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A Note on Static Contribution of Services Sector to Growth in India

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Abstract

This note makes a distinction between the share of a sector in national product and its contribution to growth in the static sense. Though the share of services sector in national product was less than that of agriculture till the first-half of 1980s, the contribution of services sector to growth, as defined in the note, has always been more than that of the other two sectors in India. Moreover, whereas the contribution of services sector to growth has been increasing throughout, that of the agricultural and the industrial sector has been decreasing, the former much more than the latter. Thus, in a static sense, Indian growth has always been services-led and, by the 2000s, services contributed two-thirds to aggregate growth.

Keywords: Services Sector; Sectoral Contribution; Indian Growth

JEL Codes: O14, O47, O53

1. Introduction

The acceleration of the rate of economic growth in India in the 2000s has generated interest in characterising the structure of this growth. In a comparative analysis of the growth phenomenon in India it is customary to characterise the growth in East and South-East Asia and in China as being promoted by the manufacturing sector, whereas the growth in India is said to be services-led. This note makes a distinction between the static and the dynamic contribution of a sector to growth and examines the ‘service-sector-led’ characteristic of Indian growth in a static sense.

In a static sense, the services sector in India seems, statistically, to be the leading sector based on its consistently high growth rate, relative to the agricultural and the industrial

¹ Part of papers presented at the UGC National Seminar on ‘Services-Led Growth’ at Birla College, Kalyan on March 28-29, 2009 and the UGC National Conference on ‘Services Sector Revolution – Issues and Challenges’ at Lady Doak College, Madurai on August 20, 2009. Thanks are due to Rajan Padwal for his comments on the note – the usual disclaimer applies.

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sector and, consequently, its high share in the national output. The correct statistical way of identifying the leading sector is not by looking at the current share of the sector or its past relative growth that has produced the current share but by looking at the contribution of the sector to aggregate growth. The note works out the contribution of the services sector to growth based on the sectoral growth rate and the sectoral weight and thereby identifies the services-led growth phase in India. The exercise shows that except perhaps in the first few years of the very first decade of planning in India, the services sector has always made a dominant contribution to Indian growth.³

In a more dynamic sense, on the other hand, the services sector can be called a leading sector only if, as it becomes more dominating, its own productivity continues to remain high and it generates positive externalities to other sectors of the economy. So long as there are structurally unemployed resources, a sector can continue to grow by using these, but in the secular run, a sector can substantially contribute to growth through productivity growth which not only increases the output from given resources in the sector, but also provides positive externalities to sectors to which it provides inputs. The issues of service sector productivity in India and the mechanism through which the dynamic growth impulses are transmitted from the services to other sectors of the economy constitute the subject matter of another paper.

2. A Measure of Contribution of a Sector to Growth

The dominance of a sector is generally captured by the contribution of the sector to the national output. The fact that the services sector has more than 50 per cent weight in national product does not however qualify the growth to be identified as services-led, not even in the static sense that is emphasized here. Aggregate growth rate can be expressed as the weighted average of sectoral growth rates with proportion of output produced in the individual sectors as weights:

³ The average contribution of the services sector to growth in entire decade was surely more than that of the other two sectors. It is only in the first few individual years that the contribution of the services sector was not the highest.

$$g_y = w_a \cdot g_a + w_m \cdot g_m + w_s \cdot g_s$$

It follows that the sectoral contribution of the i^{th} sector to growth can be written as

$$(w_i \cdot g_i / g_y)$$

In the above expression w_i is the output share of the i^{th} sector, g_i is the growth rate of the i^{th} sector and g_y is the aggregate growth rate.

It follows that the contribution of a sector to growth is high either if the growth rate of the sector is high or if the share of the sector in national output is high. A high sectoral growth rate will, of course, produce a high sectoral share over time and a fast growing sector will ultimately contribute doubly to the aggregate growth in the economy, i.e., both because it is growing at a high rate and because it has become an important component of the total. As we see below, this is what has happened in the context of the services sector in India. It must be noted that, in the above measure, when the g_i in the numerator increases, g_y in the denominator also increases, but by less than the increase in g_i , since w_i is less than unity.

