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**INDIA @ 100 AND THE SIGNIFICANCE OF TOP
SIX STATES**

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India

July 2024

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Abstract

India has a goal of achieving a US\$ 7 trillion economy in 2030 and subsequently a developed nation status by 2047. While some studies/reports have explored the possibilities of reaching these targets based on assumptions recording the growth rate, inflation etc., this study is an attempt to forecast the future growth of the Indian economy till 2047-48, using the Markov Switching model and real GDP growth data from 1993-94 to 2022-23 and verify when these goals will be achieved. Since the economic outcomes are highly heterogeneous across the Indian States and there are indications of divergence in economic growth, it also estimates and predicts the future growth prospects of the top six states to see how much these top states contribute to achieve the targets. The findings suggest that India will achieve the US\$ 7 trillion target by 2032-33 and the per capita income level of developed nation by 2046-47, assuming 4.5 percent inflation and 2 percent depreciation of exchange rate. Tamil Nadu, Karnataka and Gujarat are expected to reach per capita income mark of developed nation by 2037-38, Maharashtra is expected to reach in 2040-41. West Bengal will reach this target by 2047-48, while Uttar Pradesh has to go a long way to reach this ambitious target.

Keywords: *Indian economy, Indian States, Markov Switching Regression, GDP/GSDP forecasts*

JEL Codes: *C34, E17, E66*

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Mathew Koshy Odasseril

INTRODUCTION

India is amongst the fastest growing major economies in the world in recent years. It is the third largest economy in terms of purchasing power parity, aspiring to achieving a US\$ 7 trillion economy by 2030 and becoming a “developed” economy, with per capita income of US\$13,845 by 2047 (Ministry of Finance, 2024), the year at which India will complete 100 years after achieving freedom from British rule.¹

The successful growth story of India since 1990 is as a result of carefully designed policy reforms and sector-specific action goals embedded in the vision of equitable development and enhancing the standard of life of the people in the country. Accelerating India’s growth will have profound implications for more than 1.4 billion Indians, particularly young people, who are looking for jobs led growth. Further, India’s higher performance has relevance far beyond India’s borders - the entire world has a lot riding on India’s success (NITI Aayog, 2018). If India is able to achieve its ambitious target of becoming a developed nation, while becoming a net-zero economy, this will become a successful model for many nations to follow to improve their economies without compromising on their climate change commitments.

However, India faces a number of challenges in achieving this target. It is the world’s most populous country. India is now a lower middle-income country with per capita income (in 2022) of only US\$2390 (and) as against USA’s per capita income of US\$76770 and China’s per capita income of US\$12850. According to the World Inequality Report 2022, India is among the most unequal countries in the world. The wealthiest top 1 percent own nearly 40.6 percent of the total wealth in India. India still has the world’s largest number of poor at 228.9 million (Oxfam India, 2023).

¹The next 25 years have been deemed as the ‘Amrit Kaal’ by Prime Minister Narendra Modi, a term drawn from Vedic inspiration, which means a uniquely auspicious period and represents India’s opportunity to herald a new world era (EY, 2023).

The sectoral transformation from agriculture to industry has been relatively slow, especially in terms of employment. 45 percent of working populations are still in agriculture, which contributes only 15 percent of GDP, indicating low productivity in this sector. Poor quality of human capital is another concern. India ranked 134 out of 193 nations in UNDPs' HDI index in 2022. While there are few signs of convergence, the economic and social outcomes across India are indeed highly heterogeneous. A few states account for a large share of national output and overwhelmingly dominate activities like exports and innovation.² On the other hand, a large number of laggard states appear largely unconnected to the modern Indian and global economy.

India also suffers from high inflation, unstable rupee against the US dollar, and a larger fiscal deficit (with public debt of about 80 percent) and current account deficit. While its unemployment rate ranged between 2.37 percent - 5.76 percent between 1991 to 2019, it increased to 8 percent in 2020. It also suffers from dramatic weakness in environment quality. It is the third largest CO₂ emitter globally. Like all other nations, it was also severely affected by the COVID-19 pandemic. RBI's Report on Currency and Finance (2022) shows that based on pre-COVID trend growth and actual growth rates for the last three years (2020-21 to 2022-23), India's output loss (real) amounted to a total of ₹52.6 lakh crore.

Government of India announced the target of achieving a US\$ 5 trillion strong economy by 2024-25 just before the pandemic started. Several studies have worked out how much growth rate is required to reach the target: 9.5 percent to 13.5 percent (Soni and Subrahmanya 2020). Due to the pandemic, this target is postponed to later year.

