Corporate Tax

A brief assessment of some exemptions

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Corporate tax: A Brief Assessment of some Exemptions

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Abstract

Government of India proposes to reduce the number of tax incentives built into the corporate tax regime and alongside reduce the statutory tax rate on corporate tax to 25 percent. Beneficiaries of the incentive regime tend to argue that these regimes provide tangible benefits which induce higher level of activity within the economy and hence, phasing these out can be detrimental for the Indian economy. An attempt is made in this paper to briefly assess what can be inferred from available evidence on the effectiveness of the incentive regimes. The focus is on three such schemes, incentives provided for investment in backward areas, incentives for special economic zones and incentives provided for expenditure on research and development.

Keywords: area based exemption, SEZ, R&D, corporate tax

JEL: H25, E62, H32

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1. Introduction

The government has announced its plans to gradually phase out incentives within the corporate tax regime and correspondingly reduce the statutory tax rate on corporate profits to 25 percent over a period. This is an attractive policy since it provides a level playing field to all corporate entities and potentially encourages corporatisation of non-corporate firms since the latter would be taxed at a higher rate. In India, a number of committees have argued in favour of such reforms, i.e., Kelkar Committee's Reports on Direct Taxes and Indirect Taxes are one set of such reports. In an attempt to find ways to increase the tax-GDP ratio in the country, Bagchi, Rao and Sen (2005) present a discussion on the likely impact of the incentives of the economy and attempt to quantify the fiscal impact of the same. Given the present context and the existence of an official estimate of revenue foregone on account of various exemptions and incentives provided within central tax statues, this present note makes an attempt to take a few of the tax incentives within corporate tax to explore whether these incentives were useful to achieve the intended objectives.

The importance of various tax incentives as reflected in the revenue foregone statements have changed over the years. Table 1 below presents a summary of the major incentives in recent years. The table highlights the fact that apart from incentives given for "infrastructure sectors", the major incentives relate to exports through special economic zones, accelerated depreciation, incentives for encouraging investment in certain less developed areas and incentives provided for expenditure on scientific research.

Table 1: Major Incentives Provided to Corporations

		(Rs Crore)
	2013-14	**2014-15**
Area Based Exemptions	6928	7480
SEZ	18418	19890
Accelerated depreciation	34278	37010
Scientific Research	7527	8127
Infrastructure	3171	3424
Power	9824	10607
Mineral Oil	6245	6743
Telecom	1431	1545
Total	91144	98408
Recovered through MAT	33351	36009
Net Revenue Foregone	57793	62399

Source: Revenue Foregone Statement, Budget of GOI, 2015-16.

The literature on impact of tax incentives in India is rather limited. In the context of area based exemptions one study on the public domain is Chaurey (2013). This study evaluated incentives in context of Himachal and Uttarakhand using firm level data for the year 2007and concludes that policy change resulted in large increases in employment, output and capital - both due to entry of new firms and growth by existing firms. Further the study finds no evidence for relocation of economic activity across as a result of the regime from the un-incentivised states/regions to the incentivised regions. Given that the incentive regime has come to an end, it is useful to examine the evidence again to assess the impact of the regime. On Special Economic Zones there is a lot of literature. The literature is however divided in assessing the impact. There

are studies like Agarwal (2010) which conclude that the policy has been very effective and others like Seshadri (2011) conclude that there is not much evidence to suggest that export growth and generation of export zones in India are related. In this light, an attempt is made to re-examine the issue. As for R&D tax incentives there is a dearth of studies that have evaluated the same in the context of India. Studies such as those conducted by OECD(2013)find that the incentives tend to increase the level of R&D activity in the economy. An attempt is made to look at the data in the Indian context to examine whether the desired results are obtained.

To assess the impact of or effectiveness of an incentive regime, it is useful to know if the regime has undergone some changes in the period of analysis. In the absence of any major changes in the structure of the tax incentive regime, it is difficult to attribute changes in the investments in the incentivised sector to the incentive regime. Demand for the output of these sectors as well as other policy interventions through the expenditure side of the government budget or changes in the regulatory regime here might be playing a more important role. In the last two decades, there have been many attempts to provide and modify incentives given to infrastructure as well as manufacturing/service sectors in India. Of these an attempt is made to assess the impact through three categories – area based exemptions, special economic zones and incentives for research and development. These three provisions provide incentives to manufacturing/service sectors units where the intended benefits can be more easily measured than in the case of infrastructure sectors. For these reasons, the present attempt to understand the impact of tax exemptions focuses on the elements which have been initiated or changed in the last 10-15 years. The analysis will be limited to looking at area based exemptions, special economic zones and incentives for research and development. Turning to accelerated depreciation, there can be two potential ways in which this benefit can be defined. One, the schedule of Depreciation as per the Income Tax Rules can be different from the provisions of in general accounting principles and this difference can be interpreted as a provision for accelerated depreciation. Second, beyond the provisions in the depreciation schedule, the Income Tax Act also can make provisions for additional depreciation under section 32. The difference between the rates provided in the depreciation schedule in the rules and the additional provision in the Act can be considered an alternative definition of accelerated depreciation. It is not clear which of these can be considered an appropriate notion of incentive. Further, the provisions vary across sectors and across forms of investment within a sector. For instance, while machinery in a factory may be depreciated at 15 percent, pollution control machinery in the same unit can be depreciated at 100 percent. Given these differences, it is difficult to find a ready metric to assess the impact of the incentives offered on the intended goal, i.e., increasing rate of investment in the economy. As a result, in this note, we have not attempted to assess the effectiveness of this regime, even though it accounts for a significantly large part of the revenue foregone.

2. Area Based Exemptions

Fiscal incentives have been given to encourage investment in “backward” areas in many ways for very years. These incentives have been a combination of tax incentives and subsidies, capital subsidies, interest subsidies and/or transport subsidies. One phase of these incentives focused on identified backward areas wherever they might be located. So there were districts identified as backward in all states. In such schemes it was felt that the benefit largely accrued to the backward districts of developed states and to areas closer in location to developed areas of the states. While these were incentives offered by the Union government, States on their part too have been using tax holidays and deferrals as a mechanism to influence the location of industry in backward areas. There was a change in policy in the mid-nineties where the unit for determining incentives was changed from district to State. In 1997, the Union government set out a policy called the North East Industrial and Investment Promotion Policy to encourage the location of manufacturing activity in the North Eastern States of India. Such a package was initially designed for the states in the North East in 1997 and then extended to J&K in 2002, and

to Himachal Pradesh and Uttarakhand in 2003. The period of each incentive policy announcement was 10 years, i.e., the units had to start commercial production within 10 years from the date of notification of the scheme. The policy announced for the North East lapsed in 2007, and has been followed by an extension of the same policy for 10 years. The benefits allowed within these schemes can be summarised as follows:

1. 100 percent exemption from excise duty for 10 years from date of commercial production
2. 100 percent exemption from income tax for initial five years followed by 30 percent for companies and 25 percent for other firms for a further period of five years from the date of commercial production.[2] For states in the North East, income tax exemption of 100 percent is available for the entire 10 year period.
3. Capital investment subsidy of 15 percent of investment in plant and machinery subject to a ceiling of Rs 30 lakh for new units as well as for existing units for substantial expansion. The ceiling is substantially higher for the North Eastern states, where even subsidy of over Rs 30 crore can be approved by the DIPP.
4. There is an interest subsidy of 3 percent on working capital loan given to units in J&K

The objective of these schemes was to increase investment, employment and output in these regions. To answer the question on whether the incentives were useful to serve the desired objective, the questions we can ask are

1. Did the incentivised states grow faster than before? As a part of this question, since a number of states were offered similar package of incentives, it is useful to ask whether similar effect was observed in all the states, or whether some states benefitted more than the others. If the latter is true, it raises questions on how the incentive packages are to be designed so that more states can benefit.
2. It is often argued that the investment and economic activity from the neighbouring states was diverted to these states thereby resulting in a diversion of activity. Per se, this kind of a policy is meant to influence the location of new investment. So it would be expected that out of incremental investment, these states would have a higher share. However, if existing units in the non-incentivised states reduce production, then we can consider that evidence of unintended diversion. In other words, the evidence to look for is whether other states experienced negative growth especially in output and employment in the initial years of the new policy.
3. Second way in which the regime could have resulted in unintended consequences would be if the investment which moved to the state chooses to leave the state when the incentive period ends.

Each of these aspects will be examined through available evidence. The data available to analyse these issues are

1. Gross State Domestic Product for individual states: Information is available till 2013-14 or 2014-15 on value added in different sectors of the economy.
2. Income, employment and capital formation data from the Annual Survey of Industries (ASI): This series ends in 2011-12 and provide information on more variables.

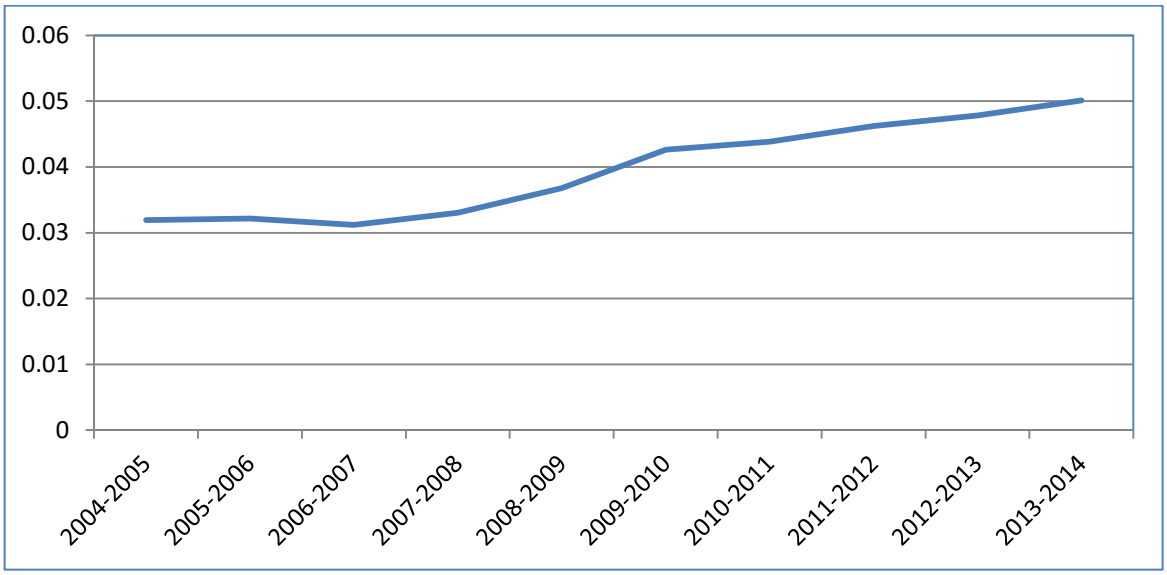
Dimension 1: Did the incentivised states grow faster than before?