3. Estimating the contribution of the Services Sector using Indian Data

We estimate the contribution of the services sector to aggregate output and growth using the sectoral GDP data.⁴ Data was available from 1950-51 to 2006-07. Seven-year moving averages were used on the original data to smoothen these as the contributions to growth computed on the original data were erratic.⁵ The smoothened data is summarized in Tables 1, 2, 3 and 4. Table 1 gives the yearly sectoral composition, sectoral growth rates and the sectoral contribution to growth for the smoothened data for the years 1953-

⁴ Data was downloaded from the website of the Ministry of Statistics and Program Implementation as accessed on 27-3-09.

⁵ The smoothing effect by calculating the moving averages is seen by comparing charts giving the sectoral shares, respectively, for the original data and their moving averages. The effect is seen much more sharply from charts which show the growth rates for the original and the smoothened data. These charts have not been reported here.

54 to 2003-04.⁶ The sectoral contribution to growth is computed using the formula developed in Section 2 above. Tables 2, 3 and 4 give, respectively, the sectoral composition of output in India, sectoral growth rates and the sectoral contribution to growth for each of the decades from the 1950s to the 2000s, though, of course, the number of years averaged in the last decade is less than ten years.

From the first three columns in the body of Table 1 and from Chart 1 it is evident that the share of services has overtaken that of agriculture since 1982-83, a conclusion which is not as sharp in the original data as in the 7-year moving averages that are reported in Table 1. The share of services has always dominated that of industry and continues to do so by a wider absolute margin in percentage point terms since the end 1960s. The share of industry is nevertheless increasing and has overtaken the decreasing share of agriculture toward the end of our period in 2002-03.

From the middle three columns of Table 1 and from Chart 2 it is clear that the 7-year moving average of agricultural growth rate has been the lowest among the three sectors in all the years, except 1972-73 when it was marginally higher than that of industry, though not higher than that of services. The 7-year moving average of industrial growth rate was the highest among the three sectors up 1967-68. Since 1968-69 up to the early 1980s, the services sector growth rate has been, by and large, the highest, though there are some years when the industrial growth rate dominates. The services growth rate has overtaken the industry growth rate decisively since 1979-80 and continues to remain the highest thereafter. Since 1982-83, therefore, when the share of services in output turned the highest, the services sector has dominated the other two sectors both in terms of share and growth rate.

In terms of the formula developed above and as seen from Chart 3 and the last three columns of Table 1, the contribution of the services sector to growth has always dominated the contribution of the other two sectors. Since the contribution of a sector to growth is the product of its share and own growth rate and since the both the share and

⁶ Three years have been lost at each end due to taking 7-year moving averages of the data.

growth rate of the services sector has been the highest since 1982-83, it follows that contribution of services to growth will be the highest in the post 1982-83 period. In the earlier years too, though the share and the growth rate of the services sector have not been individually the highest, these have been high enough for the product to turn out to be the highest among the three sectors.

As the Chart 3 and Table 4 show, the contributions to growth of agriculture and industry have been declining as a trend, whereas that of the services sector has been continuously increasing. In the 2000s, services have contributed two-thirds of the growth in a static sense, and industry one-fourth, whereas agriculture's contribution to total growth is less than ten per cent. Charts 4, 5 and 6 show that agriculture's contribution to growth has been consistently less than its share, with both declining; the contribution of industry has been declining, which, in the context of increasing share means, that the contribution of industry to growth as a percentage is becoming lower than its share at the end of the study period. It is only services which has an increasing share and contribution, with the contribution dominating the share in all years. This is the sense in which Indian growth is services-led.

4. Conclusions

Two points can, however, be made in conclusion. First, in the above sense, Indian growth has always been services-led – this is not a recent phenomenon. Secondly, as brought out in the introduction, this is a static interpretation of the term 'services-led growth.' A more dynamic interpretation in which productivity-based externalities from the services to the other sectors of the economy lead to an acceleration of growth in these sectors needs further elaboration.

