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Fifty Years of Economic Growth in Gujarat

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ECONOMIC GROWTH

50 Years Perspective

INTRODUCTION

Gujarat is one of those States of India where economic production system has always performed better than the national average. Economic performance of the State may be termed as even more remarkable in view of the fact that Gujarat is poorly endowed with natural resources. The State has limited mineral base and its water resources are scarce with most of the rivers flowing through the State are seasonal and their irrigation potential is poor. At the same time, the State faces some serious environmental challenges in terms of decreasing vegetation cover, soil erosion, deforestation, etc. resulting from the overuse of water for both agricultural and industrial purposes. Despite these limitations, the entrepreneurial natural of the people of Gujarat and popular participation in development efforts are argued to have contributed significantly to an industrial economy and commercialised agriculture. An important contributing factor to better than average performance of the State economy has also been the fact that the State has the longest coastline in the country which has contributed to the growth and expansion of the economic production system of the State through international trade and commerce since times immemorial. For example, Lothal, located in district Ahmedabad of the State is widely believed to be currently known oldest sea-port in the world.

In the above context, the present paper analyses the evolution of the State economy 1960-61 when the State of Gujarat first came into existence after the division of the erstwhile Bombay Province of the independent India on linguistic

basis. The analysis of the evolution of the State economy has been carried out in two contexts - expansion of the economic and social production system and changes in its structure – over 50 years period since 1960-61 through 2010-11. The expansion of the economic and social production system of the State has been measured in terms of the trend growth rate of the monetary output of the system while its structure has been analysed in terms of the relative contribution of the output of its different sectors to the total output of the system – primary or agriculture sector, secondary or manufacturing sector, and tertiary or service sector. Finally, on the basis of the trend in the monetary output of the system, an effort has also been made to project the size of the State economy in terms of its monetary output during the XII Five-year Development Plan period: 2012-2017. The projection exercise has been carried out separately for the three main sub-sectors of the economic and social production system as described above. Sector-specific projections have also permitted an analysis the projected change in the structure of the State economy in the immediate future.

The paper is organised as follows. The next section of the paper describes the methodology employed for the analysis. Essentially, regression-based approach has been used to measure the growth of the monetary output of the system. The third section of the paper describes the data with a discussion on their quality. Findings of the analysis are presented and discussed in section four while results of the projection exercise are presented and discussed section five. Finally, the sixth and the last section of the paper summarises the findings of the analysis and discusses the policy implications in the context of the projected increase in the output.

METHODOLOGY

The monetary output of any production system can be measured in terms of either market prices or cost of factors of output or production. Estimation of the output of the production system in terms of market prices is sensitive to subsidies and indirect taxes. On the other hand, estimation of the output at the cost of factors of production is independent of any type of subsidy or indirect taxes from the value of the output. As such, the size and growth of the economic and social production system is conventionally measured in terms of the cost of factors of production.

The indicator that is universally used to measure the output of the economic production system is the domestic product which, in monetary terms, is the total cost involved in producing all goods and services during a given period within a specified administrative area without duplication. A decentralised approach is

adopted for estimating the cost involved in the production of goods and services. First, the entire economic and social production system is divided into three main sectors of production – primary or agriculture sector, secondary or manufacturing sector and tertiary or service sector. Subsequently, each sector of the system is further divided into different sub-sectors and each sub-sector is further divided into specific goods and services. In other words, a nested system of production is evolved to estimate the total cost of goods and services produced. The sum of the total cost of production of goods and services by all sub-sectors and sectors of the economic and social production system then provides the estimate of the total output of the system in monetary terms. This total cost is the domestic product. The domestic product may be estimated at the nominal or current prices or at real or constant prices. Real domestic product is free from the effect of inflation.

The domestic product can be measures in gross terms as compared to net terms. The net domestic product takes into consideration the cost of depreciation in the capital stock of the economic production system used in the production process. The gross domestic product does not take into consideration the depreciation in the capital stock during the production process. The gap between gross and net domestic product reflects the obsolescence of the capital stock of the economic production system.

The gross domestic product (GDP) at nominal cost is the most crude, yet very commonly used indicator of the output of the economic and social production system or the economy. GDP is a crude indicator because it is influenced by inflation or the increase in prices and, at the same time, it does not account for the depreciation in the capital stock. The net domestic product (NDP) at fixed cost, on the other hand, is the most refined indicator of the output of the economic and social production system. Estimation of NDP at either nominal or fixed cost is however problematic because of the problems associated with the estimation of the cost of depreciation in the capital stock.

Costing of all goods and services produced is not the only method of estimating the domestic product. Domestic product can also be estimated through the income approach and the through the expenditure approach, although the production approach is the most straightforward approach. The expenditure approach is based on the principle that all goods and services produced must be purchased by somebody so that the total cost of goods and services produced must be equal to the total expenditure incurred by people in purchasing goods and services. The income approach, on the other hand, is based on the concept that total income of all producers of goods and services must be equal to the cost of all goods and services produced by them. In principle, all the three approaches give the same result but, in practice, this rarely happens.

Estimates of the cost of the domestic product of Gujarat are prepared every year by the Government of Gujarat on the basis of the methodology suggested by the Government of India (Government of India, 2008). This methodology is a combination of production and income approaches. The expenditure approach is not employed for estimating the cost of domestic product of at the State level. The first step in the estimation process is to work out gross domestic product at nominal and fixed costs and then estimate the net domestic product by subtracting consumption of fixed capital from the gross domestic product. The consumption of the fixed capital is estimated by the Government of India at the national level using estimates of asset wise net fixed capital stock and average life of asset following the perpetual inventory method. The national level estimates of the consumption of fixed capital are then allocated to States using appropriate indicators.