Using the GSDP data, we find that the incentivised states did grow faster than the other states, resulting in an increase in the share of these states in combined GSDP across all states. A similar result is evident if we use ASI data. The share of these states has increased in gross output, in gross value added as well as in gross fixed capital formation. (See Figures 1 and 2)

[2] The present dispensation for J&K makes this part of the incentive regime irrelevant.

This suggests that the incentivised states did experience relatively higher rates of growth when compared to the rest of the country. This is reflected in Graphs 3 as well where rate of growth of manufacturing in higher in the incentivised states when compared to the other states.

Figure 1: Share of Incentivised States in Combined GSDP of all States



Source: MOSPI website

Figure 2: Annual Survey of Industries: Share of Incentivised States

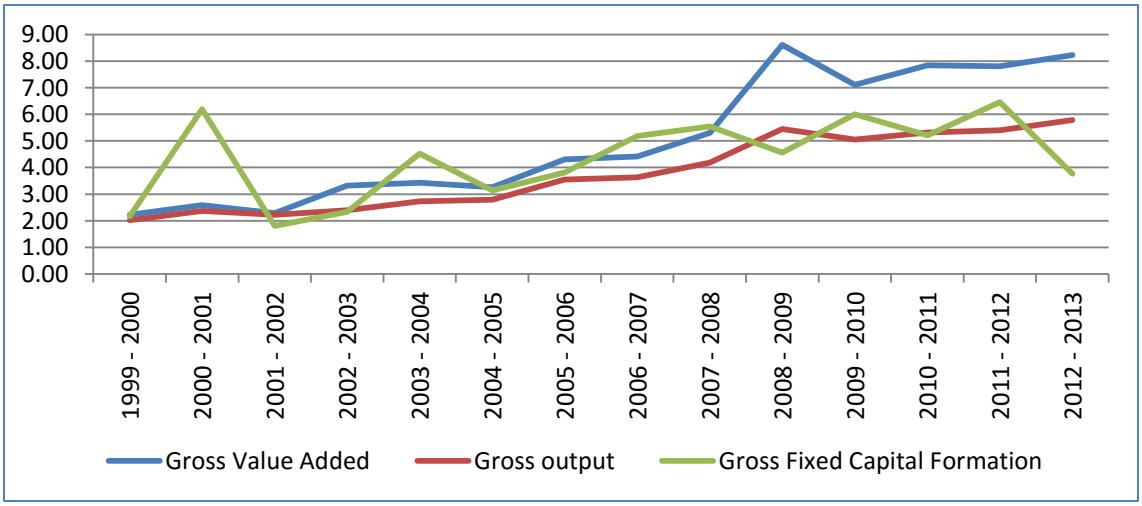
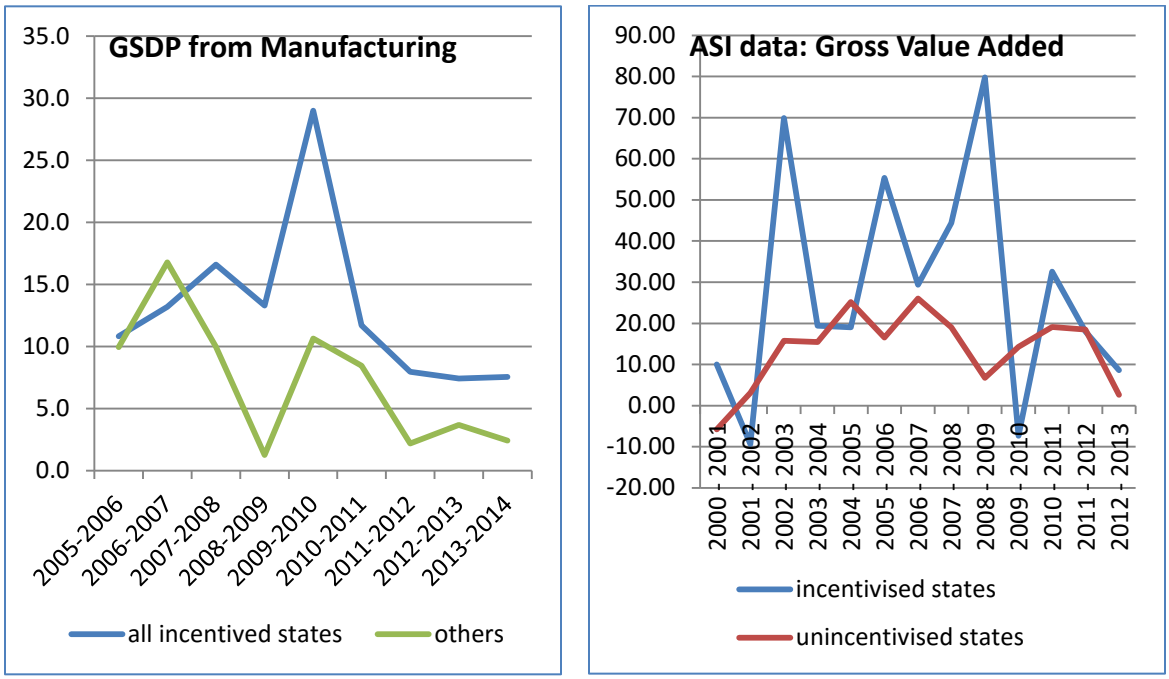


Figure 3: Annual Rate of Growth of Manufacturing



Of these incentivised states, if one examines the shares of individual states in the combined GSDP from manufacturing for these states, one finds that during the period 2004-05 to 2013-14, the share of Assam has declined sharply from 39 percent to 15.5 percent, while that of Uttarakhand has increased sharply from 22 percent to 47.8 percent (Table 2). Among the other states which have witnessed a significant change in share is Sikkim whose share increased from 0.47 percent to 4.88 percent and Jammu and Kashmir whose share has declined from 11.7 percent to 8.2 percent. A similar trend is evident in ASI data as well both in Gross Value Added and in Gross Fixed Capital Formation. These observations suggest that while some states among the incentivised states did benefit from the incentives provided, others did not. Predominant among the states which did not experience any major change in share is Himachal Pradesh.

Table 2: Changes in the Share of States (ASI Data)

	Share in Gross VA		Share in GFKF	
	1999 - 2000	2012 - 2013	1999 - 2000	2012 – 2013
Assam	45.6	9.0	31.1	11.2
Himachal Pradesh	32.1	30.4	57.0	31.7
Jammu and Kashmir	6.0	5.4	6.0	4.1
Manipur	0.0	0.1	0.0	0.1
Meghalaya	0.2	1.2	0.2	4.3
Nagaland	0.2	0.1	0.2	0.0
Tripura	0.7	0.5	0.4	0.1
Uttarakhand	15.2	48.8	5.2	47.7
Sikkim	0.0	4.5	0.0	0.8

Dimension 2: Did Economic Activity Shift from neighbouring states to the incentivised States?

The objective of the incentives, as discussed above, is to direct economic activity into the incentivised states. This could happen broadly in one of two ways:

- Of the incremental investment in any given year, the incentivised region claims a larger share, implying that the rest of the country gets a lower share. This would mean that the rates of growth in the incentivised region are higher than in the other regions, but the latter is not negative, i.e., there is no contraction in the other regions.
    - It is also possible that because of the incentive scheme, the overall scale of investment in the economy is higher and the additional incremental investment is located in the incentivised region/economic activity. While this is a possibility, given that the incentivised states and the economic activity in manufacturing therein account for only about 8 percent of Gross Value Added (as per ASI data), this effect is difficult to allude to.
- Existing economic activity in different states finds it attractive to shift business to the incentivised region from their existing location. This could take many forms: it could mean a shift of the unit physically from one location to another location. It could also mean that the firm sets up a billing unit in the incentivised region where the level of production may not be very high but the level of sales can be high. It could also mean that the firm sets up a low capital investment unit in the state depending on whether the investor plans for the unit to remain functional after the incentive period is over or not.

To first explore if the firms have shifted from other locations to the incentivised region, the exercise focuses on Himachal Pradesh and Uttarakhand for two reasons. First, the incentive regime is of more recent origin and the data for pre-incentive and during incentive period can be accessed. Second and more importantly, while the incentives to the North Eastern states did not evoke protests from other states, when the incentives were extended to these two states, it evoked a lot of reaction from other states. It was even suggested that the period for incentives should be reduced. These reactions suggest that if a shift in economic activity is a major concern, it should be more evident in these states, especially in comparison to their neighbours.

Figures 4-6 below shows that the rate of growth of fixed investment, value added as well as employment in Himachal Pradesh and Uttarakhand was higher than in the neighbouring

states[3]. However, the latter did not report a fall in the levels below historical levels, i.e., there is not much evidence to support the argument that there was a large scale movement of economic activity from the neighbouring states to the incentivised states.

