India's policies to attract FDI in R&D

Freie wissenschaftliche Arbeit

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II. List of Abbreviations

BoA	Board of Approval
BTP	Bio-Technology Park
BPO	Back Office Processing
CCEA	Cabinet Committee of Economic Affairs
CII	Confederation of India Industry
CSIR	Council of Scientific and Industrial Research
DEA	Department of Economic Affairs
DGFT	Directorate General of Foreign Trade
DIPP	Department of Industrial Policy and Promotion
DoIT	Department of Information Technology
DSIR	Department of Scientific and Industrial Research
EHTP	Hardware Technology Park
EOU	Export Oriented Unit
FC-GPR	Foreign Collaboration
FC-IL	Foreign Collaboration-Industrial License
FDI	Foreign Direct Investment
FIIA	Foreign Investment Implementation Authority
FIPB	Foreign Investment Promotion Board
FTC	Fast Track Committee
IBEF	India Brand Equity Foundation
IEM	Industrial Entrepreneur Memoranda
IPA	Investment Promotion Agency
IPR	Intellectual Property Rights
IT	Information Technology
ITES	Information Technology Enabled Services
KPO	Knowledge Process Outsourcing
R&D	Research and Development
Rs	Indian Ruppe

RBI	Reserve Bank of India
S&T	Science and Technology
SEZ	Special Economic Zone
SIA	Secretariat for Industrial Assistance
STP	Software Technology Park
STQC	Standardization Testing and Quality Certification
TIFAC	Technology Information, Forecasting and Assessment Council
TFYP	Tenth Five Year Plan
TRIPS	Trade-related Aspects of Intellectual Property Rights
UNCTAD	United Nations Conference on Trade and Development
WTO	World Trade Organization

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1. Introduction

1.1. Background

For the last 30 years the world has experienced a steady increase in foreign direct investment (FDI) cashflows.[1] According to the "United Nations Conference on Trade and Development" (UNCTAD), an intergovernmental forum whose activity is, among others, to help developing countries integrate to the world economy, FDI inflows are the biggest component of the external financing of developing countries. Actually, in the period 1998-2002 the share of FDI rose from 30% to 82% of all capital flows entering them.[2] Arguably, FDI acts as a major driver for their development. The soundness of the latter argument becomes apparent if the definition of FDI is taken into consideration, which reads investment involving long-term relationship, lasting interest and control by a foreign enterprise of an enterprise residing in another economy.[3]

The aforementioned increase of FDI towards developing countries prompts competition among them in order to attract a share of the cashflows.[4] Moreover, as it is well understood that innovative activity is an essential factor to sustain growth and development, countries compete for a more targeted part of FDI inflows, namely the one that focuses on research and development (R&D). Indeed, investments in R&D abroad have turned to a mandate for international companies and are growing fast.[5] Reasons for that are, on the one hand, because some adaptation to local technologies and customs is necessary in order to sell in host countries, and on the other, because R&D activity follows the general trend of fragmenting production activities in order to place them where they can be performed most efficiently—be it cost- or talent-driven. Thus, in an ever more globalizing and more competitive world, the effort of countries to attract FDI in general, and in R&D in particular, cannot be left to chance.

[1] Brakman St. et al (2005), P. 140
[2] United Nations Conference on Trade and Development (2004), P. 24
[3] cf. ibid, P. 32
[4] World Investment Report: Transnational Corporations and the Internationalization of R&D, 2005, P. 6-8
[5] United Nations Conference on Trade and Development (2005), P. xxvi

1.2. Scope of study

India, which stands in the focus of this study, has made itself renowned for its performance in terms of FDI in the service sector, such as call centres or telemarketing—broadly known as back office processing (BPO). Parallel to that, India increases its importance in much more sophisticated activities such as R&D or other high-end services—generally known as knowledge process outsourcing (KPO). Actually, such is the importance of India in the latter field that the leading business magazine The Economist claims that no big international company can do without an India strategy today.[6]

The scope of this paper is to help understand the policies that India employs to attract R&D investments, the reasons that lie behind these policies and, ultimately, their effectiveness. Another product of this study is to help identify the way some of these policies are communicated to the public, and the way they are brought into reality by the different authorities of the Indian state. Where applicable, this study will point out any shortcomings or inconsistencies identified during the research, and will proceed with recommendations to overcome them.

1.3. Structure of study

The task to identify and separate a country's specific policy to attract FDI in R&D is not an easy one. Firstly, because the latter belongs by definition to the wider policy to attract FDI and, thus, it is largely influenced by its regulations and procedures. Actually, FDI in R&D inflows represent generally a small portion of the wider FDI inflows in developing countries (Indeed, the share of R&D spending of foreign affiliates in India in 1999 represented only 3.4% of their total expenditures).[7] Secondly, identifying what exactly constitutes R&D expenditure is problematic as such.[8] For example, expenditures on testing equipment should be allocated to manufacturing or R&D? International experience has also shown that R&D centers are not typically stand-alone departments of a company that operates thousands of miles away. They are rather parts of wider industrial complexes, many of whom have been established as purely production sites in the first place. This is why the correlation between preceding general FDI and succeeding FDI in R&D of the same company is strong.[9] For all aforementioned reasons, an examination of India's FDI

[6] The Economist (2006): "Survey: A business in India; Now for the hard part"
[7] United Nations Conference on Trade and Development (2005), P. 127
[8] cf. ibid. P. 216
[9] United Nations Conference on Trade and Development (2005), P. 212

policies in their entity is firstly introduced in this study, followed by a closer look on the specifics of FDI in R&D. More specific:

a. In chapter 2 the policies and procedures that govern the FDI inflows entering India are presented. In Figure 1 at the end of this chapter, an effort is made to visualize all these procedures.

b. In chapter 3 India's FDI policy is taken under closer examination. Some shortcomings about the way this policy is communicated to the public are pointed out, followed by inconsistencies and pitfalls of the policy as such. At the end of this chapter, the effectiveness of the general FDI policy is examined.

c. In chapter 4 India's policy to attract FDI in R&D is presented. It starts with India's Science and Technology (S&T) policy to understand the priorities of the Indian state, and stretches to areas such as promotion activities to market India's knowledge-intensive investment opportunities or the status of the Intellectual Property Rights (IPRs).

d. In chapter 5 the various factors presented in chapter 4 are closely examined for their scope. Some pitfalls are also presented in the communication of this policy to prospective investors. At the end of this chapter, the effectiveness of the FDI in R&D policy is examined.

e. In chapter 6, some recommendations for improvement, both for the general FDI and the FDI in R&D policy, are suggested.

f. In chapter 7, the findings of previous chapters are summarized and concluded.

2. Presentation of FDI policy

There are four different parameters which determine the specific procedure that a prospect FDI inflow follows upon entering India. These parameters are the Industry/ Sector that the FDI intends to be invested in; the FDI Equity Cap, which is the percentage of foreign equity in the investment; the Entry Route that the investment is required to follow; and the need or not for Industrial License for the investment (Figure 1). How these parameters interact and affect each other is described in § 2.1 – 2.4.

What is more, a number of special schemes offered by the Indian government offer some special incentives and facilities to attract FDI. Although these schemes have some things in common with the parameters of § 2.1 – 2.4, they fall ultimately under different procedures. They are described in § 2.5.[10]

2.1. Industry/ Sector of investment

The Indian Ministry of Commerce and Industry has split the whole industry spectrum in 27 different categories that range from investments in Airports and other Construction Projects to Atomic Minerals, and from Telecommunications and Broadcasting to Banking and Insurance investments.[11] Depending on the sector, different combinations in terms of the height of allowable foreign equity, the applicable Entry Route, and the requirement or not for Industrial License are provisioned, which in turn lead to different FDI application and approval procedures.

2.2. FDI Equity Cap

India's FDI policy acknowledges four different equity cap categories for foreign investments. These are up to 26%; up to 49%; up to 76%; and up to 100%. For each of the 27 industries/ sectors mentioned in § 2.1, different equity caps apply. What is more, the consequences of each sector-cap combination are not the same for all sectors.[12] The effects of these combinations are exemplified by the following:

[10] The reader is strongly encouraged to read § 2.1 – 2.5 while keeping in mind the general scheme of FDI in India presented in Figure 1.
[11] Secretariat for Industrial Assistance, FDI Manual (2006), Annex. 1
[12] cf. ibid, Annex. 1

a. There are sectors where up to 100% FDI equity is allowed, e.g. construction development projects. That means that there is no equity limit to the undertakings in this sector.

b. In other sectors the equity cap determines the upper limit of the allowable FDI, e.g. insurance activities have an allowable equity cap of up to 26% –above that FDI is not allowed as such.

c. On the other hand, there are sectors where exceeding the equity cap means a different route for the FDI approval, e.g. for basic and cellular communications FDI equity above 49% means more paperwork and time for FDI approval compared to equity below 49% (please refer to paragraph 2.3).

2.3. FDI Entry Route

Depending on the industry/ sector the prospect FDI will be invested in and the percentage of foreign equity in the investment, the FDI inflow is required to follow either the Automatic or the Government Route for its approval. As the routes' names themselves imply, the Automatic intents to be quicker and easier than the Government Route.[13] They comprise different application materials submitted at different Indian authorities:

a. Under the Automatic Route notification–not prior approval–of the Reserve Bank of India (RBI) office in the region of the FDI undertaking within 30 days of remittances receipt is required. To do so the Foreign Collaboration FC-GPR form is required.[14] An example is FDI in Insurance activities with an allowable equity cap of up to 26%, where the above described RBI notification procedure applies.

b. Under the Government Route FDI approval is considered by the Ministry of Finance, Department of Economic Affairs (DEA), Foreign Investment Promotion Board (FIPB). The application form for the FIPB approval is the Foreign Collaboration-Industrial License (FC-IL) form, which should submitted with the FIPB at DEA in New Delhi, or with Indian

[13] Secretariat for Industrial Assistance, FDI Manual (2006), Annex. 1
[14] Reserve Bank of India (2003), Format: URL

Missions around the world to be further forwarded to FIPB. No fee is payable. The Finance Minister considers proposed projects of up to Rs. 6 billion, whereas projects above that are considered by the Cabinet Committee of Economic Affairs (CCEA). A time period of about 30 days is estimated for the Government's decision. An example is FDI in Electronic Aerospace and Defense Equipment, where the above described procedure applies.[15]

2.4. Industrial License requirement

In addition to the considerations of § 2.1 – 2.3, there is the provision that some industrial undertakings need Industrial License to operate. This depends on parameters such as the sector of undertaking and/or existence of regional restrictions in the place of investment. The following procedure applies:

a. Industrial undertakings exempt from the requirement of Industrial License have to submit the Industrial Entrepreneur Memoranda (IEM) with the Ministry of Commerce and Industry, Department of Industrial Policy and Promotion (DIPP), Secretariat for Industrial Assistance (SIA) in New Delhi along with a Rs. 1,000 fee for up to 10 items proposed to be manufactured in the same unit.[16] The fee is increased by Rs. 250 for each proposed item exceeding 10. This serves the purpose of notifying the Ministry for commencing of industrial activity and no actual approval is necessary.[17] For example, FDI in Coffee Processing and Warehousing falls under the IEM procedure, thus requiring simple notification of the Ministry of Commerce and Industry.

b. Industrial undertakings that require compulsory Industrial License have to submit the FC-IL form with the Ministry of Commerce and Industry, DIPP, SIA in New Delhi along with a Rs. 2,500 fee. In brief, the sectors that fall under this provision are the Defense Industry; the Tobacco Industry; and Businesses reserved for the Small Scale Sector. A time period of about 30-45 days is estimated for the Ministry's final decision.[18] For example, FDI in Electronic Aerospace and Defense Equipment requires industrial licensing, thus requiring approval by the Ministry of Commerce and Industry.