The conventional approach to measure the growth in the economy an administrative area is to calculate the compound annual growth rate (CAGR) of the domestic product of that area. CAGR is based on the value of the domestic product in the beginning and at the end of the period under reference. It assumes a linear change in the domestic product within the period. As such, CAGR is best suited in situations where the period under reference is small so that the validity of the steadiness assumption is ensured. When the period under reference is long, CAGR gives misleading picture of the growth of the economy as the growth of the economy may not be linear. In such a situation, the alternative is to break the period under reference into smaller sub-periods and then calculate CAGR for each sub-period separately. It is assumed that the growth in a sub-period is linear. This approach, however, treats different sub-periods independently. In other words, this approach essentially assumes that growth in one sub-period is not influenced by the growth in earlier sub-periods. Such an assumption, obviously, is not a valid assumption when the growth is to be analysed over a long period.

In the present analysis, we use piecewise or segmented regression approach to analyse the growth in the economy of Gujarat during 1960-61 through 2011-12. We partition the period between 1960-61 broadly in conformity with the period of different Five-year Development Plans of the State to capture the differential growth of the domestic product of the State in different plan periods. We assume that the growth of the domestic product is linear within a plan period and the growth in different plan periods is essentially different. The use of segmented regression ensures that growth of the economy during a plan period takes into consideration the growth in the economy during the earlier plan periods.

With the above assumption, the following statistical model has been applied for analysing the growth of the economy of the State:

$$\ln(G) = a_0 + b_0T + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 \quad (1)$$

where G is the State domestic production, T is the time with origin at 1960-61 and X_1, .. X_8 are dummy variables which have been defined in the following manner:

X_1 = 0 if Year < 1970-71
= 1 if Year >= 1970-71

X_2 = 0 if Year < 1974-75
= 1 if Year >= 1974-75

X_3 = 0 if Year < 1980-81
= 1 if Year >= 1980-81

X_4 = 0 if Year < 1985-86
= 1 if Year >= 1985-86

X_5 = 0 if Year < 1992-93
= 1 if Year >= 1992-93

X_6 = 0 if Year < 1997-98
= 1 if Year >= 1997-98

X_7 = 0 if Year < 2002-03
= 1 if Year >= 2002-03

X_8 = 0 if Year < 2007-08
= 1 if Year >= 2007-08

Finally, average annual rate of growth of the domestic product in different plan periods has been calculated as

Period	Growth rate
1960-61 to 1970-71	$\exp(b_0) - 1$
1970-71 to 1974-75	$\exp(b_0+b_1) - 1$
1974-75 to 1980-81	$\exp(b_0+b_1+b_2) - 1$
1980-81 to 1985-86	$\exp(b_0+b_1+b_2+b_3) - 1$
1985-86 to 1992-93	$\exp(b_0+b_1+b_2+b_3+b_4) - 1$
1992-93 to 1997-98	$\exp(b_0+b_1+b_2+b_3+b_4+b_5) - 1$
1997-98 to 2002-03	$\exp(b_0+b_1+b_2+b_3+b_4+b_5+b_6) - 1$
2002-03 to 2007-08	$\exp(b_0+b_1+b_2+b_3+b_4+b_5+b_6+b_7) - 1$
2007-08 to 2011-12	$\exp(b_0+b_1+b_2+b_3+b_4+b_5+b_6+b_7+b_8) - 1$

It is obvious from the above specification that the growth rate of the domestic product during one period is determined by the growth rates during all periods prior to the period under reference. For example, the growth rate in the domestic product during the period 2002-03 to 2007-08 is determined by the growth rates in all plan periods prior to 2002. This linkage among growth rates of different plan periods is not possible when the growth of the economy is measured in terms of CAGR.

DATA SOURCE

The analysis is based on the estimates of State domestic product prepared by the Government of Gujarat for the period 1960-61 through 2011-12 at nominal and fixed costs. The reference period for estimating State domestic product at fixed cost, however, is not the same for different periods of the 50-year duration. Estimates for the period 1960-61 through 1970-71 are available at 1960-61 prices; estimates for the period 1970-71 through 1980-81 are available at 1970-71 prices; estimates for the period 1980-81 through 1993-94 are available at 1980-81 prices; estimates for the period 1993-94 through 1999-2000 are available at 1993-94 prices; estimates for the period 1999-2000 through 2004-05 are available at 1999-2000 prices; and estimates for the period 2004-05 onwards are available at 2004-05 prices. The estimates of State domestic product at different price base are not comparable. Therefore an integrated series of State domestic product was constructed for the period 1960-61 through 2011-12 at 2004-05 prices by using the method of splicing and this series was used for analysis. It may however be pointed out that different series of the State domestic product are not strictly comparable as there have been changes in the basket of goods and services used for estimating the output keeping into consideration the change over time in the demand for goods and services. However, the difference has not been found to be substantial and the process of averaging was adopted to smoothen the time series. This integrated series has been first prepared separately for the primary, secondary and tertiary sectors of the economy and then sectoral estimates were combined to obtain the output for the whole economy. The Government of Gujarat also prepares estimates of net State domestic product (NSDP) after accounting for the consumption of the fixed capital. However, the NSDP has not been used in the present analysis because of the poor reliability of the estimates of the consumption of the fixed capital.