Figure 4: Growth of Gross Value Added

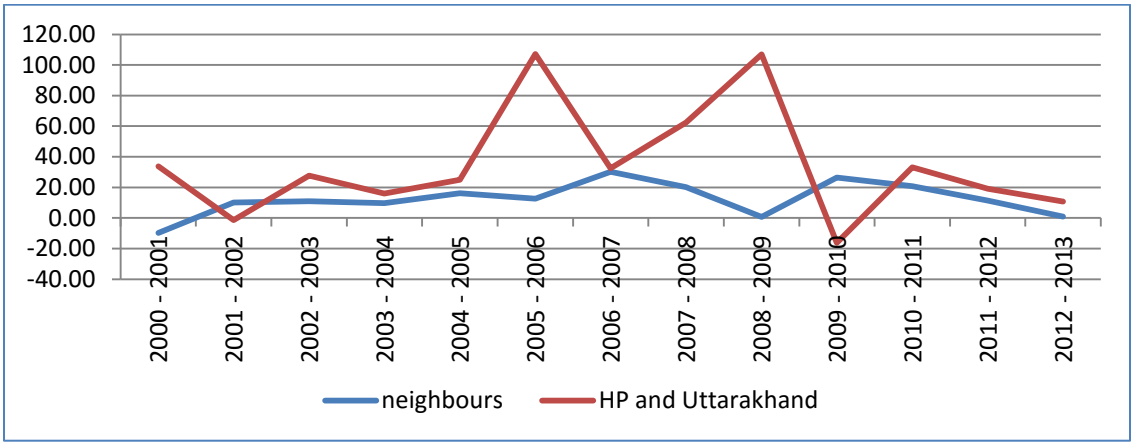
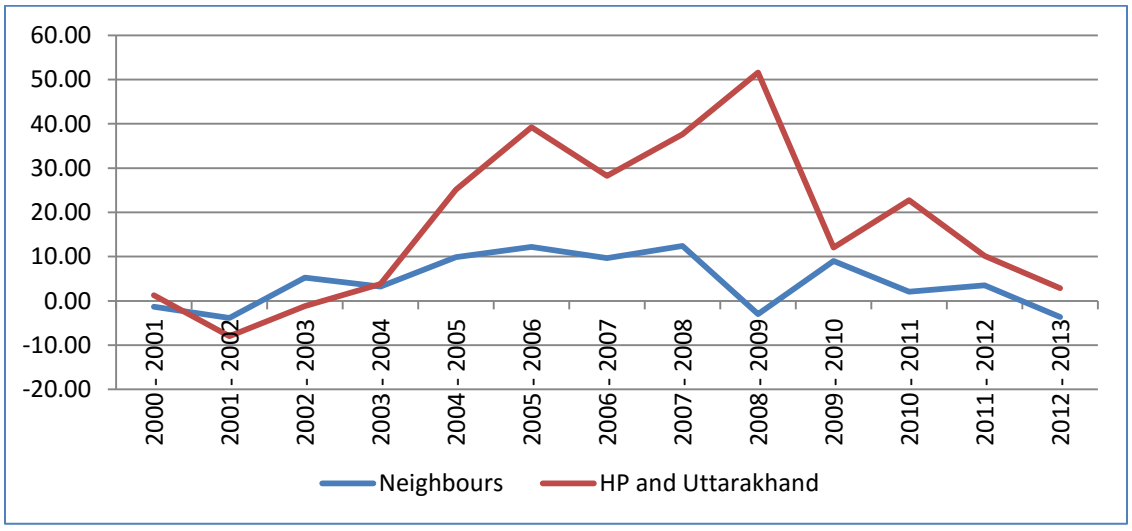
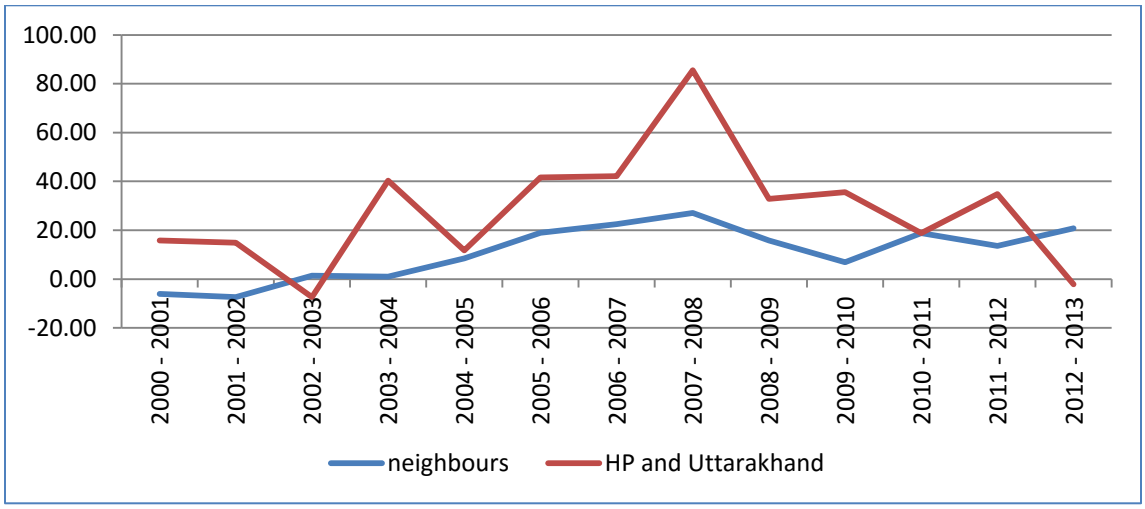


Figure 5: Growth in Employment



[3] Neighbouring states here refer to Punjab, Haryana, Delhi, Uttar Pradesh.

Figure 6: Growth in Fixed Capital



Dimension 3: Is this footloose industry which will move when the incentive period comes to an end?

The incentive period is not yet over. For firms that began commercial production in 2003-05, the incentives are drawing to a close. For firms that have entered commercial production in 2010, the regime will continue to provide benefit till 2020. Any evidence of actual withdrawal of firms is therefore not captured by the aggregate data available. There is some anecdotal evidence to suggest that some firms have closed their operations in Himachal Pradesh for instance, but it is difficult to infer from such information that there would be no net benefit for the state as a result of the incentive regime, after the incentive period has ended.[4] An alternative way of looking at the same question is to ask whether the incentive regime has attracted relatively more "footloose industries" when compared to investment in the rest of the economy. One way to answer this question would to examine whether investments in these states are less capital intensive than investments in the rest of the economy. If a firm invests in physical capital, it is expected to be more difficult to shift location of the factory when compared to firms which have relatively less sunk capital.

Based on the ASI, the trends in capital intensity suggest that while the output per unit of capital for Uttarakhand was consistently higher than that of non-incentivised states, even in Himachal Pradesh, during the incentive period, the ratio is higher than that of non-incentivised states (Figure 7). In other words, the capital in these two states seems to be more productive when compared to other states in India. One way, this could happen, is if the economic activity in these states is more labour intensive than in the unincentivised states. A look at the trends in the ratio of output per unit of labour however suggests that even on this front, these two states, Himachal Pradesh and Uttarakhand, have a higher output per employee when compared to the

[4] http://health.economictimes.indiatimes.com/news/pharma/pharma-companies-now-prefer-gujarat-over-tax-havens/46487815
http://www.outlookbusiness.com/special-edition/state-of-the-economy_2015/shrouded-in-mist-659
http://www.efytimes.com/e1/creativenews.asp?edid=49199

unincentivised states (Figure 8). From these two indicators, it appears that the firms in these two states are more productive when compared to the other states.

Figure 7: Output per unit of fixed capital

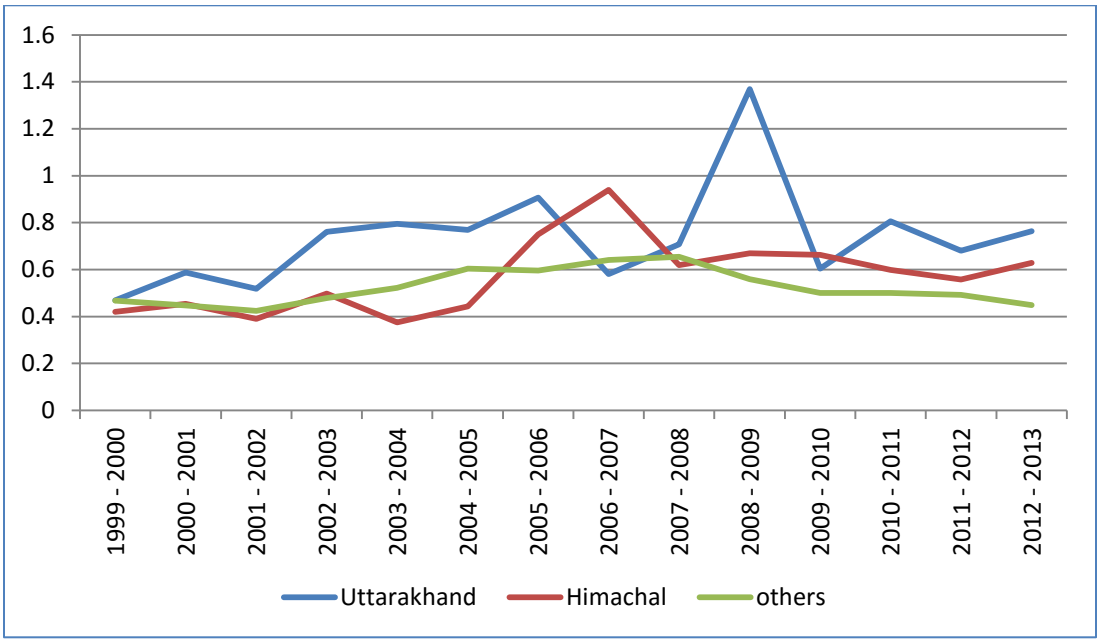
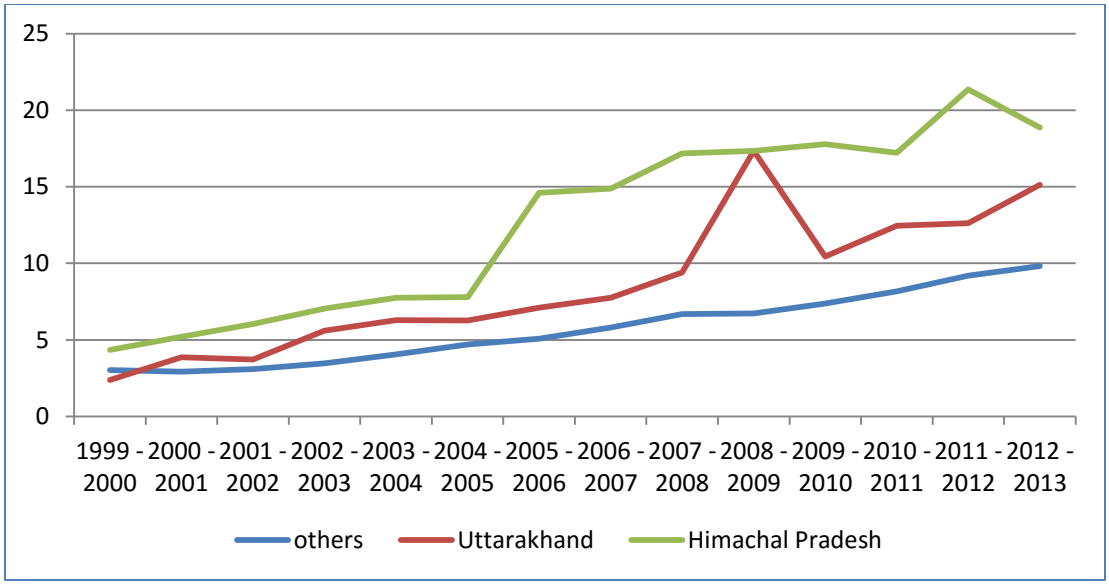


Figure 8: Output per unit of labour



To explore this issue a little further, we estimate a fixed effect panel model 16 major states along with Himachal Pradesh and Uttarakhand. The states have been grouped into two groups – those that received incentives which include Himachal Pradesh, Uttarakhand and Others. The dummy "Dum" separates these two groups. The following specification was used

$$D(Gross\ Value\ Added) = \alpha + \beta.\mathrm{D}(FK) + \gamma.\mathrm{D}(emp) + \delta.dum * d(FK) + \mu.dum * D(emp)$$

where, D(FK) stands for change in fixed capital and D(emp) stands for change in employment.

The results are summarised in table 3 below.

Table 3: Explaining Change in Gross Value Added

Variable	Coefficient	T Statistics
$\mathrm{D}(FK)$	0.317618	3.74
$\mathrm{D}(emp)$	0.896551	10.83
$dum * d(FK)$	-0.1898	-0.88
$dum * D(emp)$	0.50855	1.56

The results suggest that for given levels of capital and labour, the output produced in Uttarakhand and Himachal Pradesh is higher than in the other states.