[15] Secretariat for Industrial Assistance, FDI Manual (2006), Annex. 1
[16] Secretariat for Industrial Assistance, Industrial Entrepreneur Memorandum (1998), P.1
[17] Secretariat for Industrial Assistance, FDI Manual (2006), § 2.8
[18] Secretariat for Industrial Assistance, FDI Manual (2006), § 2.7

c. Undertakings that belong to industries without compulsory licensing but fall under geographical restrictions, namely 25 km proximity to an urban area, still need to submit the FC-IL form with the SIA.

2.5. Special schemes

Apart from the schemes mentioned in § 2.1 – 2.4 the Indian government has introduced some additional schemes to attract FDI. The basic idea behind these schemes is to provide simplified procedures for development and operation with the objectives to generate economic activity, promote exports of goods and services, create employment and develop modern infrastructure facilities.[19]

2.5.1. Special Economic Zones

The Indian government has introduced the Special Economic Zones (SEZ) Policy in 2000, which was later amended with the SEZ Act 2005 (in actual effect since February 2006). SEZs are considered, in terms of trade operations, as foreign territory, thus providing duty free imports of capital goods and materials, as well as, tax holidays against exports.[20] More specific, the developer of a SEZ, which is possible to come from the Private, Public or Joint Sector, enjoys incentives such as:

a. Single window clearance procedure
b. Income tax holidays
c. Exception form custom duties for the development of the SEZ.

The set up of a SEZ requires approval by the Board of Approval (BoA), a body consisting of 19 members all of which are at the level of the Secretaries of various Ministries, which nonetheless is a single window procedure. Originally 10 (!) copies of the application are submitted with the Chief Secretary of State where the SEZ is to be established, who forwards it, along with comments, within 45 days to the BoA for the final decision. While in operation the SEZ is headed by the Development Commissioner.[21]

[19] Department of Commerce (2007), Format: URL
[20] Secretariat for Industrial Assistance, FDI Manual (2006), § 8.1
[21] Department of Commerce (2007), Format: URL

2.5.2. Special units

Special Units such as Export Oriented Units (EOUs), Electronics Hardware Technology Parks (EHTPs), Software Technology Parks (STPs), and Bio-Technology Parks (BTPs) aim at enhancing the export potential of India, while providing impetus to the respective industry each unit refers to.[22] These units enjoy a variety of entitlements:

a. Income tax holidays, 100% for the first five years and 50% for the next five
b. Other tax holidays (e.g. 50% of ploughed back profits)
c. Reimbursement in domestic fuels
d. Realization of export proceeds within 12 months.[23]

The procedure for set up of these units varies according to the sector the FDI is to be invested in. For EOUs the application FORM F is submitted to the Development Commissioner of the SEZ along with a Rs. 5,000 fee. More specific:

a. For EOUs that do not require industrial licensing (please refer to § 2.4), the Development Commissioner accords automatic approval within 15 days.[24]

b. For EOUs that require compulsory licensing or are in the R&D and IT Information Technology (IT) sectors, approval by BoA and DIPP is required. A time period of 45 days is estimated for the final decision.[25]

The difference between the procedure for EHTPs/ STPs/ BTPs and the one for EOUs lies with the application receivers. For EHTPs and STPs the form is not submitted with the Development Commissioner, but rather with an officer designated by the Ministry of Communication and Information Technology, Department of Information Technology (DoIT) along with a Rs. 5,000 fee. More specific:

[22] Secretariat for Industrial Assistance, FDI Manual (2006), § 8.13
[23] Department of Commerce, (2007): "Foreign Trade Policy 01.9.2004 – 31.03.2007", P. 61-62
[24] cf. ibid, P. 61-62
[25] The FDI Manual (2006) states EOU-proposals are not granted automatic approval. Rather, applications have to be submitted with the SIA in DIPP, not with BoA. Nevertheless, in the Handbook of Procedures of the Ministry of Commerce and Industry, § 6.3.3, P. 99 reads that permission from both authorities is needed.

a. For proposals that do not require compulsory industrial licensing the designated officer accords automatic approval within 15 days.[26]

b. For proposals that require industrial licensing the Inter-Ministerial Committee is eligible for the final decision. A time period of 45 days is estimated for it.

On the other hand, the officer eligible the approval of BTPs is designated by the Ministry of Science and Technology, Department of Biotechnology (DoB), upon notification of the Ministry of Commerce and Industry, Directorate General of Foreign Trade (DGFT).[27]

[26] Secretariat for Industrial Assistance, FDI Manual (2006), § 8.14
[27] Department of Commerce (2007): "Foreign Trade Policy 01.9.2004 – 31.03.2007", P. 68

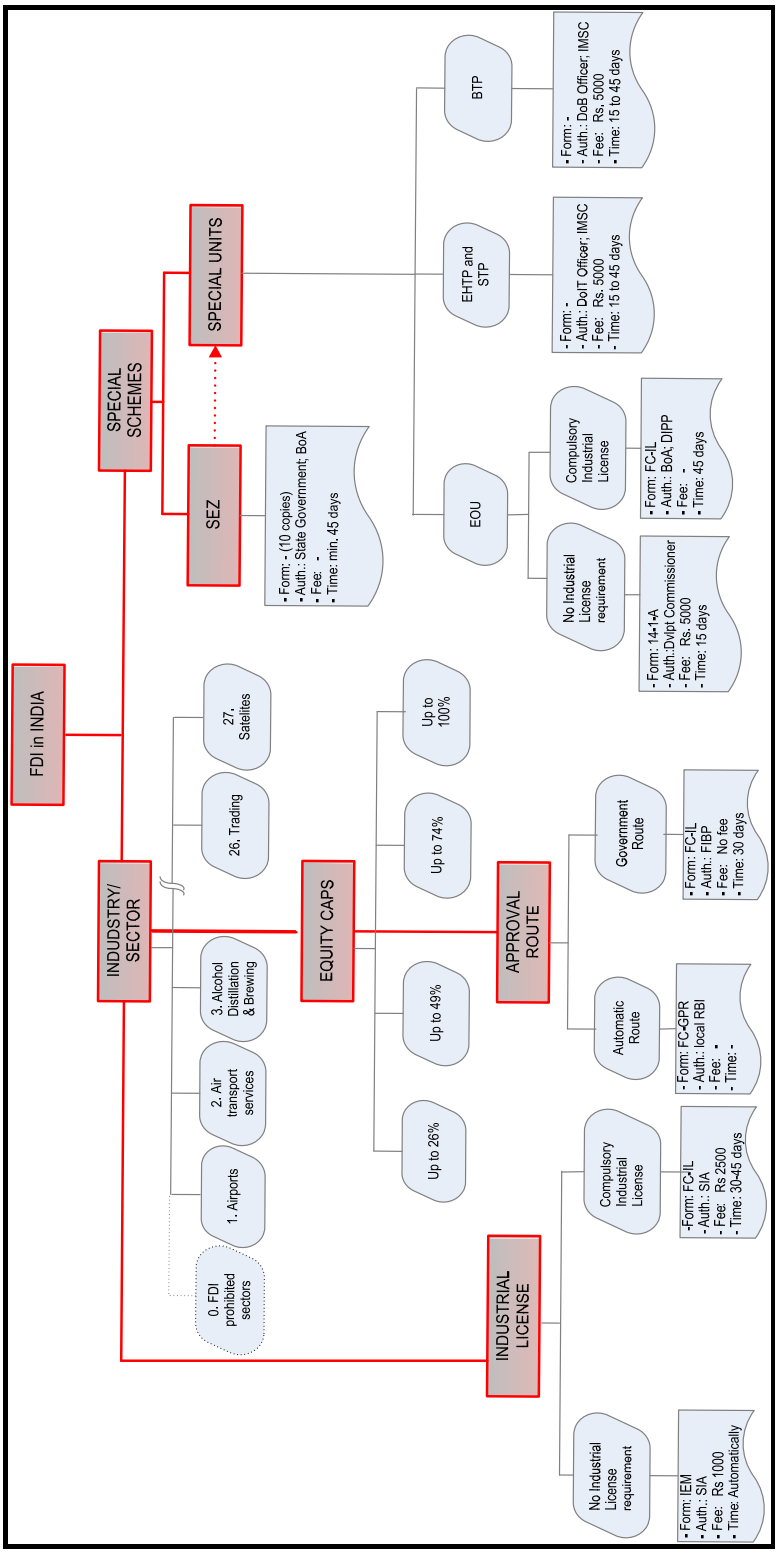

Figure 1. The red thread of India's FDI procedures[28]

[28] Source: Investing in India; Foreign Trade Policy

3. Examination of FDI policy

As already mentioned in § 1.3 the very scope of trying to attract FDI in R&D cannot be fully separated from the general FDI policy. Thus, in this chapter a first examination of India's FDI policies is introduced. In chapters 4 and 5 the focus will be mainly on India's FDI in R&D policies.

3.1. Complexity of FDI policy

In the course of chapter 2 an effort was made to track India's FDI procedures and map them in Figure 1 in order to provide an overview about them. Although the book "Investing in India – Foreign Direct Investment – Policy and Procedures (FDI Manual)", published by the Indian Ministry of Industrial Policy and Promotion as a general FDI guide, employs a rather comprehensive approach in describing India's FDI policies, its reader–in effect the prospective investor–has a hard time in developing an overview about them. The reason for that could be found in the complexity inherent in India's FDI policies as such. This complexity is also reflected in the way this policy is communicated to the public. The subject of § 3.1.1 to 3.1.3 is to comment on that.

3.1.1. Communication complexity of FDI policy

In today's world, a great tool to inform the public about FDI policy is the internet and the various government websites. The main website where information about India's FDI policy can be obtained is the official site of India's Ministry of Commerce and Industry, Department of Industrial Policy and Promotion (dipp.nic.in). Here the potential investor can find a high amount of information concerning India's FDI rules; as of 12.06.2007 the site's map contained 14 divisions and 98 subdivisions. But it could be argued that this exactly high amount of information and lack of a systematic presentation make it quite hard for the reader to filter what is relevant and what not for his/her potential investment. For example, among the 14 different divisions mentioned above one can find Acts; Schemes; Policies; Policy Notifications; and Investor Guidance, all of which aim at presenting India's FDI rules. Furthermore, the 47 subdivisions that fall under the aforesaid six categories range from html files on "The Industrial Policy" and on "The Industries (Development and Regulation) Act, 1951" to PDF files on "Rationalisation of FDI Policy" and on "The Winning Moves…doing Business in India". If the language difficulty is added on top of these all—ones needs a perfect command of the English language to fully understand the meaning of the writings—it becomes apparent that a considerable amount of time and effort is needed in order to sort out the relevant pieces that the prospective investor actually needs for his FDI proposal.