The State domestic product - gross or net - at current and fixed prices is the most widely used indicator to measure the size, structure and growth of the economy of the State and growth of different sectors of the Economy. Estimates of State domestic product are prepared by the States of India on the basis of the

methodology and guidelines prepared by the Government of India so as to ensure the comparability of the estimates across the States of the country. In order to ensure that the estimates prepared by the States conform to the guidelines and standards put forward by the Central Government, these estimates are vetted by the Government of India before being released. There are however concerns about the quality and appropriateness of these estimates as the necessary data required for estimating the domestic product either in gross or net terms are generally not available at the State level. Moreover, the methodology adopted does not permit to estimated the domestic product by social class, etc.

RESULTS

The gross State domestic product (GSDP) of Gujarat, at 2004-05 prices, was estimated to be Rs 170.20 billion during the financial year 1960-61 which increased to Rs 3864.2 billion during the financial year 2011-12. If the increase in GSDP at fixed cost is any indication than the economic and social production system in the State appears to have expanded by more than 20 times during the 50 years between 1960-61 and 2011-12. This is a remarkable achievement given the fact that the State is constrained in terms of natural endowments. The massive increase real GSDP is also a reflection of the versatility of the economic and social production system of the State (Table 1). During the same period, the output of the primary sector increased by around 6 times from Rs 79.51 billion during 1960-61 to Rs 494 billion during 2011-12 while that of the secondary sector increased by almost 35 times – from Rs 35.75 billion during 1960-61 to 1243.6 billion during 2011-12. Similarly, the output of the tertiary sector increased by more than 38 times – from 54.94 billion in 1960-61 to 2126.6 billion during 2011-12. This shows that the expansion of the economic and social production system of the State, during the 50 years under reference, has largely been the result of the growth in the output of the secondary or the manufacturing sector and the tertiary or the service sector of the economy. By comparison, the expansion of the primary or agriculture sector has been very small.

In order to analyse the trend in real GSDP (at 2004-05 prices), we have applied the regression model (1) to the data given in table 1. Results of the application of the model are given in table 2 which shows that the regression model (1) provided an excellent fit to the trend in real GSDP as well as the trend in the real output of the three sectors of the State economy (Figures 1 through 4). In case of real GSDP, the fitted regression model accounted for more than 99 per cent of the variation in actual real GSDP over time. Similarly, the regression model accounts for more than 87 per cent of the variation in the primary sector output and more than

99 per cent variation in the output of secondary and tertiary sector of the economy (Table 2). This shows that the regression model (1) is appropriate for analysing the growth of the economy of the State during the 50-year period from 1960-61 through 2011-12.

Results of the regression model have been used to estimate the rate of growth of real GSDP in different plan periods. Estimates of average annual growth rate of real GSDP in different plan periods during 1960-61 through 2011-12 obtained on the basis of the regression analysis are presented in table 3 along with the average annual growth rate of the real output in the three sectors of the economy. These average annual growth rates reflect how the economic and social production system in Gujarat has evolved over the five decades of its existence.

It may be seen from table 3 that the growth of real GSDP of the State has been different in different plan periods. The growth of the State economy was the most rapid during the V Five-year Development Plan period (1974-79) when the real GSDP of the State increased at an average annual rate of very close to 13 per cent per year. The growth of the economy has also been very rapid during VIII Five-year Development Plan period (1992-97) and X Five-year Development Plan period (2002-07). By contrast, the growth of the State economy has been the slowest during the IV Five-year Development Plan period (1969-74) when the real GSDP of the State increased at an average annual rate of just around 0.6 per cent per year. The growth of the State economy has also been very slow during the IX Five-year Development plan period (1997-02). During this period, the real GSDP of the State increased at a rate less than three per cent per year. Table 3 also suggests that, during the XI Five-year Development Plan period, there appears to be considerable

Among the three sectors of the economy, the growth in the primary sector has been the most rapid during the V Five-year Development Plan period followed by the X Five-year Development Plan period. By contrast, the growth of the output, in this sector of the economy has been negative during IV, VI and IX Five-year Development Plan periods. It is also obvious from table 3 that slow to very slow growth of the State economy during IV and IX Five-year Development Plan periods has largely been due to the negative growth in the primary sector of the State economy. Because of the negative growth in the primary sector, the growth in the State economy has been less than 5 per cent per year during the VI Five-year Development Plan period also.

The growth in the secondary sector of the economy, on the other hand, has been the most rapid during X Five-year Development Plan period followed by VIII and V Five-year Development Plan periods but the slowest during the IX Five-year Development Plan period. In case of the tertiary sector, the growth rate has been

the most rapid during the V Five-year Development Plan period but the slowest during the IV Five-year Development Plan period. The growth in this sector has also been very rapid during the X Five-year Development Plan period.

There has been very significant expansion of the economy of the State during 1960-61 through 2011-12 so that the GSDP of the State at 2004-05 prices increased by more than 3694 billion Rupees during this period. More than 56 per cent of this increase in GSDP was the result of the increase in the output of the tertiary sector of the State economy whereas around one third of this increase was due to the increase in the output of secondary or manufacturing sector. The increase in the output of the primary sector of the economy account for just around 11 per cent of the increase in the real GSDP of the State during the period under reference. The contribution of the increase in the output of different sectors of the economy to real GSDP has however been different in different Five-year Development Plan periods.