This result can be interpreted in three ways: one, these states are more efficient than the other states; two, the activities which have expanded in these states are high productivity and/or low investment activities or three, the factories are reporting more output than they are reporting use of inputs – capital and labour in these states. If the first were the appropriate interpretation, then there is very little reason to provide incentives to these states since they should have been able to attract more investments for this reason alone. The second interpretation would suggest that these are in effect footloose industries which would have relatively low cost of moving from one location to another. The third interpretation supports the possibility that the incentive regime makes it incentive compatible for firms to report more output in these regions when compared to the other states so as to derive maximum benefit from the incentive regime. Both interpretations 2 and 3 would indicate that the incentive regime might not be delivering the intended benefits, by attracting a preponderance of footloose industries.

The analysis suggests mainly three things

1. There has been an expansion in the economic activity in the incentivised regions with their share in total output/value added as well as in capital and employment increasing over time. But the benefits have not accrued uniformly to all the incentivised states. Uttarakhand and Sikkim seem to have benefitted more than the other states.
2. There is not much evidence of a largely scale shifting of economic activity from the neighbouring states to the incentivised states – since the level of activity did not decline in these states taken together.
3. On whether the states would witness sustained economic activity once the incentive period is over, evidence seems to suggest that the industry is footloose and hence a part of the economic activity might not be sustained once the incentives no longer exist.

3. Special Economic Zones

The Special Economic Zones Act was legislated in India with an objective to generate world class infrastructure that can support production and more importantly exports from India. In laying down the guidelines for notifying special economic zones, the Act specifies that

> *"The Central Government, while notifying any area as a Special Economic Zone or an additional area to be included in the Special Economic Zone and discharging its functions under this Act, shall be guided by the following, namely:-*

a. *generation of additional economic activity*
b. *promotion of exports of goods and services;*
c. *promotion of investment from domestic and foreign sources;*
d. *creation of employment opportunities;*
e. *development of infrastructure facilities; and*
f. *maintenance of sovereignty and integrity of India, the security of the State and friendly relations with foreign States".(Section 5 of SEZ Act, Page 8)*

Since the act identified quite clearly some of the intended benefits from the SEZ policy, these parameters can be used as a measure of the success of the policy. Any attempt to assess the progress on these fronts however can be possible only if information on the relevant variables is available to the public domain. There has been a lot of variation in amount and kinds of information that is available in the public domain on SEZs. In the initial years of the new policy regime, the dedicated website on SEZs in India, www.sezindia.nic.in used to provide information not just on the number of SEZs at various stages of approval and operationalization, but also SEZ-wise information on imports, exports, investment and employment. Sales in DTA too were reported. In the most recent times however, there is a sheet on total exports by all SEZs and another "Factsheet" which provides information on investment, employment and exports cumulated from the time the policy was announced till date. Some of the SEZ administrators do have their own websites which provide some information but such information is not available for all the zones and hence cannot be cumulated either. This moderate attempt to assess the impact of SEZs is therefore based on the limited data available in the public domain.

In the guidelines meriting attention above, there is a close relation between three of them: promotion of investment, generation of additional economic activity and creation of employment opportunities. Increase in investment should result in additional economic activity as well as employment opportunities. Since there is no information available for the extent of value added in the SEZs, this dimension of impact on economic activity cannot be explored. For exploring these different issues, the discussion is organised as follows.

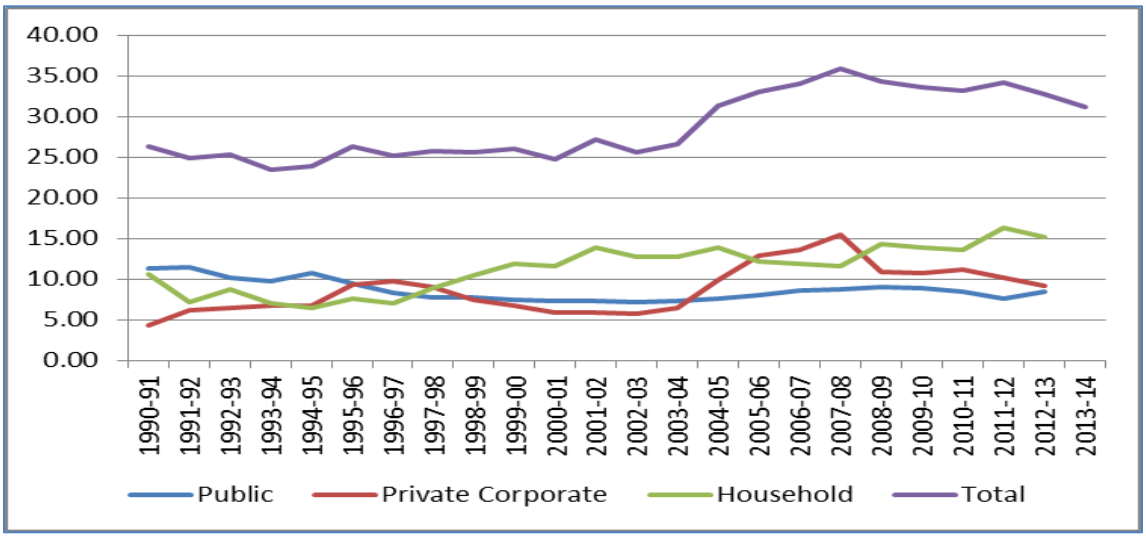
Since the investment has an impact on all the other parameters listed in the guidelines, the impact of SEZ policy on total investment in the economy is first analysed. This is followed by an analysis of the impact on exports and employment.

Related to the question on the quantum of investment, is the issue of generation of world-class infrastructure, which is once again one of the stated goals of the SEZ policy. In order to assess the infrastructure investments, since there are no aggregate indices of quality or quantum of infrastructure in the country, it is once again not possible to explore whether the SEZ policy has augmented the quality or quantity of infrastructure in the country.

i. Investment

The first indicator which should respond quickly to the introduction of a policy like that of the special economic zones is investment. There are two ways of analyzing whether this policy has had an impact on the investment in the country. The first, a very broad approach, is to ask whether, with the introduction of the policy, the investment profile of the country underwent a change. This could manifest as an increase in the ratio of investment to GDP. It should however be kept in mind that this ratio would respond not just to changes in this policy but to all other policy changes and to changes in the overall growth in the economy. The period of the enactment of the SEZ act coincided with a substantial increase in the rate of growth of the economy as well as policy stimuli such as relaxation of the FDI norms for some sectors. In terms of the observed investment, there is an increase in the ratio of investment to GDP from 2004-05 onwards. The ratio was consistently less than 30 percent in the earlier years and increased to over 35 percent in 2007-08 before declining to a little over 30 percent in 2013-14 (Figure 9)

Figure 9: Gross Capital Formation as a percentage of GDP at factor cost



Source: National Accounts Statistics, various issues.

In terms of the composition of investment, the increase is observed in private corporate investment, and similarly the decline too is in the same head. This recorded increase however is very large. If one seeks to attribute the increase to the SEZ policy, it is important to ask how much of this increase is accounted for by investment in SEZs.

As per the figures reported in the Factsheet on the official website of Special Economic Zones[5], the total "incremental" investment in SEZs since the introduction of the Act was Rs. 3.59 lakh crore. This is the total investment by both developers of SEZs and units in the zones, after the Act came into being, and includes investment in hitherto existing SEZs as well. When compared to the total investment in India during 2004-05 to 2013-14, investments in SEZs amount to 1.74 percent of total investment. When the incremental investment for 2004-05 to 2011-12 is calculated[6] based on the change in the ratio of investment to GDP, total investment in SEZs accounts for only 8.02 percent of such incremental additional investment. On the face of it, therefore, it is difficult to attribute the increase in investment in the period since 2004-05 to the SEZ policy. In other words, factors other than the SEZ policy seem to have played a larger role in driving the expansion in capital formation in India since 2004-05.

It would be interesting to ask whether investment in SEZs is more productive than that in the rest of the economy. However, it is not easy to answer this question. While we can consider the level of exports from SEZs as a measure of their output as well[7], there is no information available on the quantum of purchases by these units and therefore it is not possible to infer about value added per unit of investment in the SEZs. For similar reasons, it is not possible to assess the impact of the presence of an SEZ on the DTA through backward linkages.

[5] Accessed on February 4, 2016.
[6] Assuming the gross fixed capital formation to GDP ratio remains the same as in the period till 2003-04, we take the average of the ratio for the five years. Deviation from this average gross fixed capital formation to GDP ratio is considered the incremental additional investment in the regime from 2004-05 onwards.
[7] No information is provided on the total production in these units or on the sales by the units in SEZs to the DTA

ii. Exports

The Fact Sheet on SEZs available on the website www.sezindia.com shows that the exports from SEZs have been accounting for an increasing share in total exports of goods and services from India. In 2011-12, exports from special economic zones are reported to have accounted for 16.8 percent of total Indian exports. While these statistics do suggest that there is considerable presence of SEZs in the Indian export scenario, the relevant question here is whether the policy contributed to augmenting the overall quantum of exports from India.

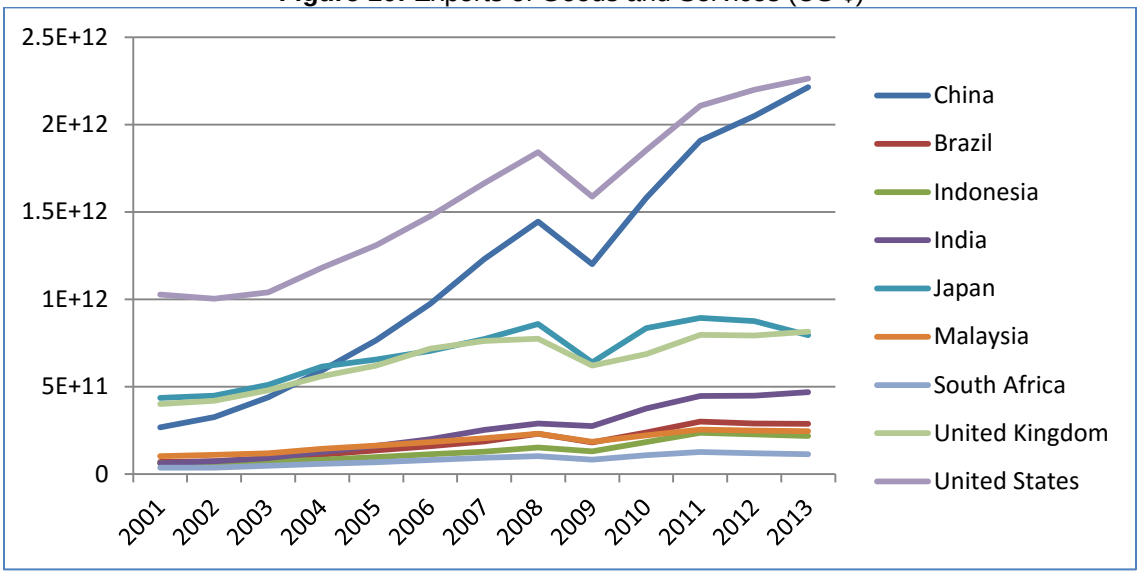
Table 4: Value of Exports of Goods and Services (Rs crore)

Year	Exports from SEZs	Exports from India	Share of SEZ in total exports (%)
2005-06	22,840	721416	3.17
2006-07	34,615	915964	3.78
2007-08	66,638	1031050	6.46
2008-09	99,689	1345972	7.41
2009-10	220,711	1317862	16.75
2010-11	315,868	1732938	18.23
2011-12	364,478	2166882	16.82
2012-13	476,159	2460177	19.35
2013-14	494,077	2848254	17.35
2014-15	463,770	2885904	16.07

Source: Compiled from SEZindia.com and BOP statements of RBI.