In addition to the above, the Indian FDI policy is reviewed on a continued basis and changes in sectoral policy/ equity caps are notified through Press Notes by DIPP.[29] The number of published Press Notes in the last three years has been 6 in 2005; 7 in 2006; and 3 up until June 2007. This continuous review falls under the effort of the Indian government to further liberalize its FDI policies, which appears reasonable in an era of increasing globalization. For example, the latest Press Note of 2007 deals with enhancing the equity cap for the telecom industry from 49% to 74%, which demonstrates a move to further open the sector to foreign investments.[30] Nevertheless, the fact that prospect investors cannot rely on well-in-advance communicated rules and regulations, but need to keep themselves updated with the latest changes in sectorwise policy, adds an additional level of difficulty in order to follow India's FDI policy.

As comprehensive—though complex—in terms of FDI policy the DIPP website is, it does not include information about Special Schemes, such as SEZs, EOUs, EHTPs, STPs, and BTPs (please refer to § 2.5). The information relevant to them is communicated through a different website of the Indian government (sezindia.nic.in). Since all these Special Schemes aim at providing extra incentives to attract FDI, especially when concerning FDI in R&D, this website is arguably of equal importance for informing the prospective investor as the one of DIPP. Here, a similar pattern of continuous policy updating is found as well. Thus, one can find the "SEZ Act 2005", the "SEZ Rules 2006", the "SEZ Rules 2006 - First Amendment" and the "SEZ Rules 2006 - Second Amendment", all of which deal with the policy concerning the SEZs. What is more, all of these publications have been issued within a period of less than 2 years.[31] This sequence resembles the continuous review of FDI polices through Press Notes mentioned above. Thus, a similar communication difficulty for the prospective investor in terms of acquiring updated information exists here as well.

A second communication issue about SEZs is the difficulty to acquire detailed information of how to proceed with their setting up. On the one hand, in the Handbook of Procedures of the Ministry of Commerce and Industry the policy relating to SEZs is not to be found, although the whole chapter 7

[29] Secretariat for Industrial Assistance, FDI Manual (2006), § 1.4
[30] Secretariat for Industrial Assistance, FDI Manual (2006), § 1.1
[31] These are four different documents, published on 23.06.2005; 10.02.2006; 10.08.2006; and 16.03.2007 of 53; 94; 3; and 7 pages respectively. They include information not only about SEZs, but about all special units as well.

is actually dedicated to them. There it is rather stated that the publication “SEZ Rules 2006” is the policy guide dedicated for the SEZs. On the other hand, in the SEZ website where all the rules for the setting up of SEZs are supposedly to be found, under the title “Procedure for setting up of SEZs” the message that the site is, still, under construction appears. These two facts leave the prospect investor in effect without guidance on how to proceed with the SEZ approval.

3.1.2. Inherent complexity of FDI policy

In chapter 2 an effort was made to describe India’s FDI policy, which is visualized in Figure 1. A simple view of the figure already gives a feeling about the complexity of the Indian FDI policy. Based on it some interesting things about the multiplicity of procedures have been identified:

a. There is a high number of combinations for the finally applicable FDI approval procedure. This is due to the fact that each of the two main areas for the Indian FDI, the Industry area on the one hand and the Special Scheme area on the other (the left- and right-hand side of Figure 1 respectively), is further subdivided into other sub-areas, creating different approval routes:

i. Especially the Industry side is divided into as many as 27 different industrial sectors, with each one of them subject to up to two (out of a total number of four) different equity caps, which pinpoint the need or not for government approval. To make things more complicated a separate procedure for industrial license exists in parallel with all the above.

ii. The Special Scheme area is less complex. There exists the wider division into the Special Economic Zones on the one hand and the Special Units on the other, which are further divided into 3 different categories. A thing worth noticing here are the different authorities responsible for each one of them (please refer to point b. hereunder).

b. Depending on factors, such as the industry to be invested in; the amount of foreign equity; or whether the FDI falls under special schemes or not, there are as many as 9 different Indian authorities that have approval rights in terms of foreign investment proposals.

c. Depending on factors similar to those mentioned in b. there are 7 different application forms to be filled in order to apply for FDI approval. What is more, not all of them are easily accessible.[32]

d. Upon handing in of application material to the applicable Indian authority(-ies), a payment is in most cases needed. Because of the fact that different procedures apply the range of fees for filing a FDI application is from Rs. 0 to Rs. 5,000 (€ 92.5).[33]

e. Following point d., the waiting time for approval upon filing an application ranges from immediate (automatic approval) to 45 days.

Of course, not all steps of India's FDI policy are as complicated as implied by the above listing. An example here is the consistency between the industries that fall under the Government Route (even under the lowest amount of foreign equity), and the industries that require Industrial Licensing. Thus, manufacturing of tobacco and its substitutes; manufacturing of electronic aerospace and defense equipment; and manufacturing of items reserved for the Small Scale Sector, which all fall under the Government Route (even for the lowest amount of foreign equity), require at the same time Industrial Licensing.[34] That means that instead of filling different application forms only one – the FC-IL application form– has to be filled. Nevertheless, even here some inconsistencies are to be found:

a. The FC-IL has to be submitted to FIPB for Government Approval where no fee is needed and with a waiting period of 30 days, whereas the same FC-IL has to be submitted to SIA for the Industrial License with a required fee of Rs. 2,500 (€ 46.25) and a waiting period of up to 45 days (Figure 1). In other words, for the same undertaking the same form has to be submitted to different authorities and with different fees and time horizons.

[32] The visit of various government websites made the collection of just 4 out 7 possible.
[33] Exchange Rate (www.XE.com), Format: URL, Enquiry: 14.06.2007
[34] Secretariat for Industrial Assistance, FDI Manual (2006), § 2.1

b. The consistency between industries under the Government Route and those requiring Industrial Licensing is valid only one way. That means that there are industrial sectors for which Industrial Licensing is needed but fall under the Automatic Route. These sectors are Distillation and Brewing; Industrial Explosives; and various Hazardous chemicals.[35] It could be argued here that, in terms of application facilitation, there is no point in having these industries under the Automatic Route. The major advantage of this route is that the Indian Government and its FC-IL form are substituted by the simple notification of local RBI office and the filling of the FC-GPR form (please refer to § 2.3). Nevertheless, although these industries fall under the Automatic Route, investors still need to fill the FC-IL form and submit it to the Indian government in order to acquire Industrial License. Thus, it becomes evident that in these cases all facilities of the Automatic Route—less bureaucracy, quicker procedures, no fees paid—are compromised by the need for Industrial License. Actually, the Indian government acknowledging the inconsistency between Automatic Route and Industrial Licensing considers leveling off the Industrial License requirement for alcohol brewing, which proved to be a damper for foreign investments in this industry.[36]

c. Even for the simplest case, that is an industry under the Automatic route combined with no need for Industrial License, a third parameter could complicate the approval procedure. This applies when the proposed location of the undertaking attracts location restrictions which demand Industrial Licensing for their own reasons (please refer to § 2.4. point c.). Thus, the combination of a FDI proposal that falls under the Automatic Route but requires Industrial Licensing appears here again, making the facilitation of the FDI policy by the introduction of the Automatic Route practically useless.

d. As already mentioned, India has introduced the Automatic Route for the simplification of its FDI approval procedures in order to make the country more attractive to foreign investment. Nevertheless, not all 27 industrial sectors identified by the Indian government actually fall under this route. In Table 1 is presented how these 27 industrial sectors fall under different approval routes, having as a parameter the amount of equity cap.

[35] cf. ibid, § 2.2
[36] Subramanian, G. et. al. (2007), The Economic Times

There, it can be seen that 37% of them fall directly under the Government Route, while an additional 18% falls only under specific conditions under the Automatic Route. Thus, only a percentage of 45% is left for the industries that fall under the Automatic Route without any provision. This is considered rather low for a country that presumably allows FDI up to 100% under the Automatic Route in all sectors except a handful of exceptions. In effect, the introduction of the Automatic Route is the introduction of a tool that gives reason to the Indian Government to boast about its liberal and transparent policies on FDI but whose performance is rather compromised by the number of exceptions to its usage.[37]

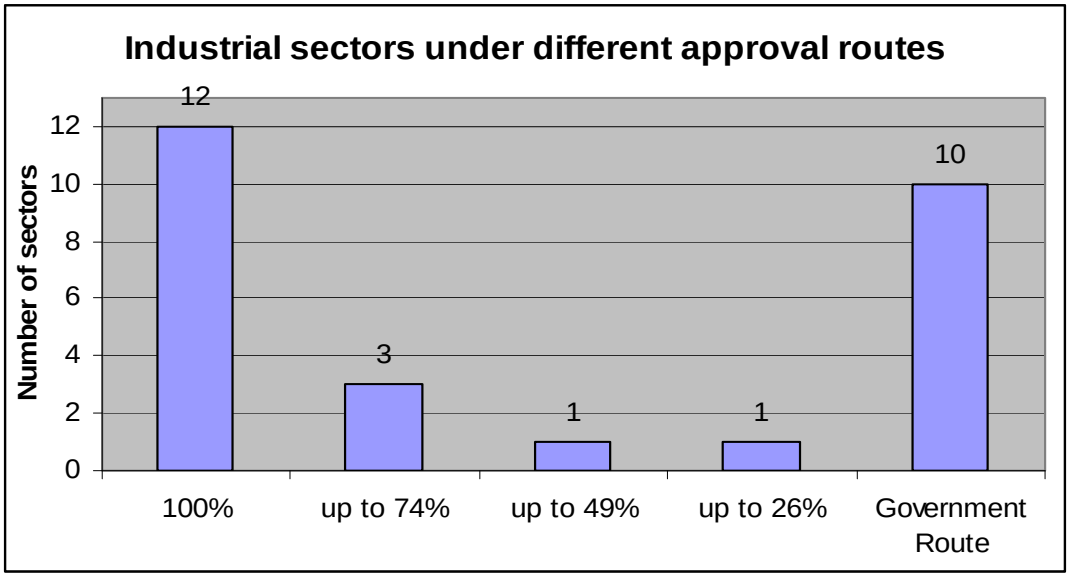

Figure 2. Industrial sectors under different approval routes[38]

3.1.3. Official acknowledgments of complexity of FDI policy

The complexity of the Indian FDI policy depicted here is in way understood and acknowledged by the very authority responsible for its conception and implementation, the Indian government. In order to facilitate the quick implementation of FDI proposals the Indian government has introduced the Foreign Investment Implementation Authority (FIIA). The scope of this authority is to bring the FDI approvals quickly into implementation, in other words to provide a "helping hand" to investors by helping them obtain approvals; sort out problems and facilitate meetings with various authorities to find solution to their problems.[39] To that end, a one-page pro-forma exists where, among others, a

[37] Secretariat for Industrial Assistance, FDI Manual (2006), § 1.3
[38] Source: DIPP
[39] Foreign Investment Implementation Authority, Format: URL

brief description of the problems encountered and the authorities these problems pertain is required. Additionally, the FIIA is assisted by the Fast Track Committee (FTC), which comprises members of all agencies concerned with the implementation of the project, not only on the Central Government level but also on the State one. Nevertheless, the very existence of the FIIA authority could be seen as a confession of the Indian government about the inherent complexity of its FDI procedures: It practically states that problems for prospective investors will arise but FIIA and FTC will help them cut corners and find an easy way for implementing their investment proposals.

