Growing Services in India -
An Inter-Sectoral Analysis Based on
State-Level Data

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ABSTRACT

This study is an inter-sectoral analysis of state domestic product data to understand the determinants of the services sector growth in India during the recent years. It is a demand side analysis where the services sector output of a specific state is not only a function of the outputs of a state's own agriculture and industry but also the output of the commodity-producing sector of the rest of the Indian economy. The findings suggest that while a state's own industry turns out to be the most important determinant of the services sector growth, the commodity-producing sector of the country outside the state does play a significant role as well in determining the services sector performance under certain conditions that basically relate to the supply side. The study essentially is an explorative analysis and has not attempted at making any precise econometric estimation.

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Deepita   Chakravarty [1]

Introduction:

The services sector has in recent decades been performing much better than agriculture and industry in India and in many other developing countries as well. According to standard literature, services experience an accelerated growth only after a certain level of development in agriculture and then in industry. In this regard, the Indian experience is somewhat different. Even today India cannot be considered as an industrially developed economy. This paper tries to see how far industrial development is responsible for expansion of services.

In the development literature much attention is given to theorizing the evolution of agriculture and industrial growth, as also to the relationship between the two. A theoretical treatment of the services sector and its growth, in a macro economic context, on the contrary, is hard to find[2]. However, it may be assumed that in a three-sector economy consisting of agriculture, industry and services, the demand for services in a closed economy is a function of the outputs generated in the commodity producing sectors of agriculture and industry. In an open economy, domestic services

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[2] The theory of stages of economic growth (Fisher 1939; Clark 1940 and Rostow 1953) is based on two straightforward assumptions on production and consumption in order to link economic growth to the development of a service economy. As far as production is concerned, productivity gains are assumed to be higher in industry than in the service sector. As for consumption, the income elasticity of demand for services has to be greater than that of demand for goods. These propositions explain the forms rather than the causes of economic growth.

can expand either directly through external demand for specific services or indirectly through the boost in local incomes provided by remittances from emigrant labour. States within India are fully open with respect to other states in the country. Thus growth in incomes elsewhere, especially in neighbouring regions can promote the expansion of services in any region under favourable demand and supply conditions.

With this brief introduction we now turn to the hard facts. The second section deals with the issues of data and the related empirical literature to justify a new study in this area. The last two sections are devoted to the analysis. We look at the state level data to get insights into regional specificities.

II. DATA

The two variables we concentrate on are output and employment. We begin with sectoral outputs. National Accounts Statistics (NAS) provide time series sectoral output data for the country as a whole, as well as for the states. The output figures, or for that matter, the figures for gross state domestic products (GSDP) are given under the broad heads of the major nine industrial categories with some disaggregation. For our convenience we have clubbed the categories of agriculture, forestry, livestock and fisheries together under the agricultural sector. Mining, manufacturing, electricity, gas and construction come under the industry category and the rest are grouped under services. The information for GSDP is available both in terms of current and constant prices. The period for analysis chosen in this study is 1980-81 to 2002-03. Currently, the data for state domestic product are available in 1980-81 prices for the period 1980-81 to 1997-98. Another series is available from 1993-94 onwards till 2002-03 in 1993-94 prices for all states and till 2004-05 for a few. In order to get continuous data researchers have converted the data with 1980-81 as base to conform to 1993-94 prices (Bhattacharya *et al* 2004). However, the definitions used in constructing the 1993-94 wholesale price index are considerably different from those used for the construction of the index numbers with 1980-81 as base. As this difference of definitions can influence the numerical values to a considerable extent, we decided not to combine the two series.

Our intention is to understand the services sector boom in the 1980s and 1990s. We work with two periods: initial phase of liberalization from 1980-81 to 1992-93 with 1980-81 as base and the later phase of liberalization from 1993-94 to 2002-03 with 1993-94 as base: we expect to capture changes through the relevant comparisons.

What about the employment figures? The decennial Census gives us the sectoral employment figures for all states once every ten years. As a consequence a time series analysis was not possible and we decided to do a cross section analysis of the output elasticities of services sector employment and productivity with respect to the outputs of the commodity producing sectors of the economy. There are still two more difficulties with this data source. First, for the year 1981 employment figures are not available for the state of Assam. Therefore, our 1981 cross section analysis does not contain the output figures for Assam. Secondly, we had to limit ourselves to early 1990s because for the year 2001 data for workers under the nine-fold classification are not yet available. The Census data for 2001 gives a four-fold classification where the fourth category consists of the non-household industry and the services sector employment together. For the analysis of employment we have considered the main workers only.