There are three related indicators which can be analysed to understand whether the SEZ policy changed the performance of Indian exports: value of exports, exports as a percentage of GDP and share of Indian exports in total world trade. As can be seen from Figure 10 below, exports of India have been increasing consistently over the years except for the year 2009 where like a lot of other countries, India too experienced a sharp fall in exports. It is not immediately discernible if there is any change in the behaviour after the introduction of the SEZ policy.

Figure 10: Exports of Goods and Services (US $)

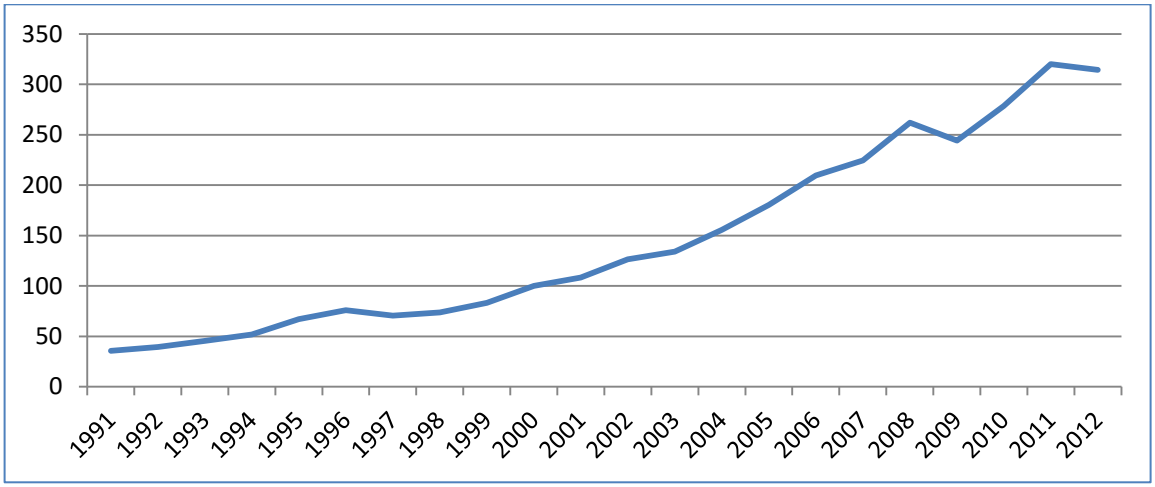


Source: IFS, IMF.

Like in investment, there are a number of extraneous factors that can affect the export performance of the country. In the present instance, slowdown in the global economy can result in a reduction in the demand for Indian exports. In the year 2009, most countries experienced a decline in exports (Figure 10).

Turning to the alternative indicators of the performance of Indian exports, the export volume index shows a consistent increase through the period considered – there is no apparent change in the behaviour after the introduction of SEZ policy (Figure 11).

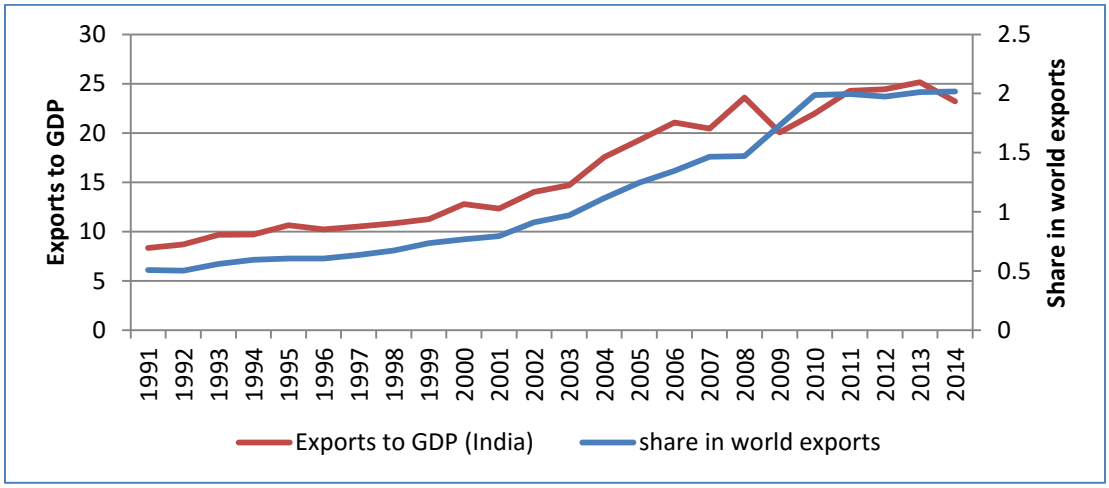
Figure 11: Exports Volume Index of India (in US $ million)



Source: World Development Indicators, World Bank.

The ratio of exports to GDP displays a slightly different picture (Figure 12). While the ratio increases till 2005, it almost remains stable with some fluctuations in the subsequent period. On the other hand, if one considers India's share in global exports, the share increases till 2009, after which there is a decline. In terms of the slope, there is no clear evidence of any sharp increase or decline associated with the introduction of the SEZ policy.

Figure 12: Export Performance: Ratios



***Source*:** Own calculation based on IFS data.

From the above, it would appear that straightforward examination of the trends is not adequate to know whether SEZ policy augmented exports of India. In order to verify whether

there is any structural break in exports, an attempt was made to explain three indicators of export performance of India in terms of world GDP and exchange rates and examine whether there was any evidence of a break(s) by using the methodology developed in Bai-Perron(2003). The results are summarized in Table 5 below.

Table 5: Explaining India's Export Performance

	Export to GDP	Share In World Exports	Exports[8]
World GDP	7.39E-13(18.06)	6.81E-14(13.70)	3.1009(2.54)
REER			0.0873(0.40)
NEER	0.0418(2.20)	0.0030(1.32)	
Constant	-20.7447 (-5.94)	-2.1726(-5.11)	0.08892.43)
Adjusted R-square	0.9607	0.9358	0.1987
Identified breaks[9]	2001	2001, 2008	No breaks

The estimates suggest that there is no statistical significant break in the performance of Indian exports in the period after the introduction of SEZs. In other words, while the exports of SEZs have increased much faster than that of exports from the rest of the country, the overall exports from India does not display an increase suggesting that perhaps the gains reported in SEZs may have come from a shift in location of exports from DTA to SEZs.

iii. Employment Generation

Employment generated in SEZ is reported to have shown a sharp increase after the enactment of SEZ Act 2005. The additional employment generated between 2005 and 2014 in the new SEZs as per the SEZ Fact Sheet is 12.23 lakh persons. Since it is expected that any investment would generate some employment, as mentioned above, it is important to assess how this set of activities compares with investments in the rest of the economy. If one takes the incremental investment and the incremental employment reported by the SEZ Fact Sheet, the capital invested per person employed works out to Rs 27 lakh. As a point of comparison, in a study for manufacturing sector, using ASI data, Papola et. al. (2011) report capital per person employed of Rs 3.86 lakh in organised manufacturing and Rs 23240 for unorganised manufacturing. It may be mentioned here that these figures relate to 2006-07 and 2005-06 respectively. Even correcting for inflation in the interim, the figures reported for SEZ suggest that the employment generated corresponding to the investment reported is somewhat low. Given the lack of disaggregated information in the public domain, it has not been possible to explore the sector wise employment intensity of investment in SEZs.

The available information on SEZs therefore does not suggest that the policy introduced any statistically significant change in the performance of the Indian economy either in terms of the level of aggregate investment or exports.[10] Further, given the level of Investment, it would appear that the employment generation in the SEZs is considerably lower than in the manufacturing sector in the domestic tariff area. While it is possible that investments reported in SEZs include a

[8] This equation is estimated in first difference of logarithamics.
[9] Identified using Bai Perron test for multiple tests. Bai, Jushan; Perron, Pierre (2003). "Computation and Analysis of Multiple Structural Change Models". *Journal of Applied Econometrics* **18** (1): 1–22. doi:10.1002
[10] Mukherjee and Bharadwaj (2016) discuss the possibility that a change in the incentive regime by the introduction of MAT on SEZ units and developers has affected the performance of SEZs but do not provide any conclusive evidence even in the context of this limited question. They however do provide evidence to suggest that the primary attraction of SEZs is identified as fiscal benefits as against other possible benefits such as infrastructure and ease of doing business. This observation is used to conclude that the incentives need to be continued. It is however, also possible to argue that if even after 10 years of the policy the important benefits are identified as fiscal benefits, evidently, the policy has failed to generated the commensurate other benefits on a scale which could make SEZs a preferred place of doing business.

considerable amount of investment in infrastructure development, there is no evidence available currently on the split of investment into those by a developer and those by units. Further, there are no measurable indicators of the quality or quantity of infrastructure generated within the SEZs to allow for any analysis of this objective of the proposed policy.

3. Incentives for R&D

Companies operating in India are offered tax incentives of the form of super deduction for incurring revenue and capital expenses on Research and Development. There are different rates of deduction that are offered to companies undertaking in-house research and to those which outsource it. Companies that undertake in-house research receive a super deduction of 200 per cent of the revenue expenses incurred by them, provided they have a dedicated research facility approved by DSIR. As per the notification of the department of revenue in 1998, Secretary, DSIR has been designated as the 'Prescribed Authority' for purposes of Section 35(2AB) of I.T. Act. Therefore, a company undertaking such expenses can claim super deduction on grant of approval by the prescribed authority.

For companies that do not carry out in-house research 175% weighted deduction is available for any payments made to a research association, university, college or other institution and 125 % of any payment made to a company. As per the OECD[11] the rationale for such tax incentives is that R&D activities are crucial for the long run growth of the economy, create knowledge spill-overs, contribute to national competitiveness and are necessary since the investment in R&D is risky.