References

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Table 1: Sectoral Shares, Growth Rates and Contributions to Growth in India 1950-51 to 2006-07 (7-Year Moving Average)

Year	Share in Output			Growth Rate			GDP	Contribution to Growth		
	Agr	Ind	Ser	Agr	Ind	Ser		Agr	Ind	Ser
1954	55.91	14.32	29.77	-	-	-	-	-	-	-
1955	55.35	14.64	30.01	2.13	5.41	4.00	3.15	37.33	25.09	38.04
1956	55.02	14.90	30.08	3.32	5.81	4.18	3.94	46.28	21.97	31.93
1957	54.43	15.32	30.25	2.69	6.69	4.39	3.80	38.54	27.01	34.97
1958	53.75	15.81	30.44	2.73	7.39	4.68	4.04	36.36	28.97	35.33
1959	52.95	16.32	30.73	2.31	7.21	4.85	3.86	31.69	30.49	38.66
1960	52.12	16.77	31.10	2.13	6.61	4.99	3.74	29.65	29.67	41.50
1961	51.13	17.32	31.55	1.74	7.06	5.20	3.71	23.97	32.96	44.27
1962	50.48	17.83	31.69	3.61	8.06	5.40	4.95	36.81	29.07	34.63
1963	49.23	18.53	32.25	0.65	7.27	5.03	3.22	10.00	41.83	50.36
1964	48.07	19.18	32.75	0.59	6.65	4.61	3.01	9.36	42.41	50.22
1965	47.30	19.62	33.07	1.64	5.66	4.31	3.29	23.58	33.80	43.43
1966	46.55	20.05	33.40	1.57	5.42	4.22	3.20	22.81	33.97	44.00
1967	46.05	20.41	33.54	2.73	5.74	4.31	3.86	32.55	30.37	37.43
1968	45.82	20.53	33.65	3.37	4.52	4.23	3.90	39.68	23.85	36.53
1969	45.31	20.72	33.98	1.82	3.88	3.96	2.96	27.81	27.13	45.42
1970	44.95	20.84	34.21	2.49	3.91	4.03	3.31	33.87	24.63	41.66
1971	44.87	20.78	34.35	3.60	3.47	4.19	3.78	42.80	19.09	38.14
1972	44.33	20.84	34.83	1.62	3.16	4.28	2.85	25.12	23.06	52.30
1973	44.19	20.75	35.06	3.49	3.38	4.51	3.82	40.30	18.38	41.39
1974	43.60	20.88	35.52	1.70	3.73	4.43	3.08	24.08	25.32	51.09
1975	43.07	21.10	35.84	2.26	4.58	4.45	3.52	27.62	27.43	45.29
1976	42.51	21.34	36.16	2.82	5.36	5.09	4.17	28.70	27.45	44.17
1977	41.78	21.52	36.70	1.41	4.07	4.75	3.18	18.48	27.50	54.75
1978	41.24	21.70	37.06	2.30	4.47	4.63	3.62	26.17	26.77	47.39
1979	40.82	21.92	37.25	3.18	5.33	4.78	4.24	30.64	27.55	42.00
1980	40.07	22.13	37.80	1.55	4.44	4.99	3.46	17.89	28.33	54.50
1981	39.80	22.15	38.05	3.75	4.55	5.10	4.44	33.63	22.70	43.75
1982	39.29	22.20	38.51	2.64	4.21	5.27	3.99	26.02	23.44	50.86
1983	38.73	22.19	39.08	2.36	3.78	5.36	3.83	23.87	21.89	54.68
1984	38.34	22.16	39.50	4.00	4.92	6.19	5.06	30.28	21.56	48.34
1985	37.47	22.28	40.25	2.20	5.16	6.54	4.57	18.01	25.16	57.61
1986	36.93	22.30	40.78	3.82	5.40	6.74	5.35	26.37	22.51	51.41
1987	36.27	22.45	41.28	3.90	6.50	7.05	5.76	24.52	25.31	50.51
1988	35.53	22.63	41.84	3.28	6.29	6.88	5.44	21.43	26.17	52.87
1989	34.78	22.73	42.49	2.73	5.39	6.57	4.94	19.20	24.80	56.56
1990	34.26	22.76	42.98	3.54	5.22	6.31	5.10	23.76	23.32	53.20
1991	33.81	22.78	43.41	3.88	5.42	6.34	5.28	24.80	23.36	52.05
1992	33.49	22.86	43.65	4.68	6.00	6.26	5.67	27.67	24.21	48.20
1993	32.61	23.15	44.24	2.66	6.80	6.84	5.43	15.96	28.98	55.74
1994	32.00	23.36	44.65	3.79	6.70	6.76	5.78	20.97	27.09	52.25
1995	31.16	23.46	45.38	2.83	6.06	7.31	5.58	15.78	25.48	59.39
1996	30.46	23.51	46.03	3.88	6.47	7.78	6.26	18.89	24.31	57.23