Furthermore, a "confession" of the same kind can also be found in the website of the Indian government responsible for the presentation of the policies and rules related to the Special Schemes (sezindia.nic.in).[40] There, in the introductory part is stated that one of the driving factors for the creation of the Special Economic Zones and of the units within them was to "overcome the shortcomings experienced in the multiplicity of controls and clearances". In other words, the rules governing these schemes aim at providing simplified procedures and single window clearances for their development and operation, as opposed to the complicated procedures and multiple window clearances required for the rest of the FDI rules and procedures.

3.2. Effectiveness of FDI policy

As already mentioned in chapter 1 the world is experiencing an era of increasing globalization that is characterized by an increasing number of foreign cash flows.[41] India, in order to better compete on the international FDI front, has undertaken since 1991 reforms to liberalize its foreign trade policy and simplify its FDI procedures.[42] In Figure 3 the evolution of the FDI inflows in the last years in India and, for comparison reasons, in China is depicted. Here it should be noted that India's fiscal year, from July of the previous year to June of the next, does not coincide with the calendar year. Thus, for presentation reasons the inflows in China are presented with half year delay. Based on Figure 3 some interesting conclusions can be drown:

a. A strong positive trend of India's FDI inflows, especially in recent years, can be seen; in 2006-07 FDI amounted to around US$16 billion, almost three times the figure of the previous year. The Indian government is very optimistic about the development of the FDI

[40] Department of Commerce, Format: URL
[41] "FDI - Free Flowing" (2007), in: Economist.com, Format: URL
[42] Secretariat for Industrial Assistance, FDI Manual (2006), § 1.1

inflows in the coming years. Actually, such is its optimism, that for the fiscal year 2007-08 it has updated its target to US$30 billion, double the amount of the previous year.[43] The surge of foreign inflows in India is also reflected in the increasing strength of the Rupee that appreciated since early 2007 by 10% and 6.8% against the dollar and euro respectively.[44] Nevertheless, this very surge of FDI in India conveys an underlying message as well—that up until recently Indian FDI was actually performing below its true potential.[45]

b. Although the direct comparison of international FDI data is not without risks, both for statistical[46] and political[47] reasons, it becomes obvious that the difference of FDI inflows between the two, in terms of size comparable, countries has been quite much. But even in relative terms China performs better than India; during the latter's most successful year (2006-07) FDI inflows represented only about 1.5% of its GDP, whereas China's FDI inflows have faired at about 3% of its GDP for the last decade.[48] Here, among parameters that go beyond the scope of this paper (e.g. judicial efficiency), rigidities as the ones mentioned in §3.1 could also be examined as possible causes for the existing gap. Interestingly enough, China has entered the World Trade Organization (WTO) at much tougher terms than India, and has been since liberalizing faster than the latter. Actually, this in turn led to number of industries in China where foreigners dominate, for example car- or mobile phone-manufacturing.[49] On the other hand, India, though virtually as open as any other developing market, still employs equity caps in some of each fastest growing markets, for example aviation or telecommunications.[50]

[43] ExpressIndia.com (2007), Format: URL
[44] Economist Intelligence Unit (2007), Format: URL
[45] KPMG in India (2006), P. 11
[46] United Nations Conference on Trade and Development (2005), P. 4, Box 1.1
[47] New Economist (2005), Format: URL
[48] The Economist (2007): "FDI in India: To cap it all"
[49] The Economist (2005): "Survey: India and China"
[50] Secretariat for Industrial Assistance, FDI Manual (2006), Annex. 1

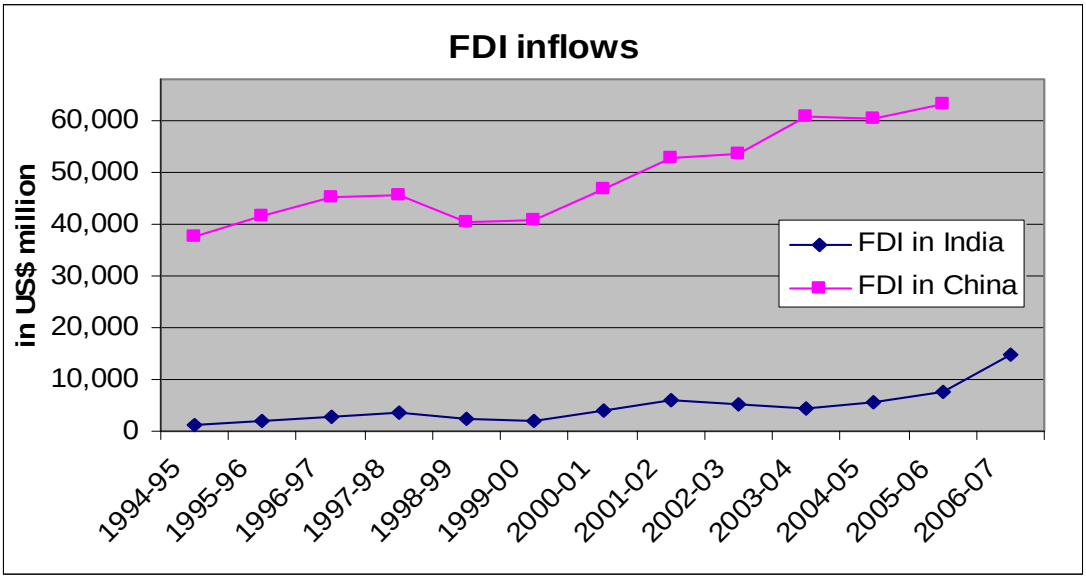

Figure 3. The evolution of Indian FDI inflows[51]

In Table 1 the ten sectors that attract the highest FDI equity inflows in India from year 2003 onwards are presented; for the fiscal year of 2006-07 these 10 sectors account for 70% of the total FDI inflows in India. A simple comparison among the last columns proves the surge of FDI inflows in recent years here as well. What is more, a closer look at the policy regulations governing FDI procedures of most of these sectors reveals that 70% of them fall either under the 100% Equity – Automatic Route combination or have undergone major liberalization reforms in the recent years (please refer to Policy Status column). This, in turn, indicates that there is a positive correlation between liberalizing FDI policy and attracting higher FDI inflows.

[51] Reserve Bank of India; The US-China Business Council, FDI in China (2006), Format: URL

Table 1. Sectors attracting highest FDI inflows (in US$ millions)[52]

#	Sector	2003 - 04	2004 - 05	2005 - 06	2006 - 07	FDI Policy Status
1.	Electrical Equipments	532	721	1,451	2,733	Continuous liberalization and reform policies[53]
2.	Services Sector	269	469	581	4,749	100% Equity – Automatic Route[54]
3.	Telecommunications	116	129	680	521	49% (79% under conditions) Equity – Automatic Route
4.	Transportation Industry	308	179	222	466	100% Equity – Automatic Route (exception
5.	Fuels (power + oil refinery)	113	166	94	250	100% Equity – Automatic Route
6.	Chemicals	20	198	447	206	100% Equity – Automatic Route
7.	Construction activities	47	152	151	985	100% Equity – Automatic Route
8.	Drugs & Pharmaceuticals	109	292	172	215	100% Equity – Automatic Route
9.	Food Processing Industries	111	38	42	98	100% Equity – Automatic Route
10	Cement and Gypsum Products	10	0	452	243	100% Equity – Automatic Route

[52] Source: Reserve Bank of India; Manual FDI in India
[53] India Brand Equity Foundation, Industry (2007), Format: URL
[54] Secretariat for Industrial Assistance, FDI Manual (2006), Annex. 1

4. Presentation of FDI in R&D policy

Up to this point India's FDI procedures are presented and examined. It is shown, which are the factors that determine the route of a prospect FDI inflow in India and which Indian authorities are responsible for every step of the process. Furthermore, some inconsistencies and redundancies of these procedures are pointed out, while an effort is made to present how these affect FDI inflows in general. Additionally, it is argued that India's FDI inflows perform very well, but their best times lie still ahead. In the next paragraphs the focus is on India's FDI in R&D policy. An effort is made to identify India's Science and Technology policy; any official references about FDI in R&D; promotional agencies to that end; the status of intellectual property rights; the educational status; and, more concretely, the specific incentives to invest in R&D.

4.1. Science and Technology policy

Since 1951 the Indian Government forms its Science and Technology (S&T) policy by creating plans that span to a horizon of 5 years. In these Five Year Plans the targets of the Indian state in terms of promoted technologies, priority industrial sectors, university expenditures etc are set and communicated to the public. These plans are created by a number of advisory committees chaired by India's prime minister. In the period 2002 – 2007 (ongoing) the Tenth Five Year Plan (TFYP) is active.[55]

The focus of Five Year Plans is India within its boundaries, namely the S&T strategy this country uses/ should use to cope with today's problems and future challenges. Thus, the TFYP in its entity is out of the scope of the present paper. Nevertheless, the priority sectors of latter are briefly presented here for the following reason; when further in this paper the industry-specific incentives of the Indian Government to attract R&D are compared with the priority sectors of the Science and Technology policy, useful conclusions can be drawn whether these two distinct parts of the Indian public administration communicate and whether they incorporate a holistic approach (please refer to § 5.1).

The TFYP focuses on technologies aiming at enhancing the quality of life of the Indian population. Thus, sectors like health, energy, agro-sciences, water management, transportation etc are

[55] Department of Scientific & Industrial Research, Tenth Five Year Plan (2003), P. 1

mentioned as high priorities. Not exclusively though. The TFYP also gives great emphasis in the sectors where India possesses a competitive edge, namely information technology and biotechnology. It also acknowledges the importance of having a well educated workforce for the well being of the nation, thus stretching education as an additional sector of focus. All in all, the TFYP aims at improving the welfare of the Indian population while rising up to the challenges and opportunities that globalization and competition among nations bring along.

4.2. Official references on FDI in R&D policy

The publication "Investing in India – Foreign Direct Investment – Policy and Procedures" constitutes India's FDI Manual. It presents both the Industry/ Sector route and the Special schemes route that Indian FDI inflows can follow. There, there are arguably very few references about the FDI in R&D policy.

On the one hand, in that part of the manual that deals with the Industry/ Sector procedure, it is hardly possible for the prospect investor to discern any distinct policy about FDI in R&D. The same applies to the Ministry's twin-publication, the Foreign Trade Policy. There too, no reference about FDI in R&D as such exists. Nevertheless, in terms of R&D under the Industry/ Sector procedure a reference can be found in DIPP's website under Frequently Asked Questions which reads that "consultancy services, research and development, software development etc do not require FIPB approval". Thus, although in the official FDI publications no R&D reference exists, in the respective website, virtually hidden in the FAQ area, it is stated that FDI in R&D enjoys the Automatic Route procedure.[56]

On the part of the official publications that deals with Special schemes, a reference about R&D can be actually found. There, it is stated that proposals in R&D under the Special scheme procedure, do not fall under the Automatic Route.[57] Rather, they fall under the Government Route, which in turn means that approval from the FIPB is required (please refer to § 2.3). This means that for such investment applications some bureaucracy from the Indian state is involved.