It is also evident from table 3 that the growth in the output of secondary and tertiary sectors of the State economy actually picked up the momentum after 1970-71 and followed a high growth trajectory throughout the 40 years period from 1970-71 through 2011-12 with the only exception of the IX Five-year Development Plan period. In both these sectors, the average annual growth of the real output has been more than 6 per cent per year during this period with only one exception. This sustained growth in the output of secondary and tertiary sectors of the economy is perhaps the most remarkable feature of the State economy. Gujarat has been able to not only substantially expand the manufacturing and service sectors of its economy but also to sustain the expansion for almost four decades. This is a major achievement and reflects a favourable investment climate could be maintained in the State continuously for almost four decades. Sustenance of a favourable investment climate for such a long period is a reflection of the entrepreneurial nature of the people of Gujarat and their active participation in productive processes.

Expansion of the State economy has been associated with a significant change in the structure of the social and economic production system. When the State came into existence, the output of the social and economic production system of the State was dominated by the output of the primary sector. Today, the output of the service sector dominates the output of the social and economic production system. An implication of this transition in the structure of the State economy is that State domestic product is now only marginally sensitive to the vagaries of the agricultural production system.

The decrease in the share of the output of the primary sector has also been associated with the increase in the share of output of the secondary sector. The

share of the output of the secondary sector increased from around 21 per cent during 1960-61 to almost 33 per cent during 2011-12. This transition in the structure of the State economy has important implications for development planning and programming and for sustaining the growth of the State economy. Moreover, because of the rather limited dependence of the State economy on the secondary or the manufacturing sector, the State appears to have been able to bear the impact of the economic shocks than the country as a whole.

FUTURE GROWTH OF OUTPUT

It is possible to forecast the growth of real GSDP of the State in the near future on the basis of the regression model fitted to the historical data. The forecasting exercise is based on the assumption that the past trend in the real GSDP of the State and in the real output of the three sectors of the economy during the period 1960-61 through 2011-12 will continue in the near future. This exercise has been carried out separately for the three sectors of the economy and for the total output of the State economy in real terms - at 2004-05 prices. Time series based forecasting is rarely used for forecasting the future output of the economy, although such forecasting has relevance at least in the near future.

According to this exercise, the real GSDP of the State at 2004-05 prices is forecasted to increase to very close to 7000 billion Rupees by the year 2020. This means that the real GSDP of the State is forecasted to increase by 80 per cent from the real output during 2011-12. The output of the primary sector of the State economy is expected to increase to Rs 513 billion by the year 2020 if the trend in the output of this sector during 1960-61 through 2011-12 continues up to the year 2020. Similarly, the real output of the secondary or the manufacturing sector of the State economy is expected to increase to Rs 2112 billion while that of the tertiary or the service sector is expected to increase to Rs 4592 billion by the year 2020. The increase in the real put will be the slowest in the primary sector (22 per cent) but the real out in the service sector is forecasted to more than double by the year 2020. By contrast, the real output in the secondary sector is forecasted to increase by around 64 per cent during this period.

The forecasting exercise also suggests that structural transition in the State economy will gather momentum in the coming years. It is estimated that, by the year 2020, the output of the tertiary of the State economy will be accounting for very close to 66 per cent of the total real output of the economic and social production system of the State. By contrast, the contribution of the primary sector is forecasted to decrease to less than 8 per cent whereas the contribution of the manufacturing

sector is estimated to be slightly more than 30 per cent of the total real output. There will, in fact, be a marginal decrease, not increase, in the contribution of the real output of the secondary sector to the total real output of the State economy in the forthcoming years. In other words, the social and economic production system of the State will increasingly become dependent on the tertiary or the service sector of the economy for is growth and expansion in the coming years whereas the relevance of the primary and secondary sector will decrease.

CONCLUSIONS

The present analysis has presented the historical perspective of the evolution of the economic and social production system in terms of the growth of the economy of the State as measured through the increase in the GSDP of the State at 2004-05 prices. The evolution of the economic and social production system of the State has been analysed by fitting a segmented regression model which provided a very good fit to the observed trend in the total real output as well as in real sector specific outputs. The very excellent fit of the regression model has also prompted to forecast the growth of the real GSDP of the State in the near future which suggests that the total output of the State economy is projected to reach Rs 6500 billion mark by the year 2020.

The State domestic product is commonly known as the State income in common parlance. It is a measure of the volume of all goods and services produced by the State in monetary terms during a given period without duplication. Estimates of the State domestic product over a period of time reveal the extent and direction of the change in the levels of economic development. The composition of the State domestic product by sectors of the economic and social production system gives an idea about the relative position of different sectors of the economy over a period of time which indicates not only the real structural changes taking place in the economic and social production system but also provides the much needed insight into the functioning of the State economy that is critical for effective development planning and programming.