Services sector boom in India has evoked the issue of sustainability in a major way in the recent years. Studies have basically approached the question either through an input -output framework (for example, Hansda 2001) or through econometric modeling (Sastry *et al* 2003) at the all-India level. Though, the input -output framework allows us to look at the interdependence between different sectors, it has serious limitations too[3]. In their attempt to estimate and forecast the state domestic products for three states in India, Bhattacharya *et al* (2004) do shed some light on the services sector growth at the state level in the recent years. But they worked basically with a closed economy, where rest of the country's commodity producing sector has no role in determining a single state's service sector performance. The present study approaches the problem from the demand side. Our specification includes not only the outputs generated in the commodity

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[3] Preparation of these tables involves a huge amount of data collection and makes it impossible to acquire this information annually. As a consequence, the results based on these tables are generally static and relate mainly to the reference period alone.

producing sectors within the state but also in the rest of the Indian economy. In order to quantify the 'rest of the Indian economy' with respect to a specific state, we deduct the specific state's commodity producing sector's output from that of the total 16 state's combined output of agriculture and industry. We calculated the output elasticities of demand for services output using a simple double log specification with three independent variables, namely, state's own agriculture and industry and the output of agriculture and industry in the rest of the Indian economy. We have also looked at the elasticities without introducing the independent variable 'rest of the Indian economy' in the model. The equations are estimated for the initial as well as the later period. Apart from these, trend rates are calculated with a semi log specification for the relevant variables[4].

It is worth mentioning here that our specification does not address the demand for services generated outside the country. This is important for the Indian economy is in the process of opening up itself to the world market, since the early 1980s. The indirect effect of the external economy mentioned above has been taken care of by the fact that we are using the 'gross domestic product' for measuring output[5]. The most visible and well-known dimension of the expansion in the services sector in India especially in the late 1990s, is the IT- based services including exports. However, Gordon *et al* (2004) argue that growth in services in India has been much more broad-based than IT. The study shows that although, IT exports has a profound impact on the balance of payments, the sector remains a small component of GDP. Even in the year 2003, total IT related services accounted for only three per cent of the total services output.

III. ESTIMATION RESULTS

Table 1 indicates a fairly high rate of growth of the services sector for a majority of Indian states in the decades of 1980s and 90s. In the initial phase, the maximum is about 8 per cent and the minimum hovers around 4.5 per cent. While, the minimum remained more or less the same in the

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[4] It is worth mentioning here that, this study is basically an explorative analysis and has not attempted at making any precise econometric estimation.

[5] Gross domestic product of a country refers to the value of final goods and services produced within the geographical area of the country.

later phase of liberalization, the maximum touched 9.5 per cent. On the basis of the rate of growth of the services sector in the initial phase of liberalization we have classified the states into three groups respectively with per cent growth rates (1) above 6.5; (2) between 6.5 and 5.5; and (3) below 5.5. Interestingly, the composition of the three groups has changed considerably in the later phase of liberalization with more states moving up to the first group. The most significant change is noted in the cases of Bihar and West Bengal; both these states have moved up in terms of services growth.

Table 1

Annual rate of growth (in per cent) of the services sector in different states of India

States ranked in descending order on the basis of the growth rates achieved in the period 1980-81 to 1992-93	1980-81 to 1992-93		1993-94 to 2002-03	
	Growth Rates	Residual Mean square	Growth Rates	Residual Mean square
Rajasthan	8.1* (0.41)	.003	7.4*(0.44)	.002
Maharashtra	7.4* (0.29)	.002	7.0*(0.24)	.000
Haryana	7.2* (0.28)	.001	9.3*(0.23)	.000
Karnataka	7.1* (0.12)	.000	9.5*(0.16)	.000
Gujarat	6.6* (0.24)	.001	7.8*(0.24)	.000
Himachal Pradesh	6.4* (0.28)	.001	7.7*(0.39)	.001
Tamil Nadu	6.3* (0.23)	.001	8.0*(0.36)	.001
Madhya Pradesh	6.2* (0.19)	.001	5.5*(0.41)	.001
Uttar Pradesh	5.9* (0.22)	.001	4.6*(.002)	.000
Orissa	5.9*(0.29)	.002	6.5*(0.16)	.000
Andhra Pradesh	5.6* (0.22)	.001	7.0*(0.13)	.000
Bihar	5.1* (0.16)	.000	7.5*(0.57)	.003
Kerala	5.0* (0.17)	.001	5.5*(0.41)	.000
West Bengal	4.9* (0.10)	.000	9.3*(0.14)	.000
Assam	4.9* (0.21)	.001	4.7*(0.43)	.002
Punjab	4.4* (0.12)	.000	6.0*(0.31)	.001

Notes: 1.* Indicates significance at 5 per cent level.
2. Standard errors are given in the parenthesis.