Table 1: Sectoral Shares, Growth Rates and Contributions to Growth in India (Concl.) 1950-51 to 2006-07 (7-Year Moving Average)

Year	Share in Output			Growth Rate			GDP	Contribution to Growth		
	Agr	Ind	Ser	Agr	Ind	Ser		Agr	Ind	Ser
1997	29.61	23.53	46.86	3.42	6.48	8.30	6.39	15.84	23.88	60.92
1998	28.72	23.62	47.66	2.91	6.54	7.93	6.12	13.64	25.27	61.80
1999	27.92	23.54	48.55	3.09	5.63	8.01	6.04	14.28	21.97	64.44
2000	27.01	23.44	49.55	2.09	5.12	7.70	5.53	10.21	21.70	69.05
2001	26.12	23.35	50.54	2.26	5.30	7.86	5.75	10.27	21.55	69.09
2002	25.22	23.40	51.38	2.53	6.45	7.98	6.20	10.28	24.35	66.15
2003	24.24	23.56	52.19	2.58	7.44	8.37	6.69	9.36	26.18	65.28
2004	23.24	23.83	52.93	2.78	8.47	8.75	7.24	8.93	27.89	64.00

Source:

Computations made by the author from the data on sectoral GDP downloaded from the website of Ministry of Statistics and Programme Implementation. The computations have been done on smoothed data by taking 7-year moving averages of the original data.

Table 2: Decadal Sectoral Composition of Output in India – 1950s to 2000s
(Per cent of GDP)

Sector:	Agriculture +	Manufacturing +	Services	GDP
Decade				
1950s	54.22	15.44	30.34	100.00
1960s	47.49	19.50	33.01	100.00
1970s	42.65	21.29	36.06	100.00
1980s	37.14	22.38	40.47	100.00
1990s	30.68	23.33	46.00	100.00
2000s	24.70	23.54	51.76	100.00

Table 3: Decadal Sectoral Growth Rates in India – 1950s to 2000s
(Per cent per annum)

Sector:	Agriculture +	Manufacturing +	Services	GDP
Decade				
1950s	2.55	6.52	4.52	3.75
1960s	2.02	5.82	4.53	3.54
1970s	2.39	4.20	4.61	3.57
1980s	3.22	5.14	6.20	4.85
1990s	3.32	6.12	7.32	5.81
2000s	2.54	6.91	8.24	6.47

Table 4: Decadal Sectoral Contributions in India – 1950s to 2000s
(Per cent per annum)

Sector:	Agriculture +	Manufacturing +	Services	GDP
Decade				
1950s	36.64	27.20	36.16	100.00
1960s	26.04	32.00	41.95	100.00
1970s	28.18	25.09	46.73	100.00
1980s	24.71	23.69	51.60	100.00
1990s	17.80	24.63	57.57	100.00
2000s	9.71	24.99	65.30	100.00

Source: Tables 1 and 2 are computed using Data downloaded from the website of Ministry of Statistics and Program Implementation accessed on 19-02-09. Table 3 is computed from the data used to compute Tables 1 & 2 using the formula developed in Section 2 of the Text. As explained in Section 3, the computations were done on 7-year moving averages of the original data.

Chart 1
Sectoral Shares of National Output: 1953-54
to 2003-04
(7-Year Moving Average)