[56] Department of Industrial Policy and Promotion, Format: URL, Frequently Asked Questions, Q. 29
[57] Secretariat for Industrial Assistance, FDI Manual (2006), § 6.7

4.3. Existence of Investment Promotion Agency

Another factor that plays an important role in supporting a country's effort to attract FDI in R&D and help it benefit from the internationalization of such activities is the existence of Investment Promotion Agencies (IPA).[58] Typically, IPAs are agencies close to key government ministries and the industry at the same time, often acting as a bridge between these two. First of all, their role is to market the knowledge-intensive opportunities that exist in a place. These principally constitute R&D opportunities but not exclusively—opportunities in areas such as production or even after-sales services are also part of it. After all, the experiences made in Singapore, Ireland or Brazil show that existing foreign affiliates in a country play an important role when mother companies decide where to establish their offshore R&D centers later on.[59] Another, less obvious, role of IPAs is to act as an advocate of knowledge-intensive opportunities. That is, to raise the attention of respective government bodies about what needs to be done in order to make a specific location more attractive to knowledge-intensive investments.

The Indian body that acts as an IPA is the "India Brand Equity Foundation". IBEF is a public-private partnership between India's Ministry of Commerce and Industry, Government of India, and the Confederation of Indian Industry, which—as already mentioned above—is the typical configuration of IPAs around the world. As IBEF self-proclaims, its mission is to effectively present the business perspective of India and to try to leverage business partnerships in a globalizing market-place. In doing so, it presents India as a well-established business partner, an attractive investment destination, a quality goods- and services-provider, and a rapidly growing market. In other words, IBEF tries to build the brand name of India.

The website of IBEF is www.ibef.org. It acts as a resource center for prospective investors, media, and policy makers that are interested in acquiring up-to-date and comprehensive information about India, both on an economical and political level. The website's categories of information and, together with that, the areas where IBEF is takes action in promoting India, are listed here-below:

a. Trade and Economy. Here, information about India's economy, union budget, balance of trade, foreign reserves, FDI etc is available.

[58] United Nations Conference on Trade and Development (2005), P. 212
[59] cf. ibid, P. 212

b. Industry. Here, the status, trends and business opportunities of 25 different industrial sectors in India are presented. These range from Automobiles, to Gems and Jewellery to Tourism and Hospitality.

c. States. Here, the 20 states of India are presented. General information and a comprehensive datasheet on each state in provided.

d. Events. Here, promotional events, such as conferences or business forums, of the Indian state in India and abroad are presented.

e. News. Here, articles written about India in the press are to be found. An additional service here is the e-subscription to two newsletters, namely "India Now" and "Invest Now India". These are biweekly newsletters sent to the email address of the subscribers keeping them informed about the latest trends in the Indian market.

f. Information material. A number of brochures, annual reports, posters and films about India, both general and specific, are available. The majority of them have been developed in co-operation with IBEF's business partners, namely renowned consultancies such as KPMG, Ernst & Young or PriceWaterHouseCoopers.

4.4. Intellectual Property Rights policy

Another factor that plays a role in a company's decision of where to create its R&D center(s) is the policy regarding intellectual property rights (IPRs) of the prospect host countries. The main areas of IPRs include patents, copyrights, trademarks, industrial designs, and geographical indications. The effort of host countries is to assure international companies that they will be given ownership to knowledge assets emerging from their inventions. By doing so, economical incentives behind knowledge creation arise and commercial activity is facilitated. A well-defined, aligned to the international standards and enforceable by law system of IPRs creates a friendly environment for FDI in the high-risk high-reward sector of R&D. To that end, the WTO requires all its member countries to abide by the minimum IPR standards pointed in the Agreement Trade-related Aspects of Intellectual Property Rights (TRIPS). India, being a WTO member since 01.01.1995, falls consequently under the TRIPS obligations.[60]

In general, the patent system in India is administered by the Controller General of Patents, Designs, Trademarks and Geographical Indications under DIPP, Ministry of Commerce and Industry. A brief

[60] World Trade Organisation (2007), Format: URL

introduction of the status of the different IPR areas that affect R&D activities in India is presented here-below.

a. Patents. The Patents Act 1972 is the landmark of the Indian patent system. Today the Patent Rules 2005 (3rd Amendment of Patents Act) provide the legal framework for the Indian patent system, incorporating the latest provisions for pharmaceuticals, biotechnology, agrochemicals, food etc. In general, the TRIPS provisions are satisfied by this act. A number of exclusions exist, namely in areas that deal with national security, human, animal and plant life, and the environment. Additionally, e-filling of patent applications has been recently introduced.[61]

b. Trademarks. Trademarks are protected under the provisions of the TRIPS Agreement too. The Agreement provides that initial registration and each renewal of registration shall be for a time period not less than seven years and that registration is renewable indefinitely. Due to the changes in global trade the Indian Government acknowledges the need for simplification and harmonization of trade marks registration system. To that end, a Bill to withdraw and replace the Trade and Merchandise Marks Act, 1958 has been passed by Parliament. Additionally, e-filling of trademark application was recently introduced and new applications are examined within one week.[62]

c. India is member of all international conventions and organizations dealing with copyrights issues (Bern, Geneva etc). Its copyright law, the Indian Copyright (Amendment) Act 1999, reflects the provisions of all these agreements. The copyright law includes provisions for computer software, digital technology and satellite broadcasting.

d. Industrial designs. The law governing industrial designs, brought to force in 11.05.2001, states that the holder of an industrial design has the right to prevent others to commercialize articles that embody the protected design without the owner's consent. State governments have the right to exclude designs due to technical, functional or aesthetic reasons. In any case, the duration of protection is not less than 10 years.

[61] Controller General of Patents Designs and Trade Marks (2007), Format: URL
[62] Controller General of Patents Designs and Trade Marks (2007), Format: URL

All in all, the Indian Government has the modernization of its IPR administration high on its agenda to meet the challenges of globalization. To that end, a project that included the establishment of a National Patent Office, the development of the appropriate human resources, the computerization and re-engineering of work practices and the like was kicked off in 2000. Results of this project are, among others, the website patentoffice.nic.in, the Manual of Patent Practice and Procedure, the possibility of e-application for patents and trademarks etc.

4.5. Education policy

Education plays a pivotal role in a country's efforts to attract FDI in R&D. A skilled local workforce is the ultimate key parameter that allows all other to function in order for a place to attract knowledge-intensive investments. Still today, 30% of the Indian population is illiterate. That means that although India enjoys a workforce with renowned educational skills, the Indian Government has still a lot to do to spread basic education to the masses.[63] Thus, education is mentioned as a priority sector in the TFYP—higher, as well as basic. Moreover, the focus of the coming Fiver Year Plan, the Eleventh, aims at strengthening India with even more talented people, and making innovation and technological development the driving forces for economy and society. It raises the target of educational expenditures to 4% of GDP, and proclaims the consolidation of a tuition free 9-year compulsory education.

Consistent to the above priorities, India allows 100% Equity in FDI aiming higher education (please refer to Table 2). By attracting foreign educational institutions in India the benefits are twofold. On the one hand, foreign technical and managerial ready-to-be-implemented know-how enters India and, on the other, competition among Indian institutions increases, which further leads to the development of their curricula and research capabilities. To further increase its intellectual potential, the Indian state plans further the introduction of new indigenous universities—three Indian Institutes of Technology, two Institutes of Science Education and Research, two Schools of Planning and Architecture, 20 Institutes of Information Technology (on the public-private partnership mode) and a number of polytechnic colleges and will be set up in the next five years.

[63] Wikipedia, The Free Encyclopedia (2007), Format: URL

4.6. Science Parks policy

An incentive used by many governments to promote innovation and R&D is the institution of Science Parks.[64] Nowadays, efforts in order to generally promote the creation of production factors—labor, land, natural resources, capital, and infrastructure—are not enough to provide countries with the so much desired competitive advantage. For example, having a large pool of workers with secondary education is not any more the optimum population configuration for a society to achieve high economic returns. What today's societies need in order to drive their growth are specialized factors: highly skilled, specialized and up-to-date workers; state-of-the-art infrastructure to support their work; capital to allow them to bring ideas into practice and the like.[65] India with the introduction of institutions such as the SEZs and the EOUs operating in them; the EHTPs; the STPs; and the BTPs (please refer to § 2.5) aims at exactly that: to enhance the country's factors of production in specialized areas.

The rationale of the Indian government to support such specialized initiatives could be based on the following presumptions:

a. On the one hand, inadequate infrastructure is a major problem in India. Companies having already subsidiaries in India list that as a constraint to their operations, whereas foreign ones as a deterrent to look in India for a base. What is more, not only manufacturing operations with their high demand in infrastructure, such as roads or ports, are affected by that. The same counts for R&D and consultancy services as well, since one of the most important things for a scientist or a consultant choosing the place to live is the availability or not of modern facilities, such as public transportation, hospital, schools etc. Nevertheless, the Indian government understands that establishing world-class infrastructure all-over India is a very expensive arduous endeavor that will take many years to accomplish. Therefore, by incentives such as SEZs, STPs, EHTPs, and BTPs, it offers the next best solution to that, that is, pockets of excellent infrastructure for industries to thrive. What is more, such areas can be developed by private investors as well, easing the financial burden of the state.

[64] United Nations Conference on Trade and Development (2005), P. 218
[65] Michael E. Porter (1990), P. 87

b. Furthermore and according to the cluster theory, once these high-technology and state-of-the-art infrastructure cells are created they enter a virtuous cycle leading to more investments that further draw more specialists in the region which in turn enhance the technological potential of it creating new opportunities for investments and so on. This self-reinforcing system of interactions is typical of the various technological clusters around the world. The case of Silicon Valley is the most renowned exemplification of them all. Thus, it is in the best interest of the Indian Government to help create such clusters.

c. Further to the above, investing in R&D is associated with a high degree of uncertainty, especially in high risk sectors, such as the ever-changing electronics industry or the up until today still fuzzy biotechnology industry. Thus, in order to promote the creation of Science Parks the Indian government provides various incentives to that end. On the one hand, they aim at making easier the application side, with single window clearance and lack of multiple approvals. On the other, they aim at easing part of the aforesaid risk with a series of fiscal entitlements. A short list of these fiscal entitlements is presented in § 2.5.2. It refers mainly to tax benefits that generally promote the development of such parks.

4.7. Incentives for R&D activity

In chapter 3 it has been mentioned that it makes sense to try to identify India's general FDI policy before trying to understand its FDI in R&D policy. Parallel to that, part of presenting the policy one country employs in order to attract FDI in R&D is to find and list the incentives that this country provides in order to promote R&D investments. Here, research shows that most developed countries, and an increasing number of developing ones, use some kind of incentives to promote R&D activity. Actually, in many of them such incentives are offered on equal terms to companies, irrespectively of their domestic or foreign origin.[66] In accordance to that, the laws that govern the incorporation of foreign companies in India state that "provisions shall apply mutatis mutandis to the foreign companies as they apply to companies incorporated in India".[67]

Furthermore, the incentives that governments use to support R&D take broadly the form of financial and fiscal incentives. The first ones refer to direct funding of R&D projects by the

[66] United Nations Conference on Trade and Development (2005), P. 218
[67] Ministry of Corporate Affairs(2004), § XXI

government in the form of loans or subsidies. The latter ones are basically tax-based, such as tax allowances, import tariff exception, tax holidays etc. As it is further shown in § 4.7.1-4.7.2 the incentives the Indian Government employs are rather fiscal. This is quite typical for developing countries. Since most of them have to deal with limited financial resources they apply fiscal incentive schemes to support R&D. Actually, the frequency that developing countries use fiscal incentives is more than twice the frequency they apply financial ones.[68] The list here-below presents the incentives provided by the Indian Government to support R&D activities. The way these incentives are presented, is from general, i.e. aiming the whole industry spectrum, to more industry-specific incentives.