Figure 1
Trend in Gross Domestic Product in Gujarat
(Billion Rupees at 2004-05 prices)

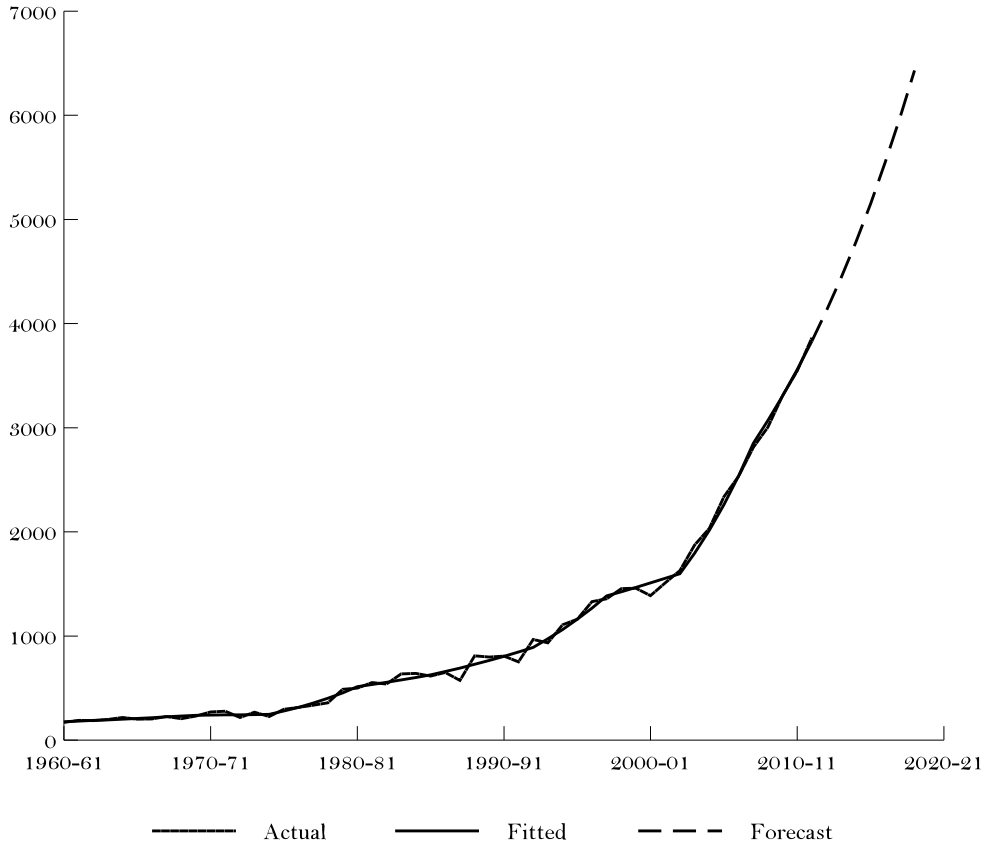

Figure 2
Trend in Output of the Primary Sector in Gujarat
(Million Rupees at 2004-05 prices)

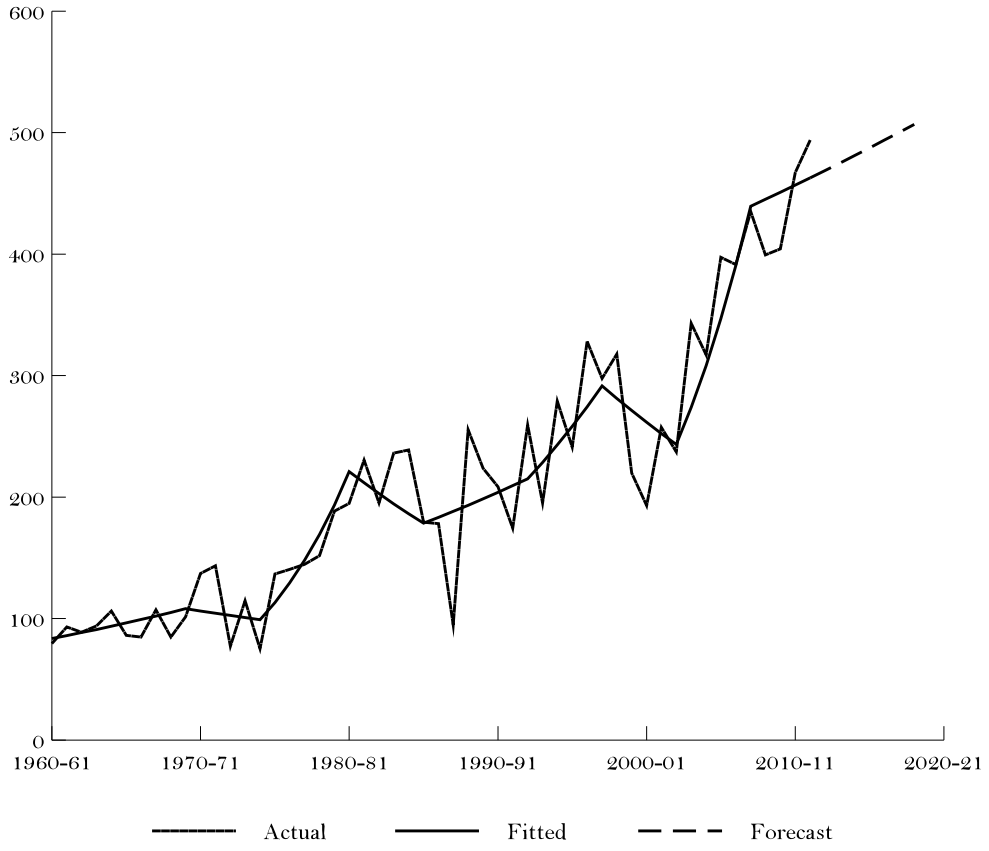

Figure 3
Trend in Output of the Secondary Sector in Gujarat
(Million Rupees at 2004-05 prices)