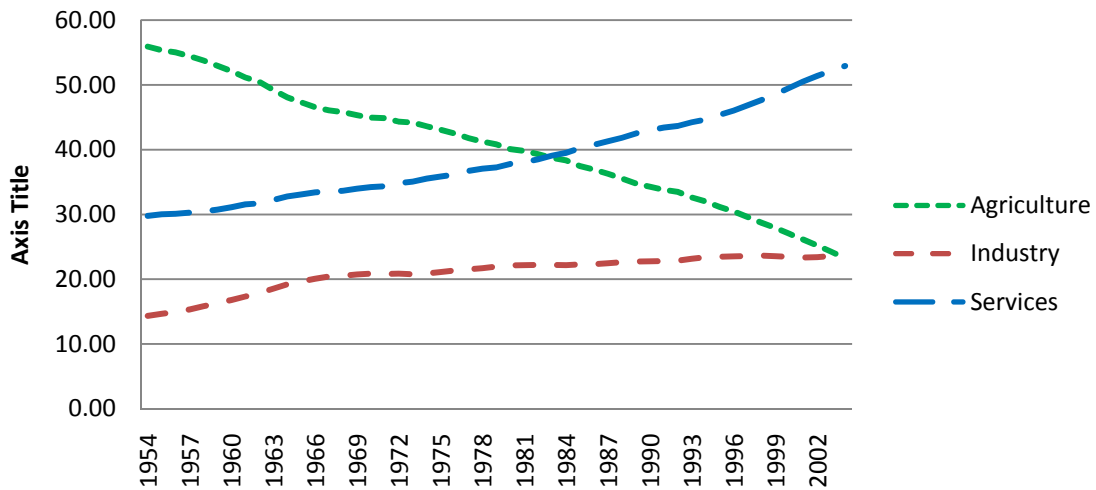


Chart 2
Sectoral and Aggregate Growth Rates in
India: 1954-55 to 2003-04
(7-Year Moving Average)

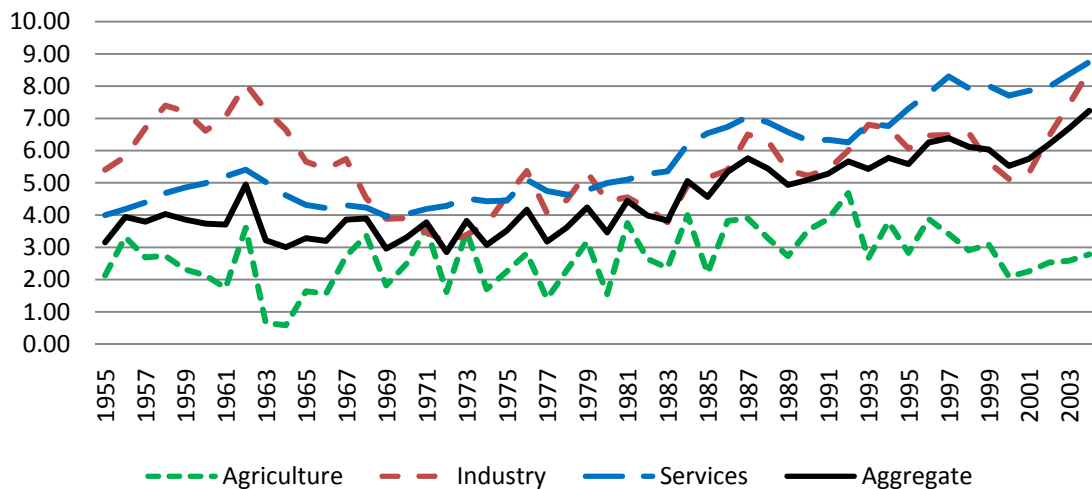


Chart 3
Sectoral Contribution to Growth: 1954-55 to
2003-04
(7-Year Moving Average)

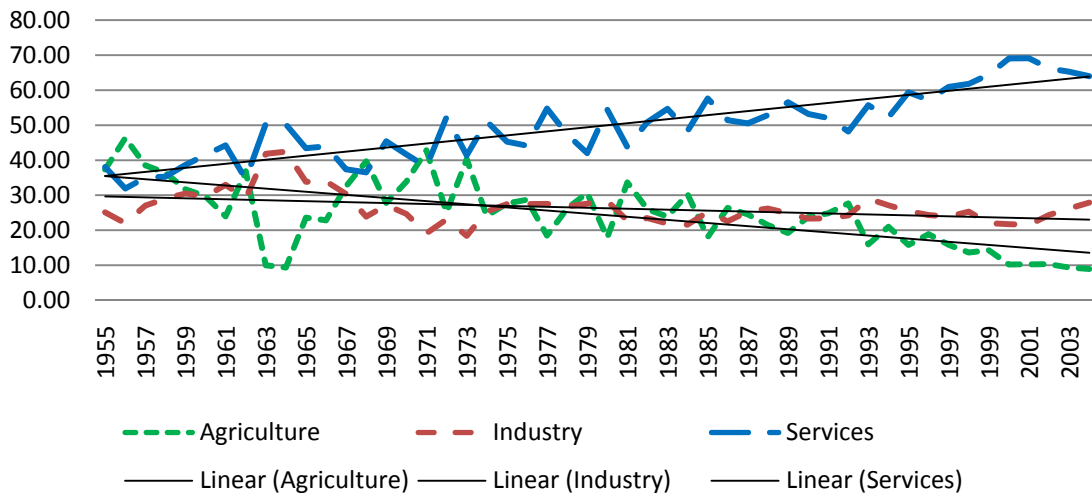


Chart 4
Agriculture Share in Output versus
Agriculture Contribution to Growth:
1954-55 to 2003-04 (7-Year Moving Average)