While there are multiple objectives of such tax incentives we assess the utility on the basis of three outcome indicators - patents, royalties received and firms performance. These indicators enable us to ask three questions

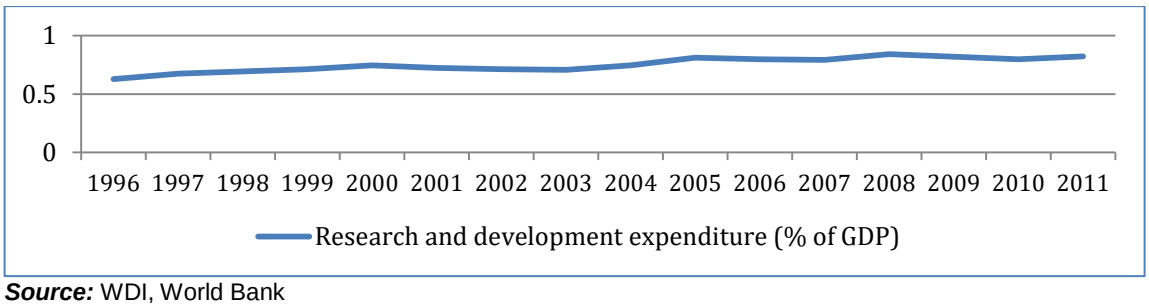
a. Do the R&D expenses within the economy bear any relationship with the extent of innovation i.e. patents generated?
b. Do these patents generate returns to the economy in the form of royalty?
c. Have R&D expenses contributed to better performance of companies?

In the following sections each of these questions are raised and answered.

3.1 Introduction

In India the R&D expenses incurred by the public and private sector have been increasing. In 2011-12 these expenses were Rs. 72,620 crore. The R&D expenses when expressed as percentage of GDP have not increased as sharply as the overall numbers. As shown in Figure 13, the percentage of R&D expenses of GDP increased from 0.62 to 0.82 %.

Figure 13: R&D expenses as a percentage of GDP



Source: WDI, World Bank

[11] http://www.oecd.org/sti/ind/46352862.pdf

While the total R&D expense has been increasing, India still lags behind many economies when the R&D expenses are expressed in terms of their share in GDP. In 2011, India's R&D expense (as a % of GDP) was lower than not just the average of the Euro Area countries (2.03) and OECD countries (2.41) but also that of China (1.79) and Brazil (1.14). In fact, the share of R&D expenses in GDP has been relatively stable over the years 2005 to 2011.

The R&D expenses incurred by private sector focus on industrial production and technology (17%), Infrastructure and General Planning of Land Use and protection (28%) and improvement of human health (38%)[12]. Further, the sectors that undertake the largest R&D expenses in total or expressed as a share of sales turnover are Information Technology, Drugs and Pharmaceuticals, scientific Instruments, biotechnology[13] and telecommunications. In terms of number of companies, drugs and pharmaceutical has the largest number i.e. 227 whereas for IT there were 27, in telecommunication 35, in scientific instruments 17 and in biotechnology 76.

Table 6: Patent Applications by Top Fields of Technology (2000 – 2014)

Field of Technology	Share
Pharmaceuticals	19.91
Organic fine chemistry	18.1
Computer technology	14.31
Biotechnology	5.03
Basic materials chemistry	3.88
Digital communication	3.59
IT methods for management	2.77
Medical technology	2.45
Chemical engineering	2.19
Materials, metallurgy	2.06
Others	25.71

Source: WIPO
Note: This includes all applications by residents in India and abroad

3.2 R&D expenses and Patents

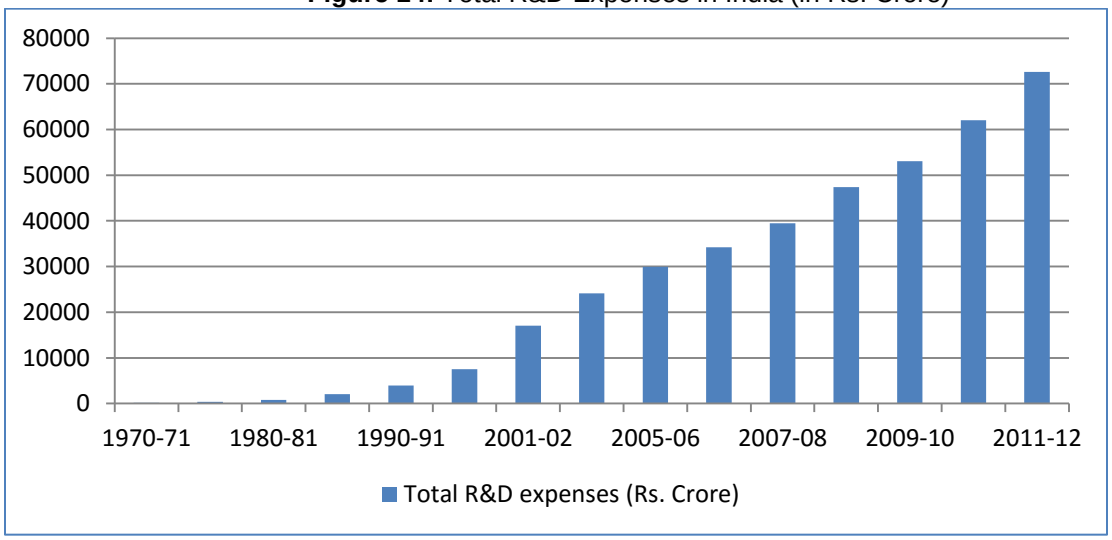
The first outcome that an incentive to research and development is expected to yield is to encourage level of innovation in the economy. One measure of the quantum of innovation is the number of patents. In order to develop patents, the companies must undertake expenditure on R&D. Therefore, there must exist some relation between the increase in the overall R&D expenses incurred by companies in the economy and the number of patents applied for in these years.

R&D expenses in India are undertaken both by the government, which funds research carried out by academic and scientific institutions, and by the private sector. As can be seen in figure 14 and 15, the R&D expenses incurred by overall economy and the share of the private sector in such expenditures has been increasing over the years. This increase in the share of

[12] All these numbers are for 2009-10
[13] R&D in biotechnology as % of STO has declined over the years

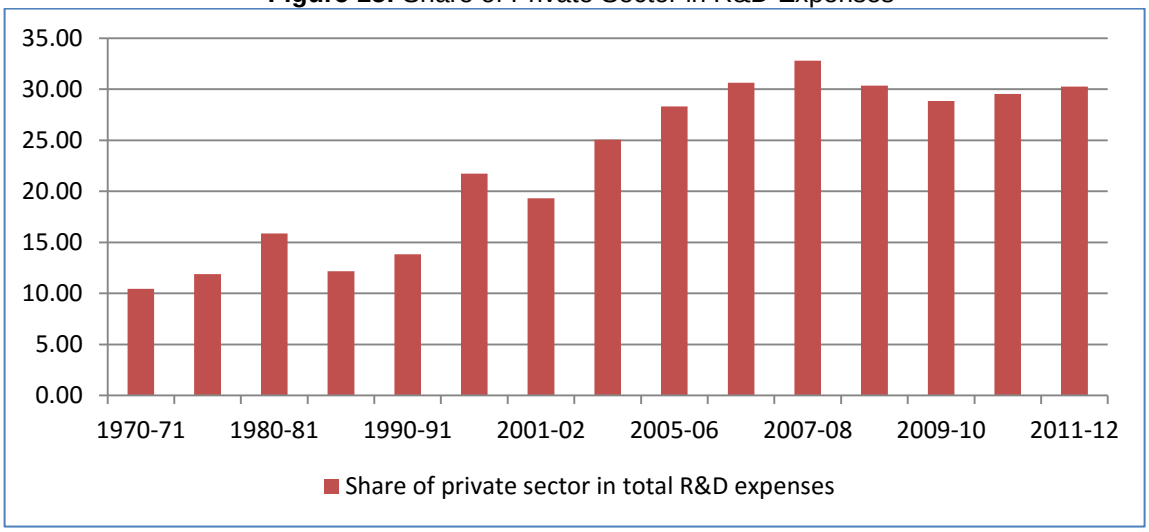
private sector came at the expense of the decline in share of R&D expenses of central sector. The central sector comprises of the 117 Public Sector/Joint Sector companies.

Figure 14: Total R&D Expenses in India (in Rs. Crore)



Source: Annual Report of Comptroller General of Patents, designs, trademarks and geographical indicators

Figure 15: Share of Private Sector in R&D Expenses



Source: Annual Report of Comptroller General of Patents, designs, trademarks and geographical indicators

The weighted deduction for R&D was made available to companies in 1997 through the introduction of subsection 2AB to section 35. The rates of weighted deduction have gone through a change from 150% up till AY 2010-11 the maximum deduction available is 200 % now. The expenses incurred have increased irrespective of such changes in rates of deduction available.

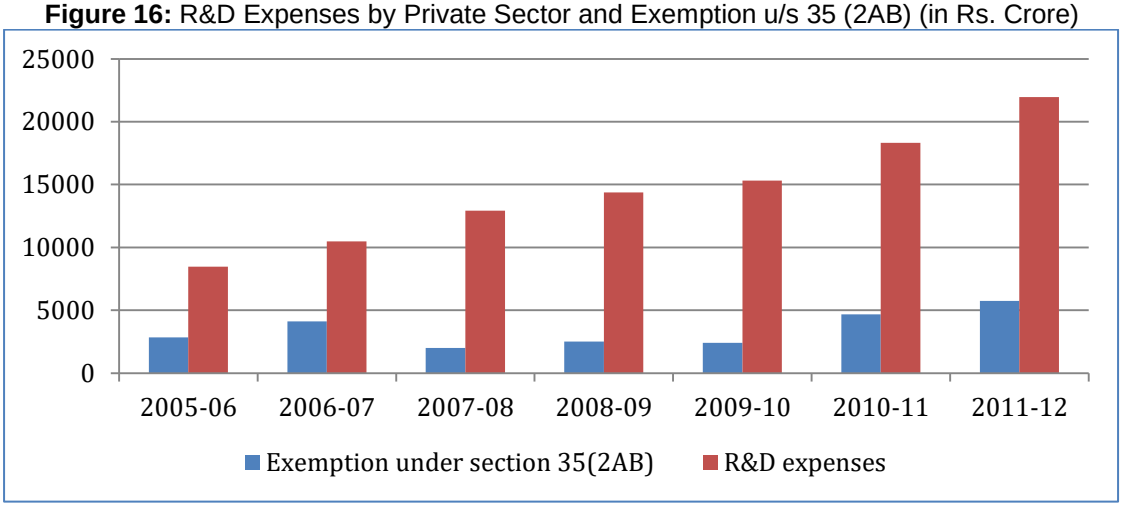
The patent regime too has gone through a significant overhaul. In order to meet its obligation under TRIPS agreement in 2005 India amended patents act 1970. The amendments introduced to the existing law were that product patents were allowed in the pharmaceutical sector, patents were extended to all fields of technology including software programs and the

patent protection period was extended to 20 years from 7 years[14]. The expansion of scope and the protection for a period of 20 years may have incentivised companies to take on higher R&D and generate patents. Further, with product patents being permissible MNCs would find it conducive to operate in India given that the new patent regime would safeguard their innovation by disallowing reverse engineering. Some of these changes could be the potential reasons for the increase in the share of private sectors expenditure in R&D, the share which had languished below 20 per cent prior to 2005 was 30 per cent in 2011-12.