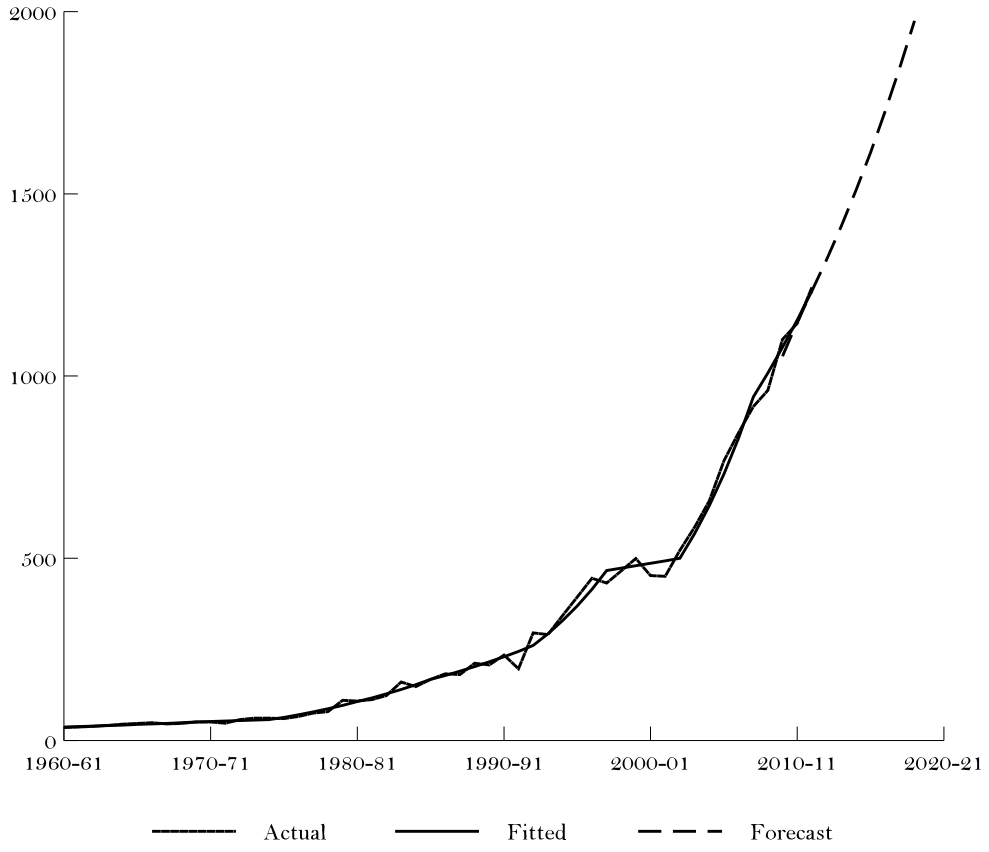

Figure 4
Trend in Output of the Tertiary Sector in Gujarat
(Million Rupees at 2004-05 prices)