Let us now turn to the essential question asked in this paper: what are the factors responsible for the performance of the services sector in different states? Tables 2 to 4 give services output elasticities with respect to state's own agriculture, industry and the rest of the Indian economy in two periods. We begin our discussion with the first group of states with services growth rates above 6.5 per cent. Table 2 A presents the results for the period 1980-81 to 1992-93. First, note that as indicated by Durbin-Watson statistics serial correlations are not present. In all the states industry is a significant variable. (The addition of the 'rest' variable makes industry insignificant in the case of Rajasthan. In this case we ignore the specification with three independent variables.) The corresponding elasticity varies from 0.76 in Haryana to 1.17 in Maharashtra. During the initial phase of liberalization, the variable 'rest of the Indian economy' plays a significant role only in the cases of Haryana and Gujarat.

This trend persists only in the case of Haryana in the later phase. For Gujarat addition of the 'rest' variable turns industry insignificant in the second period. The presence of serial correlations for both the specifications in Karnataka in the later phase ruled out the possibility of any discussion. However, Maharashtra shows an interesting trend of insignificant elasticity for industry in this period with a significantly high elasticity for the 'rest'. In all these cases while agriculture shows an insignificant elasticity, the responsiveness with respect to industry is generally significant in both periods.

Incidentally, the value of the elasticities with respect to the rest of the Indian economy is quite high and above one in all the cases. It is interesting to see why in some cases the rest of the Indian economy becomes significant. We come back to this issue shortly.

Marginal changes can be seen in the elasticities with respect to industry in the later phase of liberalization when compared to the initial one in the states of Rajasthan and Gujarat but none of them are statistically significant. During the last two decades, industrial sector of both these states have performed reasonably well and comparatively much better than the agricultural sector (Tables 5 and 6). However, even in the case of industrial growth rates, it is difficult to trace a statistically significant change in the

later phase when compared to the initial one. This indicates no qualitative change in the industrial growth leading to change in the responsiveness for the services sector output. However, results for Haryana shows a statistically significant improvement in the elasticity with respect to industry. Moreover, though Haryana has also performed well in the industrial sector during recent years, there is a statistically significant decline in the industrial growth rate in this state in the second period. A probable qualitative change in the industrial initiatives in the state of Haryana might have played an important role in determining the elasticity. It is, however, essential to look at the composition of the industrial growth in order to establish this hypothesis.

Table 2 A

Services Sector output elasticities with respect to Agriculture, Industry of A State and the (Agriculture + Industry) of rest of The Indian Economy for the High Growth States During 1980-81 To 1992-93

States	Agriculture	Industry	Rest	R-squared	DW Stat
Rajasthan	-0.06(.118)	1.11* (.095)	-------	0.97	2.457
	-0.26(.145)	0.45(.338)	1.42*(.707)	0.98	2.797
Maha-rashtra	-0.01 (.121)	1.17* (.089)	--------	0.98	1.040
	-0.05(.118)	0.79*(.271)	0.62(.424)	0.98	1.325
Hary-ana	0.21 (.201)	0.76* (.116)	--------	0.97	1.591
	-0.23(.227)	0.52*(.128)	0.94*(.354)	0.98	2.066
Karna-taka	0.21 (.192)	0.96* (.091)	----------	0.99	1.270
	0.22(.201)	0.85* (.281)	0.17 (.403)	0.99	1.200
Gujarat	-0.01(.073)	0.88* (.060)	--------	0.96	2.334
	-0.06(.045)	0.33*(.126)	1.00*(.218)	0.99	2.316

Notes:
1. Standard errors are given in the parenthesis.
2. '*' indicates significance at the 5 per cent level.
3. The specifications used: (A) ln (serv) = a+ ln(agri) + ln(ind),
   (B) ln (serv) = a + ln(agri) + ln(ind) + ln(Rest). Where 'agri' stands for output of the state's own agricultural sector, 'ind' represents output of the state's own industrial sector. 'serv' stands for output of the state's services sector and Rest stands for output of the commodity producing sector of rest of the Indian economy. Ln represents natural log.