4.7.1. Industry-wide R&D incentives

For industries that undertake R&D activity the following incentives have been identified:[69]

a. Tax deduction amounting to 100% of all revenue expenditures, such as employee salaries or materials acquisition, which have been expensed within three years of business commencement.

b. Tax deduction amounting to 100% of all capital expenditures in the year the expenditure occurred.

c. Accelerated depreciation allowance for investments on plant and equipment made on the basis of usage of indigenously developed technology (Rule 5, 2). This incentive allows companies to show increased depreciation sums, which are tax deductible, in the years just after such an investment is made.

d. Tax deduction amounting to 125% of expenditures paid by the firm to a National Laboratory; a University; an Indian Institute of Technology; or a specified person, provided that the sum will be used for scientific research undertaken under an officially approved national program.

[68] United Nations Conference on Trade and Development (2005), P. 217
[69] Department of Scientific & Industrial Research (2007), Format: URL

e. Income tax exemption amounting to 125% of sums donated to a scientific research association; a university; a college; or other institution with the intention to be used for scientific research.

f. Tax holiday of all profits for a period of ten consecutive years beginning from the initial assessment year for businesses that carry out scientific research and development as their main occupation, provided that the undertaking is approved by the prescribed authority at any time after the 31st day of March, 2000 but before the 1st day of April, 2007.

g. Exemption from custom (excise) duties to both public and privately funded R&D institutions for imports (purchases within India) in scientific and technical instruments, apparatus and equipment; accessories and spare parts thereof; consumables; and computer software needed for the R&D activity.

4.7.2. Industry-specific R&D incentives

Apart from the general R&D incentives mentioned in § 4.7.1, some other have been identified, which aim at supporting R&D investments in specific industries. They are listed here-below:

a. Tax deduction amounting to 150% of R&D expenditures which are not in the nature of land or buildings. The applicable eight industries are mentioned in Table 2.

Table 2. R&D promoted industries[70]

i. Biotechnology	v. Telecommunication equipment
ii. Pharmaceuticals	vi. Chemicals
iii. Electronic equipment	vii. Aircrafts and helicopters
iv. Computers	viii. Automobiles and their components.

For companies to be eligible for approval to this rule they have to be officially listed in the Indian Trade Classification (based on Harmonized Commodity Description and Coding System) published by the Ministry of Commerce, and their respective in-house R&D centers have to be acknowledged by the prescribed authority of the Indian Government.

[70] Source: Indian Ministry of Finance

b. For the biotechnology sector, apart from a., the following incentives have been identified:[71]

i. Bio-Technology Parks, with single window clearance and other fiscal incentives as it has been already presented in § 2.5.

ii. Duty free import of analytical and special equipment for usage in R&D departments and in production units. For usage in production units, the value of imported goods is not allowed to exceed 25% of the value of the exports made by the unit the previous year. All goods have to be installed within 6 months of import and are not allowed to be transferred or sold for a period of seven years.

iii. Removal of custom duty on imported raw material in cases where finished products are duty free.

iv. Duty free import of pharmaceuticals reference standards.

v. Provisions in the latest Amendment of the Patent Act for granting product patents in these fields (please refer to § 3.6).

vi. Existence of "National Stem Cell Priority Fund" to finance research on stem cells.

vii. Creation of a task force under the Director General of the Council of Scientific and Industrial Research (CSIR) to formulate a modern and efficient regime for DNA pharmaceutical products.

c. For the Information Technology sector, apart from a., the following incentives have been identified:[72]

i. Electronics Hardware Technology Parks and Software Technology Parks, with single window clearance and a variety of benefits like duty free imports and other fiscal benefits as it has been already presented.

ii. No corporate income tax up to March 2010 for units operating within Software Technology Parks

iii. Introduction of the Standardization Testing and Quality Certification (STQC) program that provides one-stop solution to all quality requirements of the electronics industry.

iv. Initiatives of relaxed labor laws for the IT sector.

[71] India Brand Equity Foundation, Industry (2007), Format: URL
[72] cf. ibid

5. Examination of FDI in R&D policy

Up to this point, India's FDI policy is presented and examined, followed by the presentation of its FDI in R&D policy. In this chapter, an effort is made to bring the latter under examination and identify its effectiveness.

5.1. Science and Technology policy and FDI policy

In § 4.1 the existence of India's S&T policy and its priorities, as they appear in the TFYP, are presented. Before attempting to analyze the correlation between the latter and the FDI policy, the very existence of a national S&T policy for the last 60 years should be highlighted. This reveals how important technology and science have been for the Indian state and how mature this concept is in this country. In comparison, Ireland, an economic miracle of the last couple of decades, released its first-ever Government White Paper on Science, Technology and Innovation as early as 1996.[73]

Here, an effort is made to compare S&T priorities with the FDI procedures applicable to them in order to see whether the technological priorities of the Indian state are actually facilitated by its FDI policy. That is, whether their FDI falls under the Automatic Route, whether 100% Equity is allowed, and whether the Indian state provides fiscal incentives for such investments. In Table 3, the priority sectors of the current TFYP, together with their status in terms of FDI approval routes and tax incentives are presented.

Closer examination of Table 3 reveals that there is a consistency between the technological sectors that India's general S&T policy lists as priorities and the industrial sectors promoted by its FDI policy. On the one hand, almost all industries that enhance human welfare enjoy FDI under the Automatic Route, allow for 100% Equity and include fiscal incentives. In India, where more than three hundred million people live on a US dollar per day, the promotion of these industries is well understood.[74] On the other, the importance given to knowledge intensive industries, such as information technology biotechnology and, of course, education—all made explicit in the TFYP—is proved here as well, especially by the use of tax incentives. All in all, this consistency reveals that these two different parts of the Indian public administration do communicate. It states implicitly

[73] United Nations Conference on Trade and Development (2005), P. 214 (Box VII.6.)
[74] James Surowiecki (2007): "India Skills Famine"

that the S&T policy, communicated in the Five Year Plans, is accepted by all stakeholders of the Indian Government.

Table 3. TFYP target sectors and FDI incentives[75]

#	Priority Technological Sectors	Route	Tax incentives
1.	Energy – Power	100% Equity – Automatic Route	Yes
2.	Water Management	100% Equity – Automatic Route	Yes
3.	Agriculture	100% Equity – Automatic Route	Yes
4.	Transportation	100% Equity – Automatic Route (exception railways)	Yes
5.	Health	100% Equity – Government Route	No
6.	Communication	49% Equity – Automatic Route	Yes (telecom)
7.	Education	100% Equity – Automatic Route	No
8.	Information Technology	Government Route (please refer to § 3.3)	Yes
9.	Biotechnology	Subject to the Dept. of Biotechnology(please refer to § 3.3)	Yes

5.2. Examination of official FDI in R&D references

In § 4.2 the rather few references on FDI in R&D that a prospect investor in this field encounters upon reading the official publications of the Indian state are presented. A possible reason for the small number of R&D references could lie in the fact that FDI in R&D is a very sensitive subject in the developed world. Even in countries where non-R&D related FDI outflows are popular, FDI in R&D is a hotly debated issue. This is because it is widely believed that FDI in R&D destroys high value-adding jobs in the developed world, compromises its competitiveness in the future, jeopardizes national security etc.[76] Thus, there is an incentive for the Indian Government to hide its

[75] Source: TFYP; FDI manual; www.ibef.org
[76] R. Hira (2003): "Global Outsourcing of Engineering Jobs: Recent Trends and Possible Implications"

policies that aim at particularly attracting FDI in R&D—even if they actually do exist. Nevertheless, a number of inconsistencies emerge here:

a. Firstly, although the two R&D references—one in DIPP's website and another in the FDI Manual—apply to different application procedures, in their very meaning they actually contradict each other. It comes as a surprise that FDI in R&D in the Industry/Sector scheme falls under the Automatic Route whereas FDI in R&D under Special schemes requires Government approval. After all, the very meaning of both investments is the same.

b. Secondly, although the DIPP website officially belongs to the Ministry of Industrial Policy and Promotion, the R&D reference that was found there could not be found in the official publications of the Ministry as well. Since the guidance about the applicable rules for the investment is not clear the prospect R&D investor is left, in effect, at a loss of how to proceed.

The aforementioned inconsistencies reveal a problem in terms of India's FDI in R&D policy and the way the latter is communicated to the public. For sure, keeping official information channels inconsistent to one-another, does not help prospect R&D investors understand the applicable policy for their investments.

5.3. Examination of Investment Promotion Agency policy

In § 4.3 it is argued that Investment Promotion Agencies (IPAs) play today an important role in supporting the effort of countries to attract R&D investments, and that India's IPA is IBEF. IBEF informs investors about the political and economical status of India and presents the investment opportunities around India. In doing so, it uses the www.ibef.org website, newsletters and publications.

The www.ibef.org website acts as a single window resource center for obtaining information on knowledge-intensive investment opportunities. In doing so, it is interesting to compare it with the official website of Ministry of Commerce and Industry (dipp.nic.in). Both websites have some thematic in common, such as government press notes, macroeconomic indicators etc. The latter is more formal and closer to the Ministry's rules and procedural requirements, rather than presenting

business opportunities and, in effect, market FDI in India, as the former does. There is also a big difference on how information is presented in both sites. The DIPP website is not user friendly, uses a difficult language, and lacks the necessary systematic at getting the information across to the prospective investor (please refer to § 2.1.1). Contrary to that, www.ibef.org is a modern, fresh, and user-friendly website with a distinct systematic that helps one find easily the required information. All in all, www.ibef.org lives up to its promise to act as a resource centre for foreign investors and scores high in its effort to provide updated and accurate information.

The other two resources for information and promotion that IBEF employs are newsletters and publications. Newsletters provide news and updated information in a modern way, while not missing any chances of highlighting the knowledge-intensive investment opportunities of India (The author has been a subscriber to the “Invest Now India” newsletter and can personally testify the good quality and consistency of it). The same counts for the IBEF publications. Most of them are the product of co-operations with consultancies and they have a complimentary role at presenting FDI policy. As is the role of IBEF, such publications use every chance to market India and promote foreign investment. All things considered, IBEF performs well in terms of presenting India as an investment destination for FDI, in general, and FDI in R&D, in particular.

5.4. Examination of Intellectual Property Rights policy

In § 4.4 the Indian IPR system is presented. The administration of its IPR system is headed by the Controller General of Patents Designs and Trade Marks which further belongs to the Department of Industrial Policy and Promotion (DIPP) of the Ministry of Commerce and Industry. DIPP is the main body for formulating, implementing and facilitating India’s FDI policy. Thus, this structure shows the close interrelation between IPRs and FDI in R&D, and how high on the FDI agenda of the Indian Government are IPRs. Especially the latest changes in the patents and copyright laws to include provisions for pharmaceuticals, biotechnology and software reveal the great importance given to IPRs related to these—pronounced as priorities in the TFYP—industries.