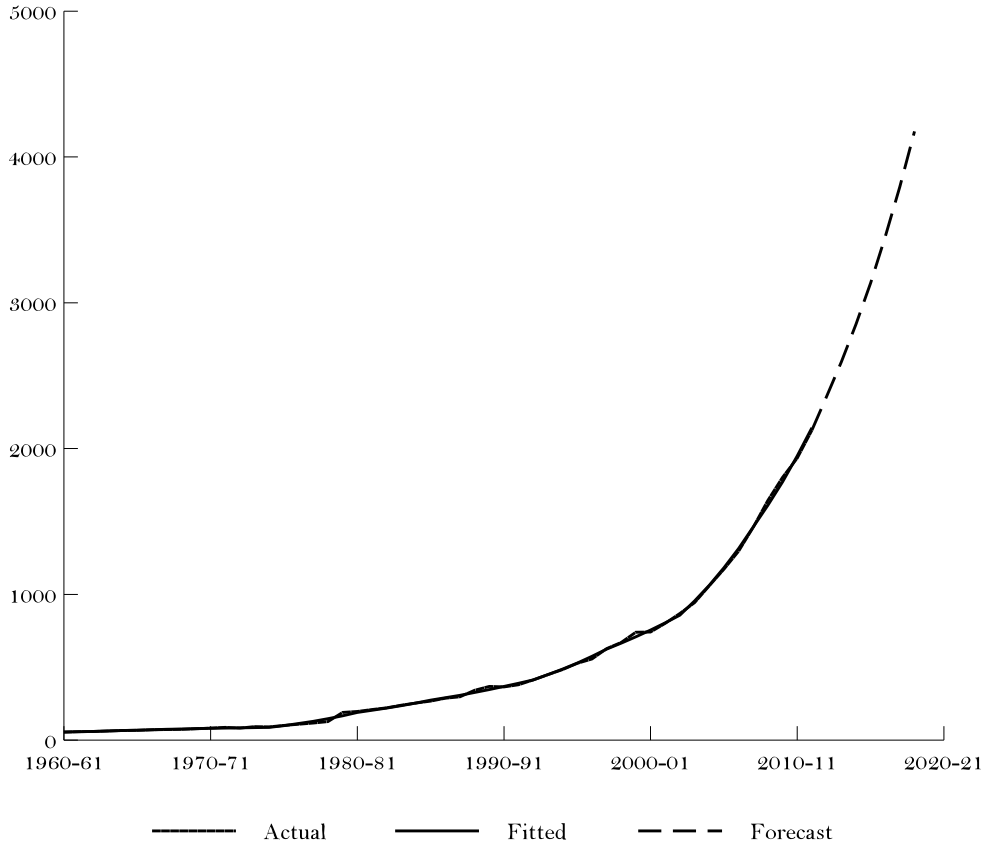

Figure 5
Structure of the Economy of Gujarat

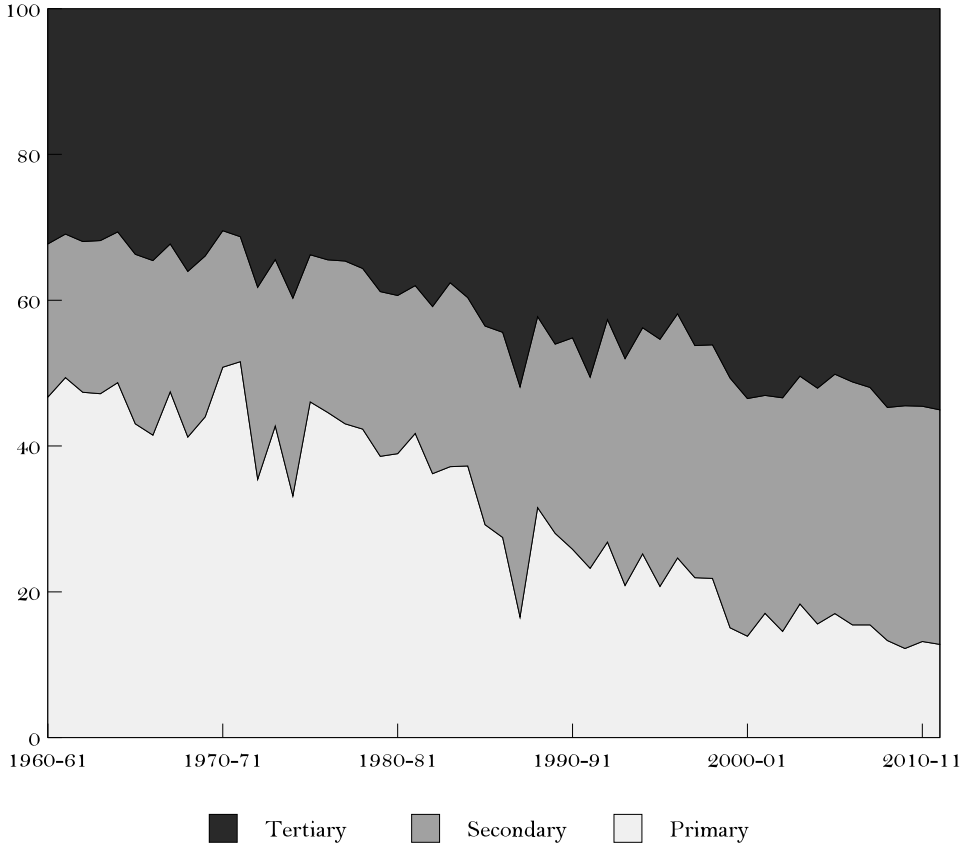

Table 1
GSDP at 2004-05 prices in Gujarat: 1960-61 through 2011-12

Year	Gross output (Billion Rupees)				Structure of the output			
	Total	Primary	Secondary	Tertiary	Total	Primary	Secondary	Tertiary
1960-61	170.20	79.51	35.75	54.94	100.00	46.72	21.00	32.28
1961-62	188.73	93.24	37.14	58.35	100.00	49.40	19.68	30.92
1962-63	187.37	88.74	38.77	59.86	100.00	47.36	20.69	31.95
1963-64	199.29	94.05	41.85	63.39	100.00	47.19	21.00	31.81
1964-65	218.10	106.21	45.08	66.81	100.00	48.70	20.67	30.63
1965-66	200.52	86.28	46.67	67.57	100.00	43.03	23.27	33.70
1966-67	204.61	84.88	49.06	70.67	100.00	41.48	23.98	34.54
1967-68	225.97	107.22	45.86	72.89	100.00	47.45	20.29	32.26
1968-69	205.73	84.80	46.80	74.13	100.00	41.22	22.75	36.03
1969-70	230.48	101.41	50.90	78.17	100.00	44.00	22.08	33.92
1970-71	270.16	137.25	50.63	82.28	100.00	50.80	18.74	30.46
1971-72	278.41	143.58	47.77	87.06	100.00	51.57	17.16	31.27
1972-73	218.05	77.29	57.42	83.34	100.00	35.45	26.33	38.22
1973-74	268.63	114.80	61.34	92.49	100.00	42.74	22.83	34.43
1974-75	227.18	75.37	61.59	90.22	100.00	33.18	27.11	39.71
1975-76	297.15	136.84	60.03	100.28	100.00	46.05	20.20	33.75
1976-77	315.40	140.63	66.06	108.71	100.00	44.59	20.94	34.47
1977-78	336.39	144.78	75.10	116.51	100.00	43.04	22.33	34.64