Table 2 B

Services sector elasticities with respect to agriculture, industry of a state and the (agriculture + industry) of rest of the indian economy for the high growth states during 1993-94 to 2002-03

States	Agriculture	Industry	Rest	R-squared	DW Stat
Rajasthan	-0.03 (.151)	0.98*(.099)	---------	0.94	2.230
	-0.11 (.111)	0.18 (.297)	1.83*(.659)	0.97	2.088
Maha-rashtra	1.27 (.843)	0.83 (.513)	-----------	0.65	0.925
	-0.17 (.562)	-0.22 (.370)	2.13*(.495)	0.91	1.968
Hary-ana	0.25 (.435)	1.39*(.121)	-----------	0.99	1.216
	0.37 (.337)	1.91*(.230)	1.02*(.417)	0.99	1.966
Karna-taka	0.37(.430)	1.13*(.235)	---------	0.92	0.747
	0.36(.419)	0.49 (.590)	1.38(1.167)	0.94	0.608
Gujarat	-0.16(.117)	1.09*(.101)	-----------	0.94	2.012
	-0.18*(.077)	0.37 (.233)	1.532*(.474)	0.98	1.676

Notes: 1.Standard errors are given in the parenthesis.
   2.'*' indicates significance at the 5 per cent level.
   3.The specifications used are same as Table 2 A

Among the states in the second group, i.e., with services growth between 5 to 6.5 percent, the equation for Tamil Nadu in the initial phase of liberalization shows indications of multicolinearity for the specification with three independent variables.[6] For this state the same specification indicates a strong relationship in the later period between state's industry and the rest of the Indian economy. Therefore, we decide to consider the specification involving state's own agriculture and industry alone for Tamil Nadu. A similar relationship is also suggested in the case of Madhya Pradesh for the specification involving three independent variables for the concerned periods. While the Orissa results suggest existence of multicolinearity in the initial phase of liberalization, the later phase of liberalization indicates the same for Himachal Pradesh and Uttar Pradesh for the same specification with three independent variables.

Apart from the above-mentioned problems, Tables 3A and 3B suggest quite similar patterns depicted by Tables 2A and 2B. States in the second group show insignificant elasticities with respect to agriculture for both periods as

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[6] All the coefficients are statistically insignificant with a high R squared value of 0.95.

well except Andhra Pradesh in the later phase. Moreover, the elasticity with respect to industry shows significance for the last two decades with significant increase in the numerical value only for the state of Orissa in the later period when compared to the first. The declining rate of growth of industry in Orissa together with the above result is suggestive of some diversification in the industrial initiatives in the later phase in this state.

Finally, let us turn to the last group of low services growth (below 5.5 percent) states. Incidentally, services sector in most of these states performed reasonably well in the later phase of liberalization except in Assam. It is clear from Tables 4A and 4B that industrial sector once again turns out to be significant in most of the states in generating demand for services in the state economies. However, in some of these states agriculture also does play a significant role but not consistently in both the periods. Incidentally, the rest of the Indian economy is significant in both the periods only in the case of Bihar. Yet the difference between the two numerical values of elasticities is statistically insignificant.

Table 3 A

Services sector elasticities with respect to agriculture, industry of a state and the (agriculture + industry) of rest of the indian economy for the medium growth states for the years 1980-81 to 1992-93

States	Agriculture	Industry	Rest	R-squared	DW Stat
Himachal	0.05 (.210)	0.80* (.084)	-------	0.95	2.467
Pradesh	-0.09(.181)	0.39*(.176)	0.85*(.333)	0.97	2.744
Tamil Nadu	0.36 (.239)	0.95* (.215)	-------	0.94	2.299
	0.23(.230)	0.11(.530)	1.10(.644)	0.95	1.975
Madhya	-0.05 (.502)	0.92* (.190)	--------	0.92	0.917
Pradesh	-0.22 (.364)	0.22 (.261)	1.19*(.377)	0.96	1.953
Orissa	0.05(.132)	0.79*(.052)	-------	0.96	1.861
	0.12(.131)	0.43 (.243)	0.61 (.399)	0.97	1.732
Uttar Pradesh	0.30 (.404)	0.72* (.156)	---------	0.99	1.965
	-0.39(.327)	0.58*(.109)	0.67*(.180)	0.99	2.057
Andhra	0.14 (.103)	1.05* (.063)	----------	0.99	1.723
Pradesh	0.06(.099)	0.70*(.174)	0.46*(.216)	0.99	1.762

Notes: 1. Standard errors are given in the parenthesis.
       2. '*' indicates significance at the 5 per cent level. The specifications used are same as   Table 2A.