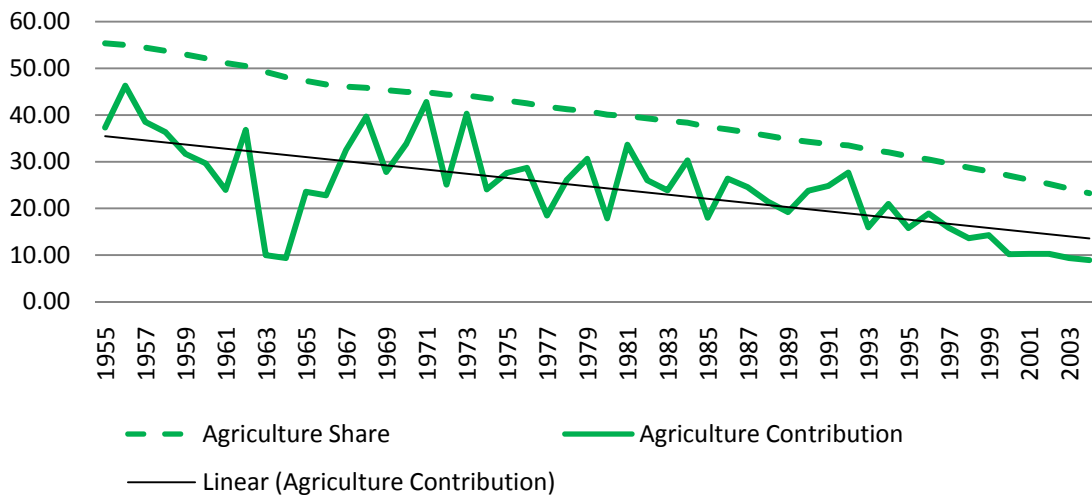


Chart 5
Industry Share in Output versus Industry
Contribution to Growth:
1954-55 to 2003-04 (7-Year Moving Average)

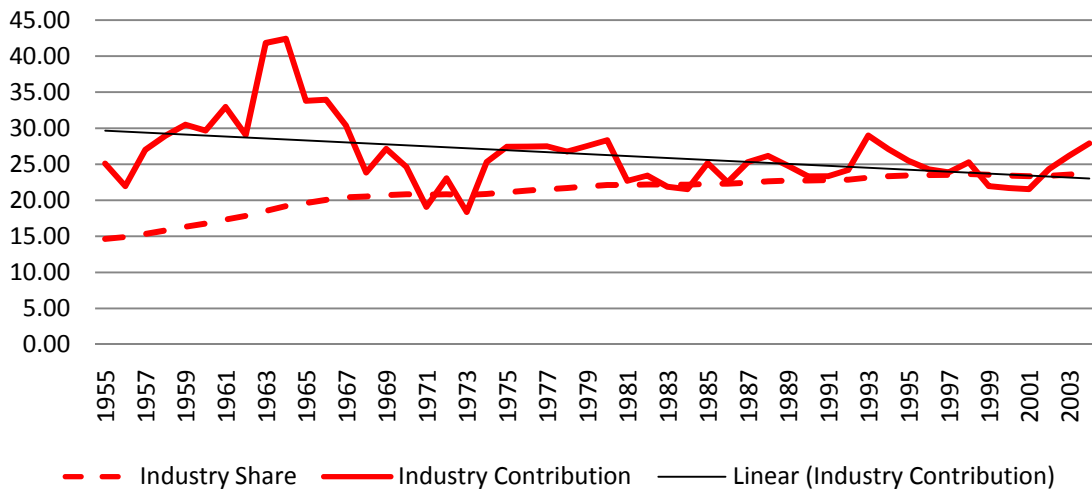


Chart 6
Services Share in Output versus Services
Contribution to Growth
1954-55 to 2003-04 (7-Year Moving Average)