Moreover, the Indian patent system is reflected in the number of patents filed, examined and granted every year. In Figure 4 the yearly numbers falling under these three categories in India’s Patent Office since 1999 are presented. The impact of the modernization of the Indian IPR system is obvious. The trend in all three categories is strongly upward. The number of applications filed in

2006-07 (28,882) was 6 times higher than the number in 1999-2000 (4,824). This is equivalent to an impressive 25.1% average yearly increase for 8 consecutive years. In terms of applications granted the numbers are 4 times higher between 1999-00 and 2006-07 which translates to a 18.5% average yearly increase. Additionally, at least 415 patens were filed from India in the US in the time period 1998-2003, with the rationale to exploit technologies developed in India in the huge and rich market of the US.[77] All in all, India's policy to modernize and secure its IPR status has done wonders to the intellectual activity within the country.

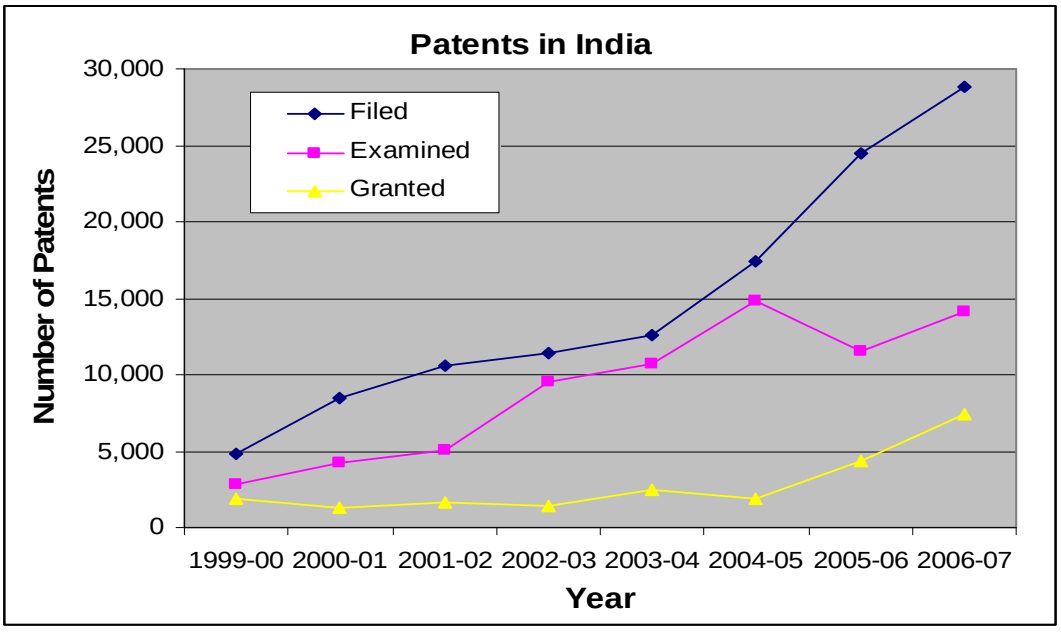

Figure 4. Patents in India[78]

5.5. Examination of Education policy

In § 4.5 the measures employed by the Indian Government to promote education are presented. Their focus is both increasing educational expenditures, and opening and expanding all levels of education. These measures are consistent with the model of countries that managed to make successful transitions from developing to developed status. South Korea, for example, spends today more money on education and training as a percentage of its GDP than any other country in the world. And in Ireland, the so-called Celtic Tiger due to its rapid economic expansion, the

[77] Technology Information, Forecasting and Assessment Council (2006), P. 14
[78] Source: DIPP

development is also characterized by increased university funding.[79] Thus, India's liberalizing measures give proof that the country understands how important education is for the well-being of society, especially in its effort to enhance its technology potential. At a time when talent is scarce around the globe, having a well educated population constitutes by itself a source for competitive advantage.

Additionally, in order to facilitate FDI in the Education Industry the Indian Government has waived any Equity limits related to it. As argued in § 4.5, this raises competition within Indian universities and brings foreign knowledge to India. A number of renowned foreign institutions, lured by the huge Indian market and a culture that values education, have responded to these liberalizing policies.[80] A few examples are mentioned herewith:

a. The Wharton Business School, arguably one of world's best business schools, is searching for a campus in India to provide MBA courses.
b. The University of Oxford and the Confederation of India Industry (CII) are setting up an Indian Business Centre, the first if its kind between the two countries.
c. The Georgia Tech University, one of the best technical universities in the United States, is opening a campus in the India state of Hyderabad.

All in all, India's youth, which constitutes more than 50% of its whole population, is the country's best capital. In 367 universities and 18,000 colleges around the country some 11 million students are enrolled. Not surprisingly, India's social rate of return on investment in university education has been calculated at an impressive nine-to-ten per cent.[81]

5.6. Effectiveness of FDI in R&D policy

So far, the different measures and policies that affect India's FDI in R&D policy are presented and examined. Nevertheless, the ultimate measure for the success of these policies or not is the amount of investment that India actually attracts in the R&D sector and, if possible, how this is distributed among industries. Here, a problem arises, namely the difficulty to obtain accurate data. The Academy of Business Studies in New Delhi, India, prepared a study in 2006 under the title "FDI in

[79] United Nations Conference on Trade and Development (2005), P. 214 (Box VII.6.)
[80] India Brand Equity Foundation, Training and Education (2007), Format: URL
[81] James Surowiecki (2007): "India Skills Famine"

the R&D Sector, Study of the pattern 1998-2003" for the Indian Ministry of Science and Industry. There, among others, it is stated that there is no official reporting system for FDI in R&D.[82] Not surprisingly, the FC-GPR application form under the Automatic Route was amended by the Reserve Bank of India in April, 2007 in order to capture FDI data in a more comprehensive manner.[83]

Nevertheless, the authors of the aforesaid study managed to develop a database of the top 100 R&D investment companies for the period 1998-2003. The FDI in R&D inflows under their respective industry are presented in increasing order in Figure 5. The total amount of such inflows amounts to US$ 1.76 billion and it can be clearly seen that the biggest share (48%) belongs to the IT and ITES sectors. It is followed by Automobiles (14.2%); Chemicals (12.9%); General Mechanical Engineering Applications (6.6%); Energy (4.5%); Biotechnology (4.4%); Aeronautical (3.4%) and Pharmaceuticals (2.4%). In Figure 6 the amount of employment created due to aforesaid FDI inflows is further presented. The total number of knowledge workers adds up to 27,784 placements. Their distribution is generally the same with the biggest exceptions in Chemicals (and Automobiles) where proportionally more (and less) people find employment.

In Table 2 the eight industries whose R&D the Indian state promotes using tax benefits are presented. Among them, the three sectors of Biotechnology, Pharmaceuticals and Computers (both Software and Hardware) receive some additional incentives by the Indian government to further promote their FDI in R&D (please refer to § 4.7.2) A comparison between what is promoted and the findings of Figure 5 reveal that international companies do respond to these incentives. Proof is that seven out of the eight industries of Table 2—exception is "Electronic equipment"—rank among the top places of Figure 5. Equivalently, the amount invested under these industries represents 86% of total FDI in R&D. Additionally, if the three mostly promoted industries of Biotechnology, Pharmaceuticals and Computers are taken into consideration, their amount accounts for 55% of the total foreign R&D investment.

On the other hand, it is also of interest to examine how FDI in R&D responds to the Special Schemes of the FDI policy, namely the right-hand side of Figure 1. In § 4.6 the policy and its rationale to attract FDI under these schemes are presented. Biotechnology, Software, and Computer

[82] Technology Information, Forecasting and Assessment Council (2006), P. III
[83] Reserve Bank of India (2006)

Hardware, with the BTPs, the STPs, and the EHTPs respectively, are the sectors that enjoy special treatment here as well. Accordingly, the sectorwise distribution of SEZs formal approvals under the SEZ Act 2005 is presented in Figure 7. Not surprisingly, the lion's share belongs to IT and ITES, followed by Biotechnology (5%); Multi-product sector (5%); Pharmaceuticals (4%); Aeronautical (4%); Textiles (4%) and others. Thus, it can be argued that here too the market responds to the benefits provided by the Indian government. IT and its related industries, together with Biotechnology sum up to 67 % of all approvals. If the close to Biotechnology sector of Pharmaceuticals is added, an impressive 71% of all approvals come just from these industries.

All in all, the numbers behind the policies that India employs to attract FDI in R&D show that the market responds positively to them. India's preferred industries are the ones that international companies actually invest FDI in R&D in.

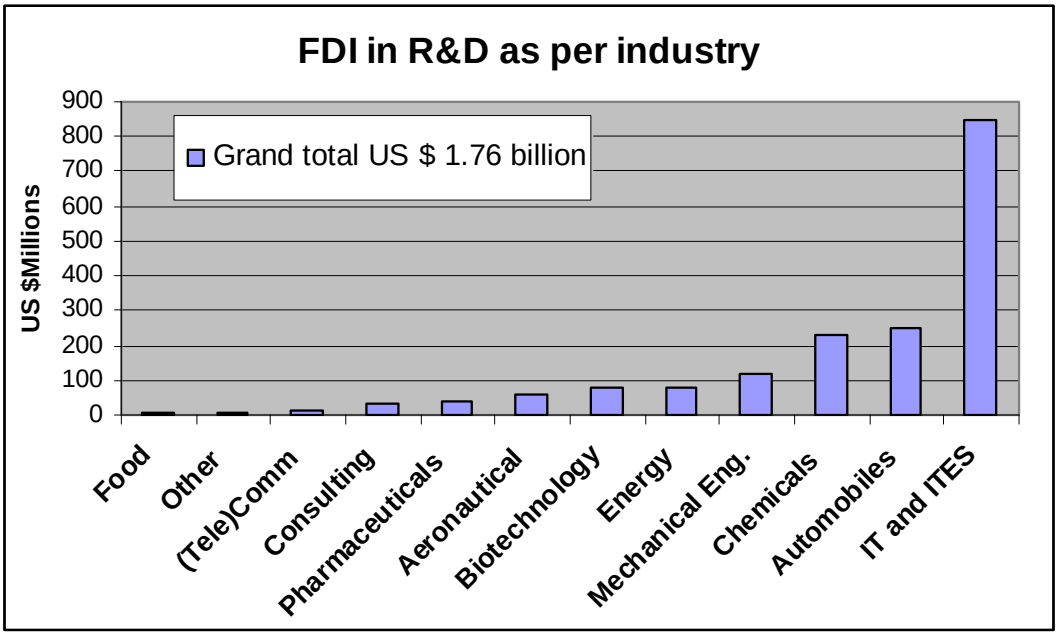

Figure 5. FDI in R&D as per industry (1998-2003)[84]

[84] Source: TIFAC (2006)