Table 3 B

Services sector elasticities with respect to agriculture, industry of a state and the (agriculture + industry) of rest of the indian economy for the medium growth states for the years 1993-94 to 2002-03

States	Agriculture	Industry	Rest	R-squared	DW Stat
Himachal Pradesh	0.22 (1.077)	0.81* (.184)	------	0.90	1.204
	0.95(1.239)	0.02 (.721)	1.75(1.554)	0.92	1.143
Tamil Nadu	0.13 (.336)	1.68* (.218)	--------	0.89	1.498
	-0.02(.223)	0.45 (.402)	1.67*(.513)	0.96	1.248
Madhya Pradesh	0.03 (.138)	0.76* (.064)	------	0.95	1.658
	0.01(.105)	0.32(.178)	0.92*(.364)	0.98	1.945
Orissa	-0.06(.294)	1.29*(.148)	--------	0.92	1.776
	-0.06(.241)	0.72*(.298)	0.84*(.399)	0.95	1.453
Uttar Pradesh	0.52 (.375)	0.69* (.194)	--------	0.93	1.118
	0.03(.449)	0.03 (.444)	1.22 (.750)	0.95	0.880
Andhra Pradesh	0.30* (.107)	1.07* (.068)	----------	0.99	.637
	0.31*(.105)	1.25*(.173)	0.33 (.285)	0.99	12.081

Notes: 1. Standard errors are given in the parenthesis.
   2. '*' indicates significance at the 5 per cent level. The specifications used are same as   Table 2A.

While, in the initial phase of liberalization agriculture was insignificant in generating demand for services in Bihar it became significant in the later phase. There is a marginal improvement in the rate of growth of agriculture in Bihar in the second period over the first from a low base of 1.6 per cent per annum. However, the change is statistically insignificant. Incidentally, the improvement in the industrial growth rate in Bihar is considerable and statistically significant in the later phase of liberalization leading to no significant change in corresponding elasticities. Can it be because of the decline in diversification in the industrial base failing to generate fresh demand for the services?

Table 4 A
Services sector output elasticities with respect to agriculture, industry of a state and the (agriculture + industry) of rest of the indian economy for the low growth states for the years 1980-81 to 1992-93

States	Agriculture	Industry	Rest	R-squared	DW Stat
Bihar	-0.00 (.143)	0.93* (.081)	--------	0.95	1.825
	0.04(.116)	0.48*(.183)	0.56*(.216)	0.97	2.001
Kerala	-0.08 (.574)	1.26* (.475)	-------	0.86	0.668
	0.10(.270)	-0.00(.304)	1.08*(.178)	0.97	2.193
West Bengal	0.32* (.096)	0.78* (.126)	--------	0.98	1.422
	0.29*(.104)	0.63*(.216)	0.19(.219)	0.98	1.355
Assam	1.60* (.306)	0.29 (.180)	--------	0.95	1.786
	0.86(.437)	0.17(.165)	0.52*(.245)	0.96	1.363
Punjab	-0.09(.178)	0.70*(.122)	--------	0.99	2.763
	-0.09(.191)	0.68*(.178)	0.03(.159)	0.99	2.789

Notes: 1.Standard errors are given in the parenthesis.
2.'*' indicates significance at the 5 per cent level. The specifications used are same as Table 2A.

Table 4 B
Services sector output elasticities with respect to agriculture, industry of a state and the (agriculture + industry) of rest of the indian economy for the low growth states for the years 1993-94 to 2002-03

States	Agriculture	Industry	Rest	R-squared	DW Stat
Bihar	0.56* (.115)	0.68* (.063)	------	0.97	1.711
	0.51*(.092)	0.53*(.080)	0.47*(.200)	0.99	1.609
Kerala	-0.28 (.193)	1.52* (.123)	------	0.97	2.597
	-0.55*(.200)	0.74 (.375)	0.92*(.428)	0.99	2.249
West Bengal	-0.33 (.408)	1.74* (.241)	--------	0.99	1.412
	-0.04(.408)	1.95*(.254)	0.69 (.423)	0.99	2.964
Assam	1.72 (1.342)	1.59* (.755)	-------	0.56	1.013
	0.69 (.953)	-1.01(.973)	1.55*(.494)	0.83	2.964
Punjab	0.71* (.224)	0.87*(.094)	-------	0.99	2.363
	0.67*(.266)	0.80*(.214)	0.12(.359)	0.99	2.280

Notes: 1.Standard errors are given in the parenthesis.
2.'*' indicates significance at the 5 per cent level. The specifications used are same as Table 2A.