The change in rate of weighted deduction seems to have had no visible impact on the trend of R&D expenses. However the shift in patent regime may in part be responsible for the increase post 2005.

While the total R&D expenses in the economy have increased one may ask if the incentives that have been offered have encouraged the private sector to increase their expense on R&D. The increase in the R&D expenses over the years 2006-2012 has been steady whereas the incentive claimed through exemptions has been volatile. As can be seen in Figure 16, the R&D expenditure has increased despite relatively stable value of the exemptions over the period. Therefore, to conclude anything about the relationship between R&D expenditure and exemption is difficult.

Figure 16: R&D Expenses by Private Sector and Exemption u/s 35 (2AB) (in Rs. Crore)



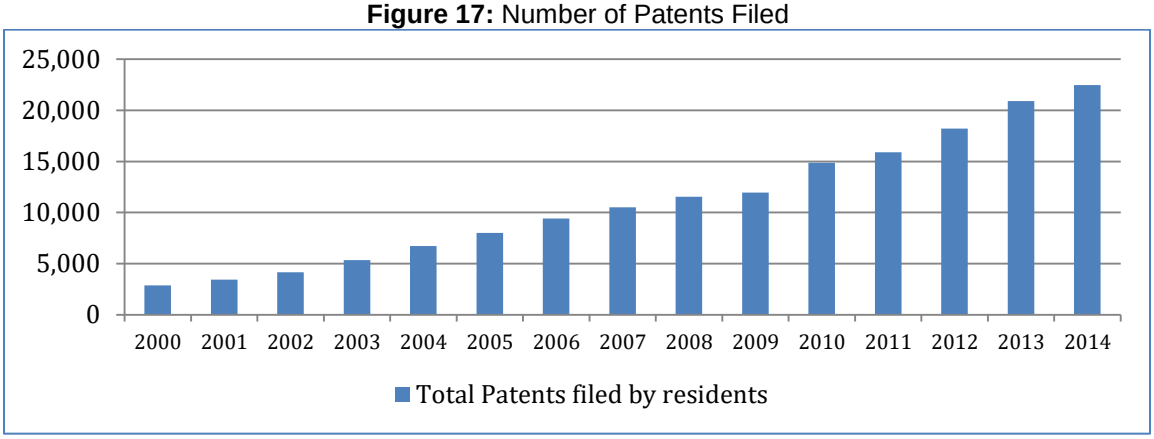
Source: Statement for Revenue Foregone and Annual Report of Comptroller General of Patents, designs, trademarks and geographical indicators

While relationship between the exemptions and R&D expenses is difficult to establish or seemingly tenuous one may ask if an increase in the R&D expenses of the private sector leads to better outcomes. Therefore we examine if the increase in R&D expenditure has led to an increase in the number of patents applied for.

The number of patents applied for by the residents of an economy has been increasing over the period 2000-14. These patents are those which are filed by the residents in India as well as abroad. Though the result or returns to investment in or expenditure on R&D are staggered, we take the total number of patents applications during a particular financial year which are expected to bear some relation with the R&D expenses incurred in that year.

[14] http://www.lawyersclubindia.com/articles/A-critical-evaluation-of-the-Patent-Amendment-Act-2005-5574.asp#.VrBBxbJ97cc

Figure 17: Number of Patents Filed

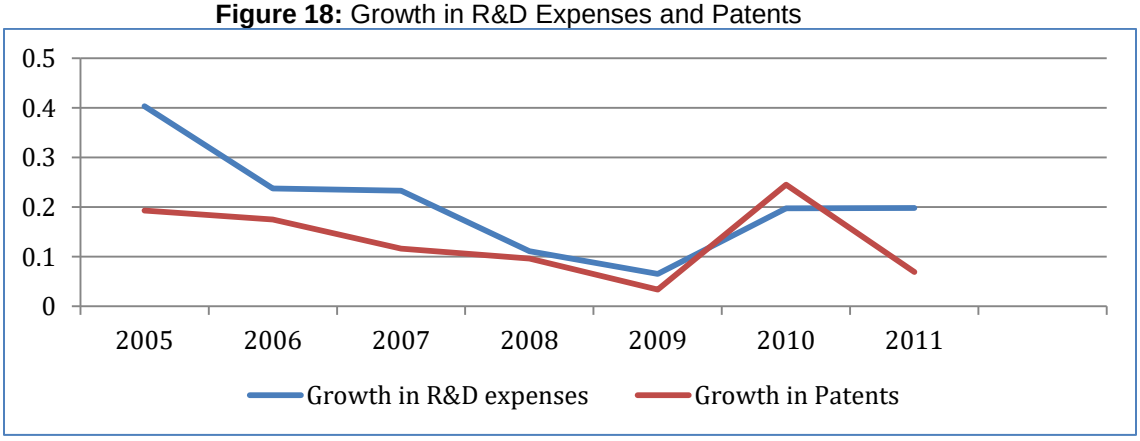


Source: WIPO

Taking the growth rate of the R&D and the patents applied for 2005-11 one finds that there is some co-movement in rates of growth of the two (See figure 18). That is, the years of lower growth in the R&D expenses have also been years with lower growth in patent applications.

While it is difficult to establish such a relationship for the private sector, due to lack of data, one can conclude that for the economy some relationship does exist between innovation, measured by patents, and the expenses.

Figure 18: Growth in R&D Expenses and Patents



Source: Computed from WIPO and Annual Report of Comptroller General of Patents, designs, trademarks and geographical indicators

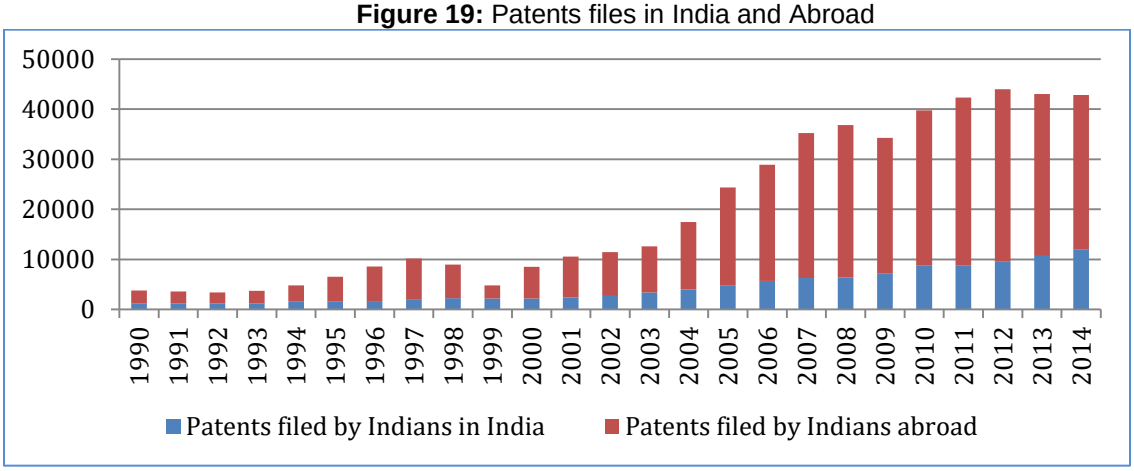
The other trend observed for the patents applied for by Indians is that the applications are predominantly filed abroad. In 2014 for every patent filed in India more than two were applied for abroad. Many attribute this trend to the MNCs' preference to set up their research labs in India. Once these labs develop a product the MNC registers the product in foreign country. Such trend has taken India to the top of the list of foreign countries filing patents in US.[15]

3.3 Patents and Royalty Incomes

Although the total number of patents filed by residents of India has increased, the proportion of these patents filed abroad has also steadily increased (Figure 19).

[15] http://articles.economictimes.indiatimes.com/2013-01-07/news/36192629_1_mnc-r-d-patent-filings-patent-applications

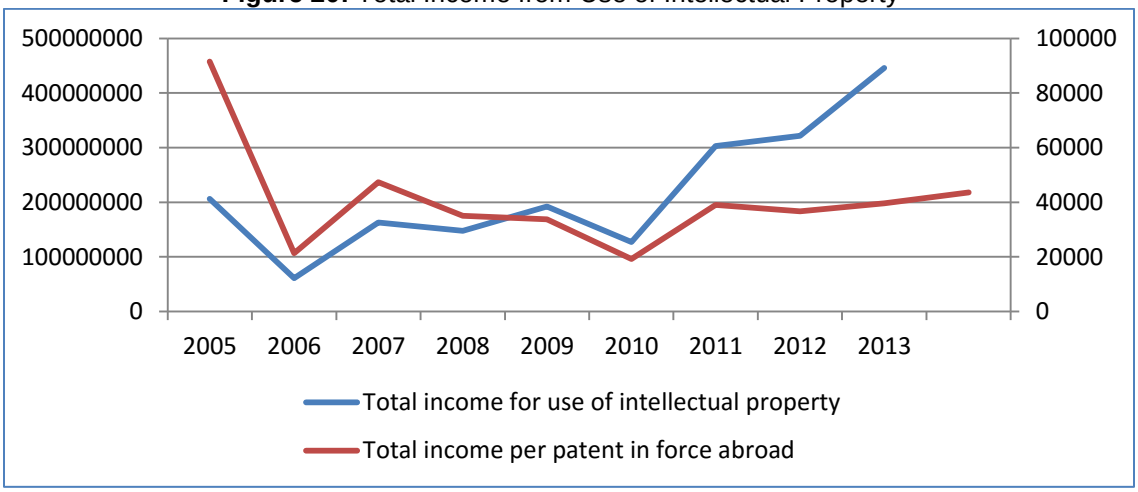
Figure 19: Patents files in India and Abroad



Source: WIPO

If the number of patents filed abroad is significant, these are expected to generate returns to India in the form of royalties. The payments received from the use of intellectual property taken per number of patents, trademarks and industrial designs filed can be considered a broad measure of the returns to R&D activities.[16] This measure should in some way reflect whether for the applications being filed, the result of present R&D expenses, are there returns being generated for the same. As can be seen from figure 20 the income from intellectual property, comprising of royalties has been increasing over the years following 2005. However the income per unit seems to have been volatile. Moreover when this is compared with the international levels for the per unit income then it is found that the average for India is much below the world average (see figure 21).