Year	Gross output (Billion Rupees)				Structure of the output			
	Total	Primary	Secondary	Tertiary	Total	Primary	Secondary	Tertiary
1978-79	358.57	151.79	79.03	127.75	100.00	42.33	22.04	35.63
1979-80	488.54	188.47	110.42	189.65	100.00	38.58	22.60	38.82
1980-81	500.25	194.85	108.55	196.85	100.00	38.95	21.70	39.35
1981-82	552.35	230.51	112.07	209.77	100.00	41.73	20.29	37.98
1982-83	539.50	195.28	123.69	220.53	100.00	36.20	22.93	40.88
1983-84	635.45	236.19	160.31	238.95	100.00	37.17	25.23	37.60
1984-85	640.89	238.87	148.06	253.96	100.00	37.27	23.10	39.63
1985-86	614.60	179.47	167.60	267.53	100.00	29.20	27.27	43.53
1986-87	649.03	178.15	182.70	288.18	100.00	27.45	28.15	44.40
1987-88	573.63	94.94	181.17	297.52	100.00	16.55	31.58	51.87
1988-89	810.41	255.58	212.36	342.47	100.00	31.54	26.20	42.26
1989-90	798.64	223.84	207.26	367.54	100.00	28.03	25.95	46.02
1990-91	807.11	208.46	234.25	364.40	100.00	25.83	29.02	45.15
1991-92	751.09	174.44	197.04	379.61	100.00	23.22	26.23	50.54
1992-93	967.48	259.37	295.57	412.54	100.00	26.81	30.55	42.64
1993-94	934.94	195.20	290.88	448.86	100.00	20.88	31.11	48.01
1994-95	1106.84	279.09	343.15	484.60	100.00	25.22	31.00	43.78
1995-96	1161.62	241.20	393.53	526.89	100.00	20.76	33.88	45.36
1996-97	1330.72	328.15	445.53	557.04	100.00	24.66	33.48	41.86
1997-98	1357.26	297.72	432.20	627.34	100.00	21.94	31.84	46.22

Year	Gross output (Billion Rupees)				Structure of the output			
	Total	Primary	Secondary	Tertiary	Total	Primary	Secondary	Tertiary
1998-99	1453.92	317.69	465.80	670.43	100.00	21.85	32.04	46.11
1999-00	1459.04	219.88	499.83	739.33	100.00	15.07	34.26	50.67
2000-01	1387.75	193.01	452.44	742.30	100.00	13.91	32.60	53.49
2001-02	1508.96	257.39	450.90	800.67	100.00	17.06	29.88	53.06
2002-03	1627.96	237.19	521.67	869.10	100.00	14.57	32.04	53.39
2003-04	1872.49	343.20	585.35	943.94	100.00	18.33	31.26	50.41
2004-05	2033.73	317.15	657.43	1059.15	100.00	15.59	32.33	52.08
2005-06	2337.76	397.35	768.03	1172.38	100.00	17.00	32.85	50.15
2006-07	2533.93	391.57	844.93	1297.43	100.00	15.45	33.34	51.20
2007-08	2812.73	435.18	916.44	1461.11	100.00	15.47	32.58	51.95
2008-09	3003.41	399.41	960.63	1643.37	100.00	13.30	31.98	54.72
2009-10	3306.71	404.29	1100.93	1801.49	100.00	12.23	33.29	54.48
2010-11	3545.15	467.15	1144.44	1933.56	100.00	13.18	32.28	54.54
2011-12	3864.20	493.96	1243.65	2126.59	100.00	12.78	32.18	55.03

Source: Authors' calculations based on data available through the Directorate of Economics and Statistics, Government of Gujarat.

Table 2
Results of the regression model

Particulars	GSDP	Primary sector	Secondary sector	Tertiary sector
R^2	0.995	0.893	0.997	0.999
a_0	9.777	9.031	8.217	8.624
b_0	0.034	0.029	0.035	0.040
b_1	-0.028	-0.046	-0.010	-0.021
b_2	0.116	0.151	0.079	0.111
b_3	-0.082	-0.177	-0.014	-0.057
b_4	0.011	0.069	-0.027	-0.014
b_5	0.038	0.034	0.053	0.023
b_6	-0.060	-0.097	-0.102	-0.019
b_7	0.087	0.154	0.113	0.043
b_8	-0.042	-0.105	-0.060	-0.012
	Average annual growth rate (Per cent)			
1960-61/1970-71	3.455	2.907	3.533	4.089
1970-71/1974-75	0.626	-1.741	2.548	1.892
1974-75/1980-81	12.977	14.313	10.940	13.823
1980-81/1985-86	4.050	-4.189	9.387	7.517
1985-86/1992-93	5.156	2.700	6.509	6.068
1992-93/1997-98	9.252	6.281	12.337	8.572
1997-98/2002-03	2.893	-3.555	1.409	6.580
2002-03/2007-08	12.276	12.543	13.524	11.283
2007-08/2011-12	7.678	1.306	6.952	9.995

Source: Authors' calculations

Table 3
Project growth in GSDP of Gujarat at 2004-05 prices

Year	Gross output (Billion Rupees)				Structure of the output			
	GSDP	Primary	Secondary	Tertiary	GSDP	Primary	Secondary	Tertiary
2012-13	4126.73	468.88	1319.60	2357.35	100.00	11.36	31.98	57.12
2013-14	4443.56	475.00	1411.34	2592.96	100.00	10.69	31.76	58.35
2014-15	4784.73	481.21	1509.45	2852.11	100.00	10.06	31.55	59.61
2015-16	5152.08	487.49	1614.39	3137.17	100.00	9.46	31.33	60.89
2016-17	5547.64	493.86	1726.62	3450.72	100.00	8.90	31.12	62.20
2017-18	5973.56	500.31	1846.66	3795.60	100.00	8.38	30.91	63.54
2018-19	6432.19	506.84	1975.04	4174.96	100.00	7.88	30.71	64.91
2019-20	6926.03	513.46	2112.34	4592.23	100.00	7.41	30.50	66.30

Source: Authors' calculations.