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The state of West Bengal, on the contrary, shows a significant elasticity for agriculture in the initial period and an insignificant one in the later period. Though the rate of growth of agriculture has declined significantly in the second period compared to the first in the state of West Bengal, it is still around 3.4 per cent. The question of lack of diversification may once again arise here.

West Bengal (WB) shows a significantly higher elasticity for the industrial sector in the second period compared to the first. This state has also achieved a significantly high rate of growth in the services sector in the second period. Over the last three decades WB was not doing well at all in the industrial sector. However, a significant improvement in industrial performance can be traced in the later years of our consideration. A notable improvement over a low base might have generated significant demand for services in the state, for the rest of the Indian economy has no role to play in this state consistently over the years of concern. We come back to these issues shortly.

While both agriculture and industry of the state are insignificant in generating demand for services in Kerala during the 1980s the commodity-producing sector of the rest of the Indian economy plays a significant role for the concerned period, but the other two variables turn out to be insignificant. If we try to drop rest of the Indian economy from our analysis, the specification suffers from a problem of positive autocorrelation for the initial period. Thus, there is a possibility that rest of the Indian economy does play an important role in the case of Kerala, while the state's own economy does not. But it requires further research to say anything conclusive. The situation, however, changes somewhat in the second period when the state's own industrial growth rate improves marginally and the elasticity for the services with respect to industry turns significant.

IV. SOME INFERENCES

The behaviour of the elasticities in different states leads to certain observations. First, the variable, 'rest of the Indian economy' is significant only in some states. This calls for an explanation. Secondly, industrial activities of a state turn out to be the most important factor in determining the state's services sector growth. But there are a few exceptions too, which demand attention. One important point to be mentioned here is that there is no significant change in the elasticities with respect to industry in the second phase of liberalization when compared to the initial phase with some exceptions. This is interesting for it suggests that the services sector growth is a mere translation of the high growth in the industry in the last two decades. Incidentally, it is hard to find any significant improvement

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in the industrial sector performance of the industrially developed states in the country in the later phase when compared to the initial one. It is some of the industrially less developed states which have shown significant improvement in the industrial growth rates during the liberalized trade regime.

Table 5
Annual rate of growth (in per cent) of
the agricultural sector in different states of india

States ranked in descending order on the basis of the services sector growth rates achieved in the period 1980-81 to 1992-93	1980-81 to 1992-93 Growth Rate	1980-81 to 1992-93 Residual mean square	1993-94 to 2002-03 Growth Rate	1993-94 to 2002-03 Residual mean square
Rajasthan	4.6* (1.19)	.026	0.9* (1.70)	.024
Maharashtra	3.5* (0.91)	.015	1.7* (0.57)	.003
Haryana	4.3* (0.57)	.006	1.5* (0.35)	.001
Karnataka	2.9* (0.39)	.003	3.1* (0.82)	.006
Gujarat	0.5 (1.82)	.061	-0.89 (2.09)	.036
Himachal Pradesh	2.2* (0.66)	.008	1.3* (0.27)	.001
Tamil Nadu	4.0* (0.69)	.006	1.1* (1.04)	.009
Madhya Pradesh	2.1* (0.39)	.003	-0.8 (1.14)	.011
Orissa	0.5 (0.01)	.013	-0.6 (0.83)	.006
Uttar Pradesh	2.7* (0.18)	.001	2.2* (0.44)	.002
Andhra Pradesh	2.3* (0.63)	.007	2.7*(0.87)	.006
Bihar	1.6* (0.78)	.011	3.0* (1.28)	.014
Kerala	2.8* (0.52)	.005	-1.9* (0.81)	.005
West Bengal	5.2* (0.47)	.004	3.4* (0.34)	.001
Assam	2.2* (0.20)	.001	0.51 (0.29)	.001
Punjab	4.6* (0.21)	.001	2.1* (0.31)	.001

Notes: 1.* indicates significance at 5 per cent level.
    2. Standard errors are given in the parenthesis.