Given this background, the central questions are: whether the Indian economy will become a seven trillion-dollar economy by 2030 or

² Maharashtra and Gujarat alone accounted for 50 percent of total exports. Gujarat alone accounted for about 25 percent of India's total gross fixed capital formation, followed by Maharashtra and Tamil Nadu.

not? whether India will become a developed country by 2047 or not? and whether the top six states-Maharashtra, Tamil Nadu, Uttar Pradesh, Karnataka, Gujarat and West Bengal will reach the target per capita income of developed country well in advance or not? This study is an attempt to answer these questions, taking into account the GDP/GSDP growth cycles, by characterizing the non-linear and asymmetric features it encompasses.³ The main contributions of this study are as follows: (i) While some studies/reports including EY (2023) have explored the possibilities for India to reach the target of developed nation based on assumed growth rate, inflation etc, this study attempts to forecast the future growth of the Indian economy till 2047-48 using the Markov Switching (MS) model and real GDP growth data from 1994-95 to 2022-23 and verify these aspirational goals of seven trillion dollar economy and developed nation's per capita income will be achieved; (ii) while no study has analyzed when the Indian states will achieve the target of developed nation's per capita income level, this study estimates the future growth of the top six states using the MS model and real GSDP growth rates of them from 1994-95 to 2022-23 and check empirically when they will achieve the ambitious target.

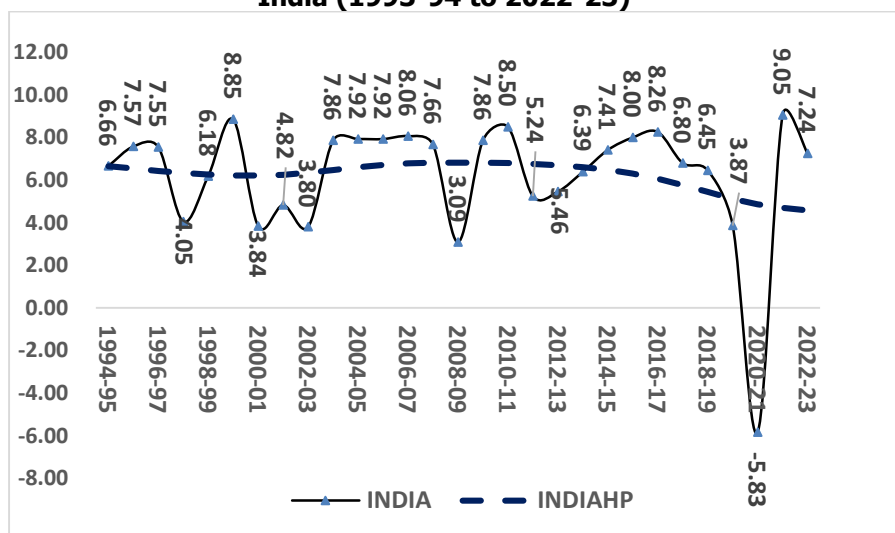
REVIEW OF THE INDIAN ECONOMY AND THE TOP 6 STATES' ECONOMY

The Indian economy had been mostly driven by the monsoon in the pre-reform period. From 1950-51 to 1979-80, its average annual growth rate was only 3.5 percent (not shown). It was popularly known as the "Hindu Rate of Growth". The major policy during that period was import substitution with an administered exchange rate. From 1980-81 to 1989-90, the Indian economy grew at an average rate of 5.69 percent. India had faced a severe economic crisis by the end of 1990. A sharp rise in crude oil prices as a consequence of the Gulf Crisis in mild 1990 gave a severe jolt to India's balance of payments situation which was already

³An economy can experience asymmetric recurring upswings and downswings due to the economic and non-economic shocks. The global financial crisis of 2008 is an example of the former, while the negative growth rate due to the recession caused by the global pandemic is an example of the latter.

under stress and the current account deficit deteriorated to 3 percent in 1990-91(Rangarajan, 2021). India's growth rate came down to 1.06 percent in 1991-92. The economic reform process, including deregulation, globalization and market orientation, started from 1991 onwards. The average growth picked up marginally to 5.87 percent in the 1990s (Figure 1).

Figure 1: Actual and Trend Growth Rate (percent) of Real GDP of India (1993-94 to 2022-23)



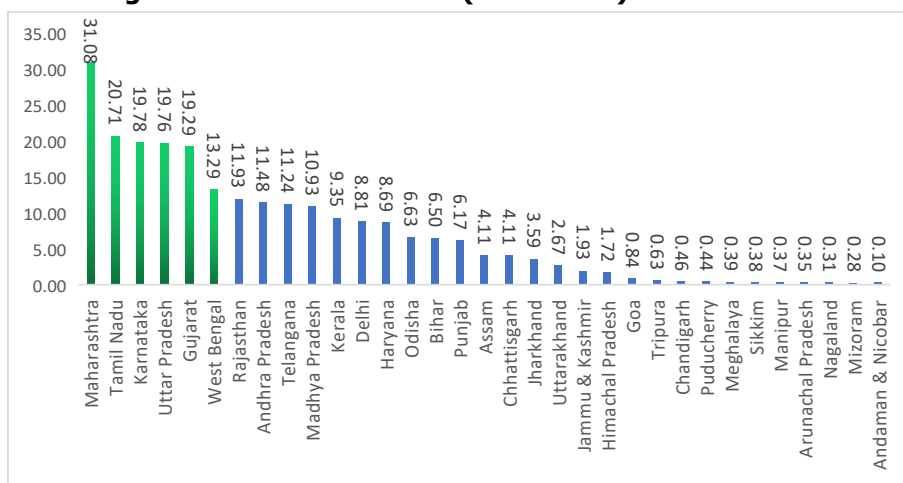
Source (basic data): MOSPI, GOI.