Figure 20: Total Income from Use of Intellectual Property[17]

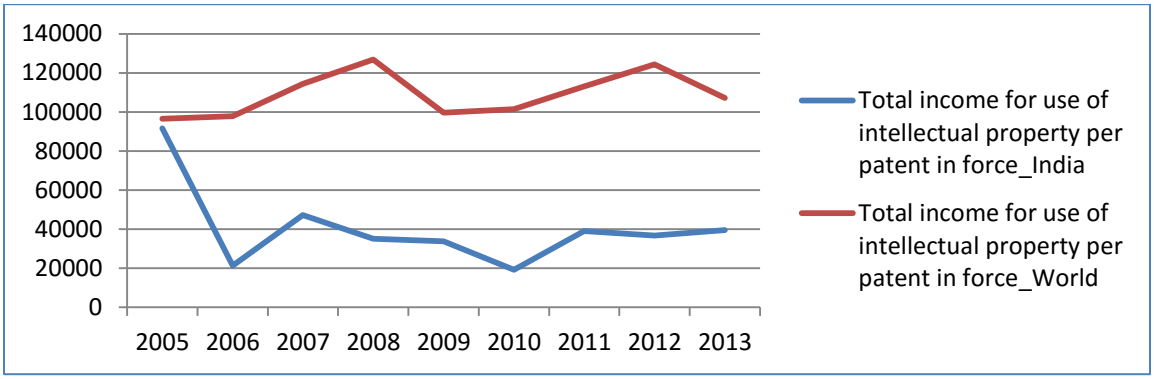


Source: computed from WDI, World Bank and WIPO

[16] Ideally the number of trademarks, patents and designs in force abroad should be taken instead of applications in a year. Given the non-availability of data for trademarks and industrial design in force abroad we take the applications in a year.

[17] Charges for the use of intellectual property are payments and receipts between residents and non-residents for the authorized use of proprietary rights (such as patents, trademarks, copyrights, industrial processes and designs including trade secrets, and franchises) and for the use, through licensing agreements, of produced originals or prototypes (such as copyrights on books and manuscripts, computer software, cinematographic works, and sound recordings) and related rights (such as for live performances and television, cable, or satellite broadcast). Data are in current U.S. dollars.

Figure 21: Total Income for Use of Intellectual Property per unit of Patent, Trademark and Industrial Design for Indian and World



Source: WDI, World Bank, WIPO

Just as in the case of the patents, the incomes from use intellectual property accrue to the economy and can be attributed to different sources in the economy. Therefore, here too the trend so demonstrated applies to the entire economy and for the want of data cannot be bifurcated into that solely accruing to the private sector. Nevertheless, an increase in the royalty incomes is observed for the period when the share of private sector in R&D expenses is shown to be rising.

3.4 R&D and company's performance

This brings us to the last question of whether these R&D expenses have a positive impact on the firms' efficiency, sales or profitability. To answer this question for every company that reported R&D expenditure during the period 2000-14, comparable company/companies are identified. Differences in averages on three indicators are evaluated- profitability, efficiency and effective corporate tax rate. To test for difference in profitability between the companies that undertake R&D and those that do not, ratio of profit before tax (PBT) to sales is taken. As a measure of efficiency the ratio of change in sales by change in net fixed assets (net of revaluation) is taken and finally the effective tax rate is measured by the ratio of corporate tax rate to PBT (CT by PBT).

A comparable in this exercise is defined as a company that is similar to the R&D company in terms of sector (NIC 2 digit code), age and the size of equity share capital[18]. Therefore, controlling for such characteristics of companies, we test for differences between averages.

The evidence provided in table 7 does not support the hypotheses that companies which undertake R&D are relatively efficient, more profitable or report higher sales or income. The only difference that we observe is for the rate of effective corporate tax. The lower effective CTR for the companies incurring R&D expenses is the result of the deduction available.

[18] Check appendix for construct of comparable

Table 7: Test of Averages for Indicators Over 2000-14

Indicator	Average of Non-R&D co.	Average of R&D co.	T Stat	N	P-value for two tailed test
PBT by sales	0.15109	1.119093	-0.72	343	0.47
Average Efficiency	1.090205	1.042574	0.63	383	0.52
CT by PBT	0.296462	0.245396	2.61	359	0.009

As for all the companies that undertake R&D expenditure, it is observed that higher R&D expenses are associated with higher sales. Thus it can be said that the relatively large companies undertake higher R&D expenses (See appendix for regression result).

In sum, while there seems to be some evidence of an economy-wide relationship between the patents applied for and the increments in R&D expenses as well as total income for use of intellectual property received from abroad, there seems to be no evidence to suggest that the companies witness an improvement in the process of production upon incurring R&D expenses. Further, the income per unit of the patents , trademark and industrial design have remained far below the global average which suggest that while India is increasingly registering patents abroad it is not registering a comparable income on its intellectual property.

4. Conclusions

The analysis so far suggests three broad conclusions:

1. There is evidence to suggest that companies are utilising the opportunities created by the provision of incentives. In the case of all the three incentives considered, the economic activity seems to have grown within the incentive regime.
2. There is no clear evidence to support the conjecture that this growth in corporate activity within the incentivised activity is incremental additional activity which would not have existed if the incentive regime did not exist. This is especially evident in the case of special economic zones. This also suggests that the overall level of economic activity might not be very different if the incentive regime is withdrawn.
3. In case the incentives being used to influence the location of economic activity, while there is anecdotal evidence to suggest that some of the economic activity might move out of the incentivised area after the incentive regime comes to an end, since that stage is not yet manifest, there is no firm evidence as yet on this aspect.

Briefly turning to the big picture, the existence of the incentive regime has resulted in the effective tax rate for corporate entities to vary between zero and the statutory rate as reflected in Table 2 of the Revenue Foregone Statement. The average effective tax rate is 23 percent. A look at this table indicates that 58 percent of companies which account for 52 percent of the reported Profit Before Tax would suffer an increase in tax rate while the remaining would benefit from a lower tax rate. What the net impact on the government's tax collections would be is not immediately clear.

The Central Board of Direct Taxes has proposed a roadmap of phasing out incentives. Taking the proposed plan and mapping it on the revenue foregone table, we can derive an approximation of the value of revenue foregone being targeted for phase-out. Table 8 summarises the corresponding numbers. These numbers are approximations since the categories of incentives to be phased out may not map exactly on to the heads being reported in the revenue foregone table. It is estimated that revenue foregone on account of exemptions and deductions that will be discontinued is Rs. 59,128.17 crore in 2013-14. Assuming that the activities which were enjoying incentives do not become unviable upon the withdrawal of the incentive regime, the discontinuation of the exemptions and deductions will provide an additional tax base for the government of Rs. 1,78,005.75 crore.[19] Therefore the revised tax base will be Rs. 920,100.75 crore which is the sum of present taxable income i.e., Rs. 7,42,095 crore (as reported in the revenue foregone statement) and additional tax base of Rs. 1,78,005.75 crore. At a statutory tax rate of 25% on this tax base will generate CIT revenue of Rs. 2,30,025.19 crore which will fall short by Rs. 27,832 crore from the 2013-14 revenue collection from CIT i.e., Rs. 257,857.57 crore. It should be noted further, that this simplified computation has been done excluding the collections from MAT which reduce the extent of benefit that companies derive from tax incentives. Incorporating the effect of MAT would reduce the revenue foregone from incentives and hence also reduce the additional base available for taxation, thereby increasing the gap between the present revenue collections and potential collections in the new regime. It is being assumed, in other words, that investment stimulus from lower corporate tax rate would more than compensate for the shortfall being discussed above. This might be a bold assumption given that investments might take time to manifest and/or yield profits on which governments can claim taxes.

[19] Rs. 59,128.17*Present Statutory Tax Rate (i.e., 33.217%)

Table 8: Value of Revenue Foregone Corresponding to Phase-Out
(Rs crore)

Sl. No.*	Nature of incentive	Revenue Impact 2013-14	Exemptions to continue	Exemptions to be discontinued	Remarks
1	Export of articles or things or services by a unit located in a SEZ [Sec 10AA]	17,036.0		17,036.0	It is proposed to provide a sunset date of 31.03.2017 for commencement of activity in the following cases:- C) Export of articles or things or services by a unit located in a Special Economic Zone (Section 10AA).
2	Accelerated Depreciation (Sec 32)	34,278.3[a]	20,566.98[b]	13,711.32[c]	**Section 32**: The depreciation under the Income-tax Act is available up to 100% in respect of certain block of assets. The highest rate of depreciation under the Income-tax Act is proposed to be reduced to 60%. This is proposed to be made applicable from 01.4.2017. The new rate is proposed to be made applicable to all the assets (whether old or new) falling in the relevant block of assets.
3	Deduction/ weighted deduction for expenditure on scientific research (Sec 35(1), (AA) & (2AB))	7,527.1		3,763.55	**Section 35**: (a) deduction under section 35(1)(ii), (iia), (iii) and 35 (2AA) is proposed to be restricted to 100% from F.Y 2017-18, and (b) deduction under section 35(2AB) of the Income-tax Act is proposed to be limited to 100% from Financial Year 2017-18 as against 200% available up to 31.03.2017 under the Income-tax Act.
4	Deduction for expenditure on eligible projects or schemes for the social and economic uplift of the public (Sec 35AC)	143.5		143.5	**Section 35AC**: No deduction under section 35AC will be available from financial year 2017-18 (Assessment Year 2018-19).
5	Deduction in respect of specified business (Sec 35AD)	1,054.2		1,054.2	**Section 35AD**: It is proposed that no weighted deduction will be allowed on any specified business w.e.f 01.4.2017.
9-13	Development, operation and manintenance of infrastructure facility [Sec 80-IA (4) (i)]	14,993.8		14,993.8	It is proposed to provide a sunset date of 31.03.2017 for commencement of activity in the following cases:- A) Development, operation and maintenance of infrastructure facility [Section 80-IA (4)(i)].
14	Development of Special Economic Zone (SEZ) [Sec 80-IAB]	1,381.9		1,381.9	It is proposed to provide a sunset date of 31.03.2017 for commencement of activity in the following cases:- B) Development of special economic zone (Section 80-IAB).
15-24	80-IB	7,043.9		7,043.9	It is proposed to provide a sunset date of 31.03.2017 for commencement of activity in the following cases:- D) Commercial production of natural gas in blocks licenced under CBM-IV and NELP VIII. [Section 80-IB(9)(iv)&(v)]. E) Commercial production of mineral oil from blocks licenced under a contract awarded up to 31.03.2011. [Section 80-IB(9)(ii)].
	Total	**83,458.7**	**20,566.98**	**59,128.17**	

Appendix

I. Construct of comparable companies

1. The two digit NIC sector code was taken for the classification of industry.
2. Companies are classified in categories 1-9 based on the size of their equity capital

Category	Size of Capital
1	<Rs.501 million
2	Rs. 501-1,000 million
3	Rs. 1,001-5,000 million
4	Rs. 5,001-10,000 million
5	Rs. 10,001-50,000 million
6	Rs. 50,001-1,00,000 million
7	Rs. 1,00,001- 2,00,000 million
8	Rs. 2,00,001- 3,00,000 million
9	> Rs. 3,00,000 million

3. Lastly, companies were classified on the basis of age on the basis of four categories
4.

Category	Age
1	0-5 years
2	6-10 years
3	11-20
4	>21

These three categories were combined to form a comparable code for which every company undertaking R&D was compared with its comparable. The dataset was cleaned to remove all companies that were not in the set of comparable for the R&D companies.

II. Firm level relationship between R&D expense and sales (2000-14)

Independent Variables	Log (sales)
Log(R&D)	0.576***
Constant	5.3***
R square	0.18

*** means significant at 1% level

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