The rest of the Indian economy becomes significant for a specific state in terms of generation of demand for services for three dominant reasons. First, in a specific state labour cost can be higher for certain services as a result of strong trade union practices compared to its neighboring states. If the transportation cost is not higher than the cost of getting the services at home, entrepreneurs are likely to prefer the services from the neighboring

states. Secondly, industrially more developed states are likely to have better infrastructure for industry related services activities which are not available in a newly industrializing state. Moreover, infrastructure in general, in a more developed state is usually much better than in the less developed ones. Here infrastructure assumes the nature of a public good and requires heavy expenditure that is usually taken up by the government. This includes roads, electricity etc. All these three factors can be clubbed under the supply side determinants of the services sector growth and need to be addressed at the state level separately. The complex interplay of all these factors outside and inside a state finally determines the ability of the domestic services sector to attract demand from both inside and outside the state.

Let us take up the example of West Bengal. We have noticed that the elasticity with respect to rest of the Indian economy is consistently insignificant for this state. On the contrary, the elasticity with respect to rest of the Indian economy for the three neighboring states of Bihar, Orissa and Assam is significant at least in one period under consideration. It is well known that labour is historically much more organized in West Bengal and likely to be more costly compared to its neighboring states. Incidentally, the government stipulated minimum wages in West Bengal are much higher than that of the three other states mentioned above. In this context, the concept of rest of the Indian economy in our analysis looks too global. It may make more sense if we consider the impact of the commodity-producing sector of the neighboring states on the services of a specific state in a region.

Interestingly, our analysis shows while rest of the Indian economy does not have any role to play in the case of Maharashtra in the initial phase of liberalization, it does matter in determining the services sector growth in the state in the later phase of liberalization. On the contrary, rest of the Indian economy plays a significant role in determining services growth in the state of Gujarat in the first period. These two neighboring states are alike on several counts, having similar kinds of social and physical infrastructure facilities (Ghosh *et al* 2004). Moreover, labour conditions are also more or less the same in these two states (Chakravarty 2003). Is it then a historically determined factor which explains the different behaviour of the state services sectors towards the rest of the Indian economy in the first period?

What happens in the second period? In the later phase of liberalization Maharashtra shows a significant decline in the rate of growth of industry when compared to the initial phase. This might have thwarted the usual

demand generation for services in the industrial sector in this state. However, Maharashtra is historically one of the most industrially developed states of India. Consequently the service facilities related to industrial sector are expected to be highly developed in this state as well. A significant decline in the state's own industrial sector demand for services might have led to a fall in the prices of those services in the state. This, in turn, probably generated a fresh demand in the rest of the Indian economy for the services of the state of Maharashtra. However, this is only a speculation; a detailed state level analysis of the cost and price structures can alone confirm this hypothesis. Unfortunately, it is not possible to say anything about the impact of the rest of the Indian economy in the case of Gujarat in this period for the reasons discussed above.

Table 6

Rate of growth (in per cent) of the industrial sector in different states of india in the decades of 80s and 90s

States ranked in descending order on the basis of the growth rates achieved in the period 1980-81 to 1992-93	1980-81 to 1992-93		1993-94 to 2002-03	
	Growth Rates	Residual Mean square	Growth Rates	Residual Mean square
Rajasthan	7.5* (0.31)	.002	7.1* (0.85)	.006
Maharashtra	6.2* (0.31)	.002	2.9* (0.94)	.007
Haryana	8.0* (0.53)	.005	6.4* (0.19)	.000
Karnataka	6.7* (0.31)	.002	6.7* (0.77)	.005
Gujarat	7.2* (0.52)	.005	6.6* (0.72)	.004
Himachal Pradesh	7.5* (0.59)	.006	8.5* (0.70)	.004
Tamil Nadu	4.8* (0.37)	.003	4.2* (0.61)	.003
Madhya Pradesh	6.2* (0.63)	.007	6.9* (0.71)	.004
Orissa	7.0* (0.57)	.006	4.6* (0.01)	.002
Uttar Pradesh	7.0* (0.34)	.002	4.5* (0.63)	.003
Andhra Pradesh	5.0* (0.19)	.001	5.8*(0.24)	.000
Bihar	5.2* (0.42)	.003	8.0* (1.13)	.010
Kerala	3.6* (0.51)	.004	4.6* (0.30)	.001
West Bengal	4.1* (0.25)	.001	5.9* (0.19)	.000
Assam	3.5* (0.55)	.005	1.4* (0.36)	.001
Punjab	6.8*(0.20)	.001	5.2* (0.43)	.002

Notes: 1. * indicates significance at 5 per cent level.
2. Standard errors are given in the parenthesis.