While the growth rate declined in the early 2000s, it picked up in 2003-04 and reached a high rate of growth of 8.06 percent in 2006-07. Due to the global financial crisis, growth again declined to 3.09 percent in 2008-09. It again increased to 8.5 percent in 2010-11. From 2000-01 to 2009-10, the average growth was 6.28 percent. From 2011-12, the growth rate continuously increased to reach 8.26 percent in 2016-17. After that, it continuously declined to 3.87 percent in 2019-20, because of many issues, including the demonetization (November 2016) and the GST implementation in 2017 (Rangarajan and Srivastava 2020). However, the average rate of growth during 2010-11 to 2019-20 increased to 6.64

percent. But due to the COVID-19 pandemic, the growth went down to - 5.83 percent in 2020-21. In 2021-22, it recovered to reach 9.05 percent (due to negative base effect). The trend growth rate (computed using HP filter) declined continuously from 6.66 percent in 1994-95 to 6.21 percent in 2000-01. Then it continuously increased to 6.82 percent in 2009-10. After that, it continuously declined to 4.57 percent in 2022-23 (Figure 1). Thus, it is clear that the trend growth was already slowing down before the pandemic struck the Indian economy (Rao 2020). It is also noted that the Indian economy has experienced asymmetric recurring upswings and downswings due to the economic and non-economic shocks over the years.

Figure 2 depicts the GSDP details of Indian states and Union Territories (UTs) in 2021-22. Maharashtra is the largest economy with Rs. 31.08 trillion. Other top 5 economies are Tamil Nadu (Rs. 20.71trillion), Karnataka (Rs. 19.78 trillion), Uttar Pradesh (Rs. 19.76 trillion), Gujarat (Rs. 19.29 trillion) and West Bengal (Rs. 13.29 trillion). These top six states accounted for about 52 percent of the total GDP of India while the remaining 27 states and UTs accounted for about 48 percent of GDP.

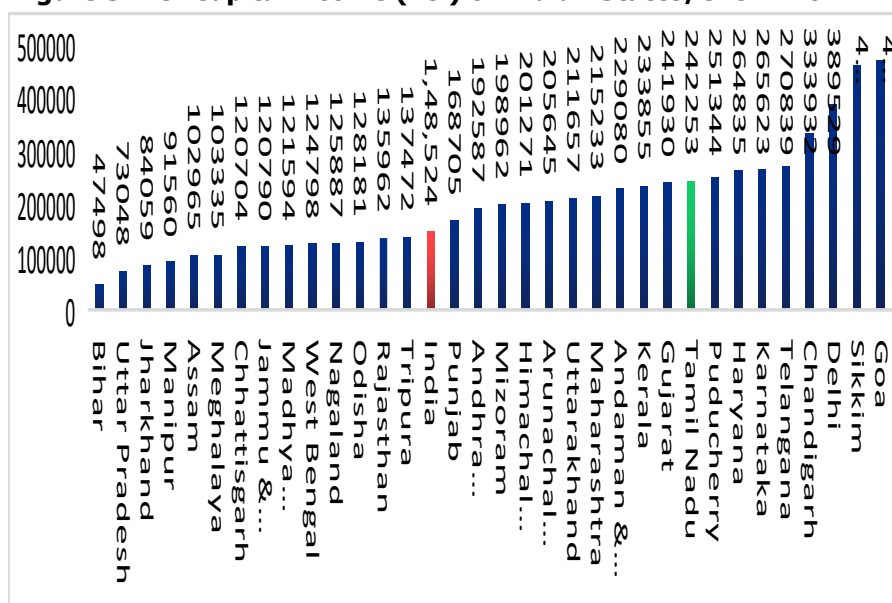
Figure 2: State-wise GSDP (Rs. Trillion) in 2021-22



Source (basic data): MOSPI, GOI.

Figure 3 shows the per capita income of Indian states and UTs in 2021-22. The top three states in per capita income were Goa, Sikkim and Delhi. Among the top six largest economies, Karnataka had the highest per capita come of Rs. 2.66 lakh (but its overall rank is 5), followed by Tamil Nadu (Rs. 2.42 lakh), and Gujarat (Rs. 2.419 lakh). While Maharashtra ranked first in size of the economy, it ranked 13 in per capita income (Rs. 2.15 lakh). Thus, ranks of top six states in GSDP size are not consistent with their ranks in per capita income due to varying population growth.

Figure 3: Per Capita Income (Rs.) of Indian States/UTs in 2021-22



Source (basic data): MOSPI, GOI.

Table 1 provides the average growth rates of the Indian economy and the top six Economies-Maharashtra, Tamil Nadu, Karnataka, Uttar Pradesh, Gujarat and West Bengal from 1994-95 to 2022-23. It also provides the average growth rates of the rest of India (India's GDP minus sum of GSDPs of the top six states). From 1994-94 to 2022-23, the real GDP of India grew at an average rate of 6.23 percent; Gujarat's GSