL PLC |
| Novartis AG | Becton, Dickinson and Company | TOYOTA TSUSHO CORPORATION | CAMELLIA PLC |
| Keegan Resources Inc | Xerox Corporation | MITSUI & CO., LTD. | BT GROUP PLC |
| Red Back Mining Inc | United Parcel Service, Inc. | MITSUBISHI CORPORATION | G4S PLC |
| Akroteri-Ashanti Gold Mines Inc. | Carlson Holdings, Inc. | DAIICHI SANKYO COMPANY, LIMITED | WPP PLC |
| Clovis Company Limited | Eastman Kodak Company | YKK CORPORATION | STRAMONGATE ASSETS PLC |
| AUSDRILL LIMITED | Bonsu & Bordon International, Inc. | SOJITZ CORPORATION | ROYAL INSURANCE HOLDINGS PLC |
| ADAMUS RESOURCES LIMITED | Ca, Inc. | RELIANCE INDUSTRIES LIMITED | STRAMONGATE LTD |
| CAPE WEST GROUP PTY LIMITED | International Business Machines Corporation | 3i Infotech Limited | RSA INSURANCE GROUP PLC |
| <u>KENIA</u> | Cisco Systems, Inc. | RAYMOND LIMITED | LONRHO PLC |
| Multichoice Ltd | NCR Corporation | KYRIAZIS S.A. | LADBROKES PLC |
| Berger Group Holdings Inc | Zimmer Holdings, Inc. | COMPASS GROUP PLC | INTERCONTINENTAL HOTELS GROUP PLC |
| Hertz Global Holdings, Inc. | Energizer Holdings, Inc. | CADBURY SCHWEPPE'S P L C | WPP GROUP PLC. |
| Mars, Incorporated | Singer Worldwide, LLC | LONMIN PLC | PRICEWATERHOUSECOOP ERS LLP |
| The Interpublic Group of Companies Inc | The Procter & Gamble Company | FAMCO HOLDINGS LTD | CP HOLDINGS LTD |
| International Data Group, Inc. | EAST AFRICAN DEVELOPMENT BANK | PEARSON PLC | OLD MUTUAL PLC |
| Chevron Corporation | Shelys Pharmaceuticals Ltd | DE LA RUE PLC | STANDARD CHARTERED PLC |
| Jpmorgan Chase & Co. | Atlas Copco AB | THE SHELL TRANSPORT & TRADING CO LTD | BARCLAYS PLC |
| Citigroup Inc. | SANDVIK AB | ROYAL DUTCH SHELL PLC | STANBIC AFRICA HOLDINGS LTD |
| AON Corporation | Telefon AB L M Ericsson | UNILEVER PLC | RENTOKIL INITIAL PLC |
| American International Group, Inc. | AB SKF | DIAGEO PLC | THE TRITON FUND II L.P. |
| Best Buddies International, Inc. | SSAB AB | SABMILLER PLC | AEGIS GROUP PLC |
| Ernst & Young LLP | PORTUGAL TELECOM, SGPS, S.A. | BRITISH AMERICAN TOBACCO P.L.C. | MOWLEM PLC |
| United Nations | Comcraft International, S.A. | GLAXOSMITHKLINE PLC | CARILLION PLC |
| Ruddick Corporation | Norsk Hydro ASA | | WPP GROUP PLC |
| Wells Fargo & Company | Atradius N.V. | | ALCATEL LUCENT |
| Google Inc. | Stichting Administratiekantoor van Aandelen Grontmij N.V. | | |
| | TMF Group Holdco B.V. | | |

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| CFAO | Syngenta AG | Hertz Global Holdings, Inc. | (PTY) LTD |
| PPR | Kuoni Reisen Holding AG | Universal Corporation | SASOL LTD |
| TOTAL SA | DAC Aviation International Ltée | AON Corporation | STEELEDALE GROUP LTD |
| SANOFI-AVENTIS | Reuters (Canvas) Holdings 1 Limited | Monsanto Company | AVENG LTD |
| FINANCIERE DE L ODET | Nabors Industries Ltd. | Sara Lee Corporation | ILLOVO SUGAR LTD |
| PAI PARTNERS | FLEMINGO INTERNATIONAL LIMITED | Alliance One International, Inc. | RICH BAY DEVELOPMENTS (PTY) LTD |
| SOCIETE LAFARGE | JACKYS ELECTRONICS L C | Carlson Holdings, Inc. | JLM INDUSTRIES (SOUTH AFRICA) (PTY) LTD |
| Wärtsilä Oyj Abp | LESOTHO | One Equity Partners, LLC | EUROP STEEL CC |
| INTERNATIONAL CONSOLIDATED AIRLINES GROUP SA | BARLOWORLD LTD | Zain International B.V. | C G SMITH LTD |
| GAS NATURAL SDG SA | EDCON HOLDINGS (PTY) LTD | TRANSAFRICA HOLDINGS OF MAURITIUS | Xerox Corporation |
| A.P. Møller - Mærsk A/S | VODAFONE GROUP PLC | Tayub Corporation Ltd | Hertz Global Holdings, Inc. |
| Gram Holding Vojens A/S | LIBERIA | MOBILE TELECOMMUNICATIONS COMPANY KSC | AON Corporation |
| A/S Cimbria | The Uniqueness of Christ International Ministries Inc | RICOH COMPANY,LTD. | Colgate-Palmolive Company |
| BPW Bergische Achsen KG | MITSUI ENGINEERING & SHIPBUILDING CO., LTD. | VALMORE PAINTS (U.K.) LTD | Government of The United States |
| maxingvest ag | MARUBENI CORPORATION | GLOBAL TEA & COMMODITIES LTD | Omnicom Group Inc. |
| Bayer AG | MITSUI & CO., LTD. | UNILEVER PLC | Greif, Inc. |
| Henkel AG & Co. KGaA | SUMITOMO CORPORATION | COMPASS GROUP PLC | Universal Corporation |
| BASF SE | SUMITOMO MITSUI FINANCIAL GROUP, INC. | PRICewaterhouseCOOPERS LLP | AB Volvo |
| Linde AG | GRIMALDI COMPAGNIA DI NAVIGAZIONE SPA | CAMELLIA PLC | Vattenfall AB |
| Heidelberger Druckmaschinen AG | DIAGEO PLC | OLD MUTUAL PLC | MOTA - ENGIL, SGPS, S.A. |
| MAN SE | BP P.L.C. | THE SHELL TRANSPORT & TRADING CO LTD | CIMPOR - CIMENTOS DE PORTUGAL, SGPS, S.A. |
| Jos. Hansen & Soehne GmbH | MARIDIVE & OIL SERVICES SAE | G4S PLC | MANUEL FINO, SGPS, S.A. |
| Rohde & Schwarz GmbH & Co. KG | A.P. Møller - Mærsk A/S | WITTINGTON INVESTMENTS LTD | BANCO COMERCIAL PORTUGUÊS, S.A. |
| Siemens AG | HeidelbergCement AG | SOCIETE BIC | GRUPO VISABEIRA, SGPS, S.A. |
| Joh. Achelis & Söhne GmbH | Deutsche Post AG | PPR | NUTASA, GESTÃO E PARTICIPAÇÕES, S.A. |
| Bundesrepublik Deutschland | Golar LNG Limited | CFAO | GALP ENERGIA, SGPS, S.A. |
| Deutsche Post AG | MALAWI | SOCIETE LAFARGE | PORTUCEL - EMPRESA PRODUTORA DE PASTA E PAPEL, S.A. |
| Hellmann Worldwide Logistics GmbH & Co. KG | The Cold Chain Pvt Ltd | FINANCIERE DE L ODET | MOVEX - PRODUÇÃO, VENDA E ALUGUER DE MÓDULOS PRÉ-FABRICADOS, S.A. |
| KRONES AG | BLOW-MOLDERS NATAL | A.P. Møller - Mærsk A/S | TEXTO EDITORES, LDA |
| Georg von Holtzbrinck GmbH & Co.KG | STANDARD BANK GROUP LTD | METRO AG | SGC - SGPS, S.A. |
| AIF VI Euro Holdings, L.P. | ILLOVO SUGAR LTD | Bayer AG | CONSTRUÇÕES EDGAR MILLER, LDA |
| Gansu State-owned Asset Investment Group Co., Ltd. | GMA SUBSIDIARY TRADING 1 (PTY) LTD | Georg von Holtzbrinck GmbH & Co.KG | SF - SOCIEDADE DE CONTROLO, S.A. |
| Nestlé S.A. | ECOMNET CC | Deutsche Post AG | ATECNIC - ACTIVIDADES TÉCNICAS INDUSTRIAIS, |
| Kühne Holding AG | KPMG L.L.P. | AIF VI Euro Holdings, L.P. | |
| Panalpina Welttransport (Holding) AG | Xerox Corporation | PALADIN ENERGY LTD | |
| SGS SA | | MOZAMBIQUE | |
| ABB Ltd | | CORNASTONE TECHNOLOGY HOLDINGS | |
| Novartis AG | | | |
| Schindler Holding AG | | | |

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| S.A. | ERS LLP | CELSIUS HOSPITALITY SERVICES (PTY) LTD | OLD MUTUAL PLC |
| TEIXEIRA DUARTE, S.A. | RIO TINTO PLC | GIJIMA GROUP LTD | BP P.L.C. |
| DIRECÇÃO GERAL DO TESOURO E FINANÇAS | ASTRAZENECA PLC | OLD MUTUAL PUBLIC LIMITED COMPANY | ANGLO AMERICAN PLC |
| MADRE - EMPREENDIMENTOS TURÍSTICOS, S.A. | CHARTER INTERNATIONAL PLC | FIRSTRAND LTD | ROLLS-ROYCE GROUP PLC |
| BANCO BPI, S.A. | BP P.L.C. | PHAPHAMA HOLDINGS (PTY) LTD | A.P. Møller - Mærsk A/S |
| EDIFER - INVESTIMENTOS, SGPS, S.A. | BRITHOL MICHCOMA INTERNATIONAL LTD | PIONEER FOOD GROUP LTD | Linde AG |
| CONDURIL - ENGENHARIA, S.A. | VODAFONE GROUP PLC | IMPERIAL HOLDINGS LTD | Siemens AG |
| Grupo Caetano | BT GROUP PLC | TOTAL SOUTH AFRICA (PTY) LTD | Kühne Holding AG |
| OPWAY - SGPS, S.A. | ENRC AFRICA HOLDINGS LTD | BUSINESS CONNEXION GROUP LTD | ABB Ltd |
| PARIPAR - SOCIEDADE GESTORA DE PARTICIPAÇÕES SOCIAIS, S.A. | RECKITT BENCKISER PLC | IT4AFRICA SA (INCORPORATED IN SWITZERLAND) | <u>RWANDA</u> |
| FERPINTA IMOBILIÁRIA - SOCIEDADE DE GESTÃO DE BENS IMOBILIÁRIOS, S.A. | G4S CORPORATE SERVICES LTD | DE BEERS GROUP SERVICES (PTY) LTD | RELIANCE INDUSTRIES LIMITED |
| SOCIEDADE COMERCIAL OREY ANTUNES, S.A. | FINANCIERE DE L ODET | PFG BUILDING GLASS (PTY) LTD | THE ARAB CONTRACTORS OSMAN AHMED OSMAN & CO. |
| SALVINTUR - SOCIEDADE DE INVESTIMENTOS TURÍSTICOS, SGPS, S.A. | TOTAL SA | NOVAGROUP (PTY) LTD | Hellmann Worldwide Logistics GmbH & Co. KG |
| HIGEST - INVESTIMENTOS IMOBILIÁRIOS E PARTICIPAÇÕES, S.A. | NOVASAUR | STEINHOFF INTERNATIONAL HOLDINGS LTD | SGS SA |
| ZON MULTIMÉDIA - SERVIÇOS DE TELECOMUNICAÇÕES E MULTIMÉDIA, SGPS, S.A. | SOCIETE BIC | EDCON HOLDINGS (PTY) LTD | L'Arche Holding SA |
| Greif International Holding Supra II C.V. | SACYR VALLEHERMOSO SA | SOUTHERN ELECTRICITY COMPANY LTD | Sucafina SA |
| RANDSTAD HOLDING nv | PESCANOVA SA | SHOPRITE HOLDINGS LTD | <u>SIERRA LEONE</u> |
| INNODIS LTD | A.P. Møller - Mærsk A/S | MACPHAIL NAMIB HOLDINGS | Carlson Holdings, Inc. |
| MITSUBISHI CORPORATION | Alcatel-Lucent Denmark A/S | MASSMART HOLDINGS LTD | Humanitarian Aid In Complex Emergencies International |
| MARUHA NICHIRO HOLDINGS, INC. | Deutsche Post AG | TRANSUNION HPI (PTY) LTD | MOBILE TELECOMMUNICATIONS COMPANY KSC |
| COOP MURATORI & CEMENTISTI CMC DI RAVENNA | Siemens AG | REMGRO-CAPEVIN BELEGGINGS LTD | GRIMALDI COMPAGNIA DI NAVIGAZIONE SPA |
| PARMALAT SPA | Bayer AG | TAEUBER AND CORSSSEN (PTY) LTD | G4S PLC |
| ADHUNIK METALIKS LIMITED | Gfk-Nürnberg Gesellschaft für Konsum- Markt- und Absatzforschung e.V. | UNITRANS HOLDINGS (PTY) LTD | STANDARD CHARTERED PLC |
| LOGICA PLC | Schindler Holding AG | PEG INVESTMENT HOLDINGS (PTY) LTD | BT GROUP PLC |
| SABMILLER PLC | ABB Ltd | THE STANDARD BANK OF SOUTH AFRICA LTD | ASTRAZENECA PLC |
| G4S PLC | Nestlé S.A. | AVENG LTD | PZ CUSSONS PLC |
| PRICEWATERHOUSECOOP | Kühne Holding AG | Kraft Foods Inc. | A.P. Møller - Mærsk A/S |
| | Syngenta AG | | UNIWORLD WORLDWIDE LTD |
| | ODBINV Investimentos S/A. | | <u>SOMALIA</u> |
| | Exmar NV | | Deutsche Welthungerhilfe e.V. |
| | BHP BILLITON LIMITED | | Hellmann Worldwide Logistics GmbH & Co. KG |
| | <u>NAMIBIA</u> | | <u>SUDAN</u> |
| | THE BIDVEST GROUP LTD | | Xerox Corporation |
| | CROSSROADS DISTRIBUTION HOLDINGS (PTY) LTD | | Singer Worldwide, LLC |
| | ALLAN GRAY GROUP LTD | | ABDUL LATIF JAMEEL IMPORT AND DISTRIBUTION CO |
| | MURRAY AND ROBERTS HOLDINGS LTD | | |
| | FIDELITY SERVICES GROUP LTD | | |

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| AFIA INTERNATIONAL FOR FOOD OIL FACTORY | PARMALAT SPA | DESBRO KENYA LIMITED | AEGIS GROUP PLC |
| GOVERNMENT OF SAUDI ARABIA | <u>TANZANIA</u> | Roschal Ltd | BARCLAYS PLC |
| ZAVER PETROLEUM CORPORATION LTD | ILLOVO SUGAR LTD | EAST AFRICAN BREWERIES LTD | STANDARD CHARTERED PLC |
| GOVERNMENT OF MALAYSIA | Standard Bank of South Africa Ltd | JASWINDER SINGH ENTERPRISES | PRICEWATERHOUSECOOPERS LLP |
| MOBILE TELECOMMUNICATIONS COMPANY KSC | AON Corporation | TRI CLOVER INDUSTRIES (KENYA) LIMITED | RENTOKIL INITIAL PLC |
| A. MENARINI INDUSTRIE FARMACEUTICHE RIUNITE SRL | Hertz Global Holdings, Inc. | TREADSETTERS TYRES LTD | RECKITT BENCKISER PLC |
| THE SHELL TRANSPORT & TRADING CO LTD | Alliance One International, Inc. | KENYA UNITED STEEL (2006) COMPANY LIMITED | INTERTEK GROUP PLC |
| SABMILLER PLC | The Clorox Company | METSEC | SOCIETE LAFARGE |
| FINANCIERE DE L ODET | Universal Corporation | AIR KENYA AVIATION LIMITED | MAFFRE RENE |
| A.P. Møller - Mærsk A/S | Citigroup Inc. | KENYA SERVICE & COMPUTER INDUSTRIES LTD | CFAO |
| MERCK KG auf Aktien | Best Buddies International, Inc. | CAR AND GENERAL (KENYA) LTD | A.P. Møller - Mærsk A/S |
| BAUER AG | Picture That LLC | MITSUBISHI CORPORATION | maxingvest ag |
| Hellmann Worldwide Logistics GmbH & Co. KG | Monsanto Company | PANASONIC CORPORATION | Deutsche Lufthansa AG |
| Schindler Holding AG | Pfizer Inc. | GIOVANNI AGNELLI E C. SAPA | Bayer AG |
| Syngenta AG | Colgate-Palmolive Company | RELIANCE INDUSTRIES LIMITED | Hellmann Worldwide Logistics GmbH & Co. KG |
| MACNELS GULF FZCO | Xerox Corporation | TATA INTERNATIONAL LIMITED | Siemens AG |
| <u>SWAZILAND</u> | Carlson Holdings, Inc. | ADHUNIK METALIKS LIMITED | Deutsche Post AG |
| TONGAAT HULETT LTD | The AES Corporation | ANGLOGOLD ASHANTI (BIBIANI) LIMITED | Joh. Achelis & Söhne GmbH |
| TWK GENOMINEERDES (PTY) LTD | ASTRA PHARMA (U) LTD | SABMILLER PLC | HeidelbergCement AG |
| CLOVER INDUSTRIES LTD | Scania AB | ROLLS-ROYCE GROUP PLC | Jos. Hansen & Soehne GmbH |
| THE BIDVEST GROUP LTD | Norrlands Etanolkraft AB | UNILEVER PLC | BAUER AG |
| SAPPI LTD | Atlas Copco AB | THE BOC GROUP LTD | Henkel AG & Co. KGaA |
| NAMIB MILLS INVESTMENTS (PTY) LTD | Telefon AB L M Ericsson | COMPASS GROUP PLC | KMCL Holdings Ltd |
| MACSTEEL HOLDINGS (PTY) LTD | SANDVIK AB | CDC GROUP PLC | AIF VI Euro Holdings, L.P. |
| MACMILLAN SOUTH AFRICA (PTY) LTD | SADOLIN PAINTS (OMAN) LTD | GLAXOSMITHKLINE PLC | Kühne Holding AG |
| ILLOVO SUGAR LTD | C.P. Pharmaceuticals International C.V. | U.A.C. HOLDINGS LTD | SGS SA |
| SUN INTERNATIONAL LTD | TELEKOM MALAYSIA BERHAD | STABLEWOOD POWER VENTURES (HOLDINGS) LTD | Syngenta AG |
| UNITED PLANTATIONS AFRICA LTD | AXIATA GROUP BERHAD | BIWATER HOLDINGS LTD | Barrick Gold Corporation |
| BURMAH CASTROL SOUTH AFRICA (PTY) LTD | CELCOM (MALAYSIA) BERHAD | VODAFONE GROUP PLC | Dominion Petroleum Limited |
| STEFANUTTI STOCKS (PTY) LTD | NASH HOLDING (MAURITIUS) LTD | BP P.L.C. | EUSTON CO. LTD. |
| MERDJAN HEALTH SPAS S A CC | SUKARI INVESTMENT COMPANY LTD | CO-INVESTMENT NO. 5 LP INCORPORATED | Herwig Tretter Beteiligungsgesellschaft m.b.H. & Co KG |
| GALP ENERGIA, SGPS, S.A. | Valcon Acquisition Holding (Luxembourg) SARL | | RESOLUTE MINING LIMITED |
| | Millicom International Cellular SA | | <u>UGANDA</u> |
| | Zimmer Investment Luxembourg SARL | | Mobile Telephone Networks Pty Ltd |
| | PHOENIX OF EAST AFRICA ASSURANCE COMPANY LTD | | STANDARD BANK GROUP LTD |
| | | | ENERGOPROJEKT HOLDING A.D. |
| | | | Virgin Group Holdings Limited |

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| AON Corporation | STANDARD CHARTERED PLC | First National of Nebraska, Inc. | BARCLAYS PLC |
| The Interpublic Group of Companies Inc | ASTRAZENECA PLC | Crown Holdings, Inc. | BP P.L.C. |
| Hertz Global Holdings, Inc. | UNILEVER PLC | Cisco Systems, Inc. | UNILEVER PLC |
| United Nations | SABMILLER PLC | Government of The United States | ROLLS-ROYCE GROUP PLC |
| Universal Corporation | BRITISH AMERICAN TOBACCO (SOUTH AMERICA) LTD | Pfizer Inc. | RESACA LTD |
| The Clorox Company | PRICEWATERHOUSECOOPERS LLP | General Cable Corporation | CP HOLDINGS LTD |
| The AES Corporation | COMPUTER & EQUIPMENT SERVICES | Emerson Electric Co. | SABMILLER PLC |
| Monsanto Company | G4S CORPORATE SERVICES LTD | Sara Lee Corporation | BRITISH AMERICAN TOBACCO P.L.C. |
| Sara Lee Corporation | FINANCIERE DE L ODET | Seaboard Corporation | ASTRAZENECA PLC |
| Carlson Holdings, Inc. | FRANCE TELECOM | Dunavant Enterprises, Inc. | PGI GROUP LTD |
| PORTUGAL TELECOM, SGPS, S.A. | SOCIETE LAFARGE | Alliance One International, Inc. | CDC GROUP PLC |
| Stichting Administratiekantoor van Aandelen Grontmij N.V. | WENDEL | Colgate-Palmolive Company | VEDANTA RESOURCES PLC |
| Valcon Acquisition Holding (Luxembourg) SARL | A.P. Møller - Mærsk A/S | Chevron Corporation | PRICEWATERHOUSECOOPERS LLP |
| SILVER STAR MANUFACTURERS LTD | Joh. Achelis & Söhne GmbH | Universal Corporation | CHLORIDE GROUP P L C |
| KENYA STATIONERS LIMITED | Deutsche Post AG | Citigroup Inc. | TELENT PLC |
| EAST AFRICAN BREWERIES LTD | Neumann Gruppe GmbH | AON Corporation | RECKITT BENCKISER GROUP PLC |
| LONRHO MOTORS EAST AFRICA LTD | Linde AG | SANDVIK AB | KAL TIRE (UK) LTD |
| CMC MOTORS GROUP LTD | maxingvest ag | AB SKF | AEGIS GROUP PLC |
| FARM ENGINEERING INDUSTRIES LIMITED | Henkel AG & Co. KGaA | Atlas Copco AB | STANDARD CHARTERED PLC |
| CAR AND GENERAL (KENYA) LTD | Bayer AG | Telefon AB L M Ericsson | N S C EUROPE LTD |
| UNGA GROUP LIMITED | Georg von Holtzbrinck GmbH & Co.KG | Norconsult Holding AS | SOCIETE BIC |
| Rai Holdings Ltd | AIF VI Euro Holdings, L.P. | C.P. Pharmaceuticals International C.V. | SOCIETE LAFARGE |
| NATION MEDIA GROUP LTD | Panalpina Welttransport (Holding) AG | Teknol B.V. | CFAO |
| HENKEL POLYMER COMPANY LIMITED | ABB Ltd | T & D Colours & Commodities B.V. | Deutsche Post AG |
| FUJI CO., LTD. | SGS SA | Koninklijke Philips Electronics N.V. | Hellmann Worldwide Logistics GmbH & Co. KG |
| TOYOTA TSUSHO CORPORATION | Kühne Holding AG | MAGISTER LIMITED | BPW Bergische Achsen KG |
| IMPREGILO SPA | M.U.S.T. Privatstiftung | CONSOLIDATED CONTRACTORS CO. (KUWAIT) W.L.L. | Siemens AG |
| CENTRAL BANK OF INDIA | UNIWORLD FZE | TOYOTA TSUSHO CORPORATION | Jos. Hansen & Soehne GmbH |
| RELIANCE COMMUNICATIONS LIMITED | ZAMBIA | HITACHI, LTD. | Georg von Holtzbrinck GmbH & Co.KG |
| AEGIS GROUP PLC | SERAPH HOLDINGS | ILLOVO SUGAR IRELAND | Joh. Achelis & Söhne GmbH |
| BARCLAYS PLC | METOREX LTD | TATA SONS LIMITED | Linde AG |
| DIAGEO PLC | THE SOUTH AFRICAN BREWERIES LTD | DREAM FACORY INTERNATIONAL | AIF VI Euro Holdings, L.P. |
| E D & F MAN HOLDINGS LTD | BARLOWORLD LTD | G4S PLC | J&W Investment AG |
| | PARMALAT INVESTMENTS (PTY) LTD | SECURICOR PLC | Glencore Holding AG |
| | ENERGOPROJEKT HOLDING A.D. | INVENSYS PLC | Kühne Holding AG |
| | Black & Veatch Holding Company | CADBURY SCHWEPPE'S P L C | SGS SA |
| | | RECKITT BENCKISER PLC | ABB Ltd |
| | | | First Quantum Minerals Ltd |
| | | | RHI AG |

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| EQUINOX MINERALS LIMITED | TOREKS ULUSLARARASI TASIMA HAVA KARGO KURYE HIZM VE TIC LTD STI | UNILEVER PLC | RIDGE MINING LTD |
| <u>ZIMBABWE</u> | | BRAMBLES HOLDINGS UNLTD | GLAXOSMITHKLINE PLC |
| ENERGOPROJEKT HOLDING A.D. | AB SKF | GUINNESS PEAT GROUP PLC | ROYAL DUTCH SHELL PLC |
| AON Corporation | Atlas Copco AB | RECKITT BENCKISER PLC | SOCIETE LAFARGE |
| Hertz Global Holdings, Inc. | SANDVIK AB | CRODA INTERNATIONAL PLC | COMPAGNIE DE SAINT-GOBAIN |
| H. J. Heinz Company | Kholdingovaya Kompaniya Suikholding ZAO | COSTAIN GROUP PLC | A.P. Møller - Mærsk A/S |
| Black & Veatch Holding Company | EFACEC CAPITAL, SGPS, S.A. | THE BOC GROUP LTD | Linde AG |
| Sara Lee Corporation | BATA (BN) B.V. | PRICEWATERHOUSECOOPERS LLP | AIF VI Euro Holdings, L.P. |
| Cisco Systems, Inc. | Ekaprin (Nig)Ltd. | STANDARD CHARTERED PLC | Nestlé S.A. |
| Universal Corporation | G & N Trading International Ltd | | ABB Ltd |
| Omnicom Group Inc. | | | Kühne Holding AG |