The second issue cropped up from our analysis is the industry-centric evolution of the services sector. To this end, Tables 5 and 6 may provide us some primary insights.

The combined facts from Tables 5 and 6 reveal that the rate of growth of agriculture in every state is considerably lower compared to the industrial sector. It is likely that if the rate of growth of a sector is not high enough, the demand generated by that sector for another will not be significant especially when the interlinkage between the two sectors is not very strong. However, the rate of growth of agriculture is not so low in all states. West Bengal has achieved the highest rate of growth of agriculture in the first period and consequently shows significant output elasticity of services with respect to agriculture.

What about the other states showing comparatively high growth rates in agriculture? Again, it seems that in order to generate demand for services in agriculture, while high rate of growth is necessary it may not be sufficient always. What is likely to be important too is the pattern of the growth. Let us take up the case of Rajasthan and Maharashtra. The residual mean squares for the agricultural growth rates for Rajasthan shows the value of .026 for the first period. In the case of Maharashtra it is.015. On the contrary, West Bengal shows a much smaller value for residual mean squares in both the periods indicating a more stable growth experience in the state. Incidentally, it is worth mentioning here that the numerical values for the residual mean squares for the industrial growth rates are generally much lower when compared to the agricultural growth rates. However, by this logic it is difficult to explain the cases of Punjab, Haryana and also WB for the later phase of liberalization. It is likely that the lack of diversification in agriculture in the case of West Bengal and Haryana thwarts the dynamism between the sectors of agriculture and services. Therefore, it is again essential to look at the nature and composition of agricultural growth to track down the sources of demand for services.

Finally, let us now turn to the employment question. It has been noted that the services sector growth has failed miserably to achieve a significant shift of employment out of agriculture in India. An obvious question comes to mind: Is it because of capital-intensive technological modernization as it has

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happened in the case of manufacturing? As a result of non-availability of time series data for employment in India, we did a cross-sectional analysis for the years 1981 and 1991. We have tried to estimate the output elasticities of services sector employment and labour productivity with respect to the commodity-producing sector of the economy. In other words we try to understand the effect of the demand generated in the commodity-producing sector on employment and labour productivity in the services. The elasticities are reported in Table 7.

Table 7

Services sector employment and productivity elasticity with respect to the outputs of the commodity producing sectors

Year		Agriculture	Industry	Agriculture +Industry	R squared
1981	Employment	0.292 (.184)	0.640*(.148)	----------	0.91
		-----------	----------	0.981*(.099)	0.89
	Productivity	-0.022 (.126)	0.078 (.101)	-----------	0.11
		------------	-----------	0.069 (.061)	0.09
1991	Employment	0.334 (.207)	0.558*(.168)	----------	0.88
		----------	------------	0.915*(.099)	0.87
	Productivity	-0.126(.120)	0.159 (.095)	---------	0.21
		-----------	------------	0.069 (.060)	0.09

Note: The calculations are based on the Census data for employment (see text for details).

Table 7 clearly shows that the increase (decrease) in the demand for services in the commodity-producing sector of the economy has no effect on the labour productivity. This is suggestive of no significant technological improvement. On the contrary, the output elasticity of employment turns out to be significant for industry separately as well as for the commodity producing sector as a whole. However, both sets of elasticities have experienced a decline in the year 1991 when compared to the year 1981. Incidentally, just like the output elasticities at the state level in the time series exercise, the output elasticity of employment for agriculture in the cross section analysis turns out to be insignificant.

To conclude, leaving some loose ends aside, this analysis does give a handle to enter into a vast and complex problem of the Indian economy. While services sector growth in the recent era is a common experience to all the Indian states, the nature and determinants are not exactly the same. The industrial sector turns out to be the most important determinant of the services sector growth in different states. However, the analysis suggests that it is necessary to have high and stable rate of growth as well as diversification over time in the commodity-producing sector to foster growth in the services. Under these conditions, agriculture is also likely to generate substantial demand for the services. Inter-regional divergences in the development experience thus become highly influential in this context. The rest of the Indian economy's commodity producing sector may play an important role in determining the services sector performance of a specific state depending upon inter-regional disparities in labour cost, infrastructure facilities etc. that basically relate to the supply side issues. Incidentally, except for the services sector hardly any significant change can be identified in the growth performances in the other two sectors in the post reform period, including industry, when compared to the early reform era of the eighties. This is true for the output elasticities of the services output as well. If this is so, it is essential to take a hard look at the macro policies that promoted a more open and liberal economy particularly after the early 1990s.

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