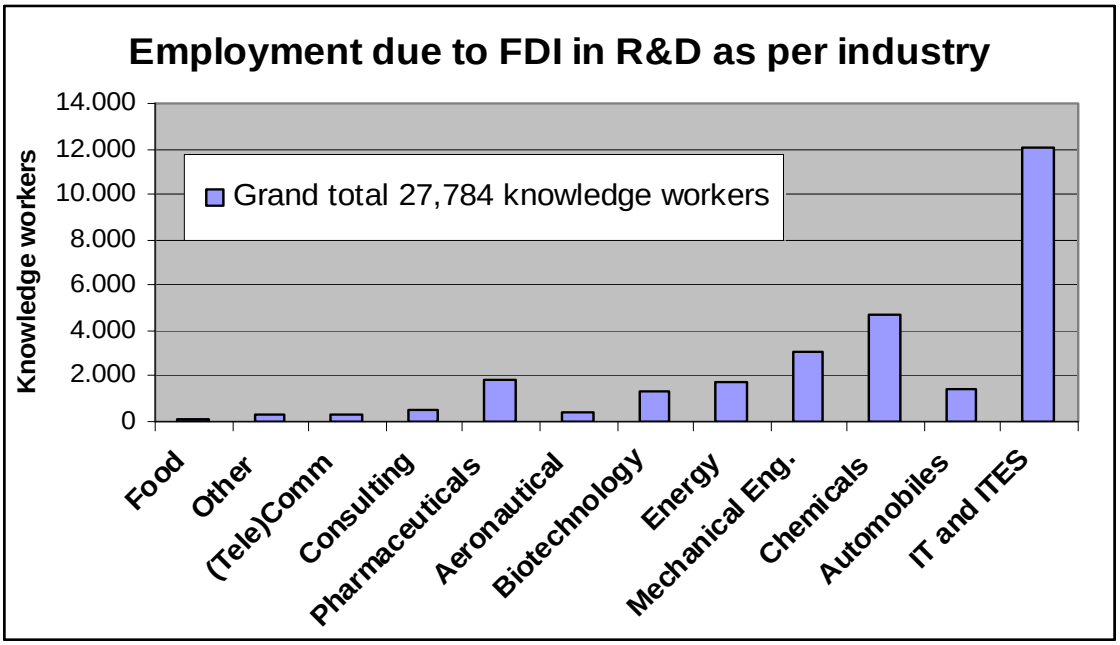

Figure 6. Employment due to FDI in R&D (1998-2003)[85]

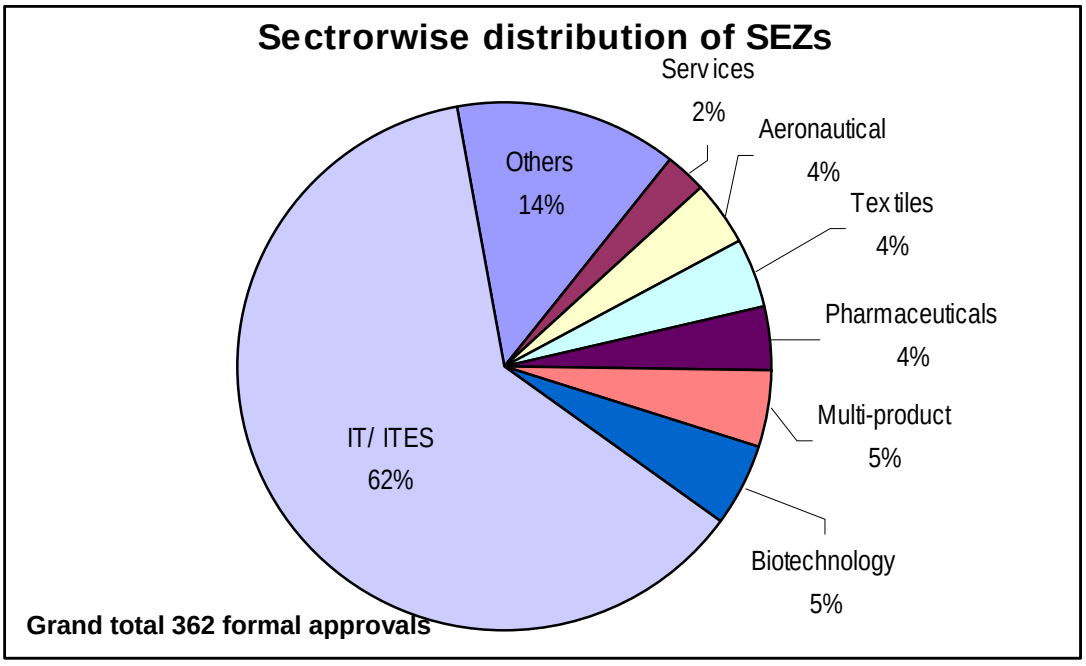

Figure 7. Sectorwise distribution of SEZs[86]

[85] Source: TIFAC (2006)
[86] Source: Ministry of Commerce and Industry

6. Recommendations

In this chapter some recommendations for improvement of the FDI policy in general, and FDI in R&D in particular, are developed based on the findings during the course of the study.

6.1. Recommendations on FDI policy

In chapter 3 the complexity of the Indian FDI policy is pointed out. This is further divided into the complexity that refers to the way this policy is communicated to interested parties, and the complexity that emerges due to the multiple routes, sectors, authorities etc that can be identified within it.

6.1.1. Recommendations on communication of FDI policy

The way India's FDI policy is communicated to the public—as the latter emerges through DIPP's website (dipp.nic.in)—is problematic. In order for this policy to lure prospective investors, a more modern and fresh, but also more structured, website is needed. This website should make it easy for the interested to sort out relevant information and understand what is up-to-date, and doing so without demanding arduous efforts. The same counts for the website responsible for the SEZ policy (sezindia.nic.in). Although the latter appears to be more structured and modern than DIPP's one, the problem of sorting out relevant information appears here too. In both cases, visualization of the various applicable procedures could greatly help investors find their "way" for setting up their undertakings. For sure, what a website needs to be complete is for professionals to say. Nevertheless, trying to make India more attractive for foreign investment is—besides the real advantages of the country—a marketing issue as well. In the era of the World Wide Web, some modernization of all relevant websites would be useful.

6.1.2. Recommendations on complexity of FDI policy

The complexity of India's FDI policy is exemplified by the existence of 2 different approval schemes; the categorization of 27 industrial sectors; the 9 potentially relevant approval authorities; the 7 different applications forms; the need or not for Industrial License; the various application fees and time horizons etc. All these make it hard for the prospective investor to understand the route that applies to his/her case. Actually, the number of all possible combinations is so high that even the Indian State has a difficulty in streamlining all its procedures (please refer to § 3.1.2.).

For sure, the Indian State could simplify–liberalize its FDI policy. The following steps are recommended:

a. First of all, the existence of the 4 Equity Caps should be waived. These ceilings hinder prospective investors from entering India, since they force them to cooperate with local firms—something not always welcome. Even if the Indian Government feels the justified need to monitor foreign activity in sensitive sectors on its territory (e.g. defense sector), the existence of 4 different ceilings and 27 industry categories is too much—rather, a handful of exceptions should be enough to control them. In § 3.2 it is shown that such liberalization reforms are positively correlated with increased foreign investments. What is more, the continuous review of these ceilings leads to numerous changes that leave prospective investors at a loss of what still applies and what not in an already complicated enough approval system.

b. Single window clearance should be introduced with immediate effect. It acts against prospective investors to have them literally study the Indian FDI policy in order for them to comprehend the function of all different authorities, such as SIA, DIPP, FIPB, RBI etc. The same applies for the multiple application forms, fees, time horizons and the like. Arguably, bureaucratic hurdles can keep India's performance below its true potential. Thus, all above need to be simplified into one Indian authority that should facilitate foreign investments by taking care of all related issues.

6.2. Recommendations on FDI in R&D policy

Based on the findings of chapter 5, the following recommendations regarding India's FDI in R&D policy are outlined:

a. No Equity Cap should exist for foreign R&D investments. The products of R&D are by definition proprietary and, generally, companies that undertake such activity do not wish to share them with local partners. Thus, 100% equity should be allowed for such investments. If the Indian State aims at technology dissemination, bringing the foreign company on its territory is already a big step to that end. Such foreign undertakings need

local scientists to perform their operations, and by doing so they already provide the much wanted interface for knowledge to spread.

b. As presented in § 5.2., India's FDI in R&D policy is not systematically presented in the official publications and websites of the Indian Government. Even if various provisions and incentives towards that end exist, they are not solidified into one integrated policy. And even if large multinational companies have the resources to find their way through the complicated Indian bureaucracy, this does not necessarily hold for the small and medium ones. In turn, this does not do justice to the huge potential of the country. Here, as already mentioned for the general FDI policy, simplification of the whole process is suggested. Only one procedure should be applicable and only one Indian authority should be responsible to give the necessarily clearances. The difference between the Automatic and the Government Route is not a thing for investors to understand. It is rather an issue inside the Indian State that should not bother the people that want to invest their money there.

c. India's FDI in R&D policy should enjoy a more focused marketing. If the integration mentioned in point b. is achieved—especially the part that deals with the Industry/ Sector procedure—than its communication to the public will become much clearer. Indeed, today's references about the latter are arguably few and inconsistent. One needs to search quite deep to identify what holds as a priority for the Indian State and what not. Thus, a simplification of procedures and a more liberal policy will allow for a much clearer, and easier to communicate, message to come across to prospective investors. This, in turn, will help to proactively promote FDI in R&D and market India as a mature destination for such investments.

d. FDI in R&D transactions occurring in India need an integrated monitoring system. In § 5.6., the issue of missing accurate data about foreign investments in R&D became apparent. There, data could be only found and collected indirectly. This belongs to the wider lack of a central monitoring system for such investments. In turn, this leads to lack of controlling of the various policies that the Indian state introduces—do they actually bring the desired results or not?—and in effect compromise the decision making process. The introduction of such a system would help to collect statistics about R&D sectors (amount of

investment, people employed, profits reinvested etc) to identify trends and fine-tune the procedures accordingly, and to more accurately inform prospective investors about the already existing status. The integration of all such data into an official database and/ or an annual report would be a helpful tool to better position India to reap the benefits of the internationalization of R&D activities.

7. Conclusions

The focus of this study is India's FDI in R&D policy. It is argued that in order to understand it, the general FDI policy needs to be firstly understood because the correlation between them is strong. Thus, the general FDI policy is presented and examined in the first place. To help better comprehend its procedures a visualization of them is developed in Figure 1. Based on it, the complexity of this policy becomes clear, while the need for further liberalization and simplification also emerges. Arguably, this is not beneficial for the FDI India wants to attract. Moreover, the way this policy is presented to the public, especially through the Indian websites, could be further improved as well.

On the other hand, closer examination of the FDI in R&D policy proves that India has a long tradition is establishing centrally its S&T policy. Actually, the priorities of the latter are also reflected in the incentives given by the Indian State in order to attract FDI in targeted sectors. What is more, a number of various factors that influence foreign R&D inflows, such as the status of IPRs, the promotion of the country's knowledge-intensive opportunities, the institution of Science Parks, the educational status of the country etc, are also given consideration by the Government in order to make India more competitive in the international R&D front. Nevertheless, some improvements could also take place here, for example by waiving still existing equity ceilings, simplifying and better communicating the FDI in R&D policy of the country (the complexity of the general FDI policy is found here too), and establishing a system to better monitor foreign R&D activity.

All in all, India appears to have a quite integrated policy in order to internationally compete for R&D investments, while there is also space for improvement. To be able to compare India more concretely on an international level and reach safer conclusions, similar studies need to be developed for other emerging countries as well. Studies of other Asian countries, such as China and Indonesia, or of South American ones, such as Brazil and Mexico, could prove useful towards that end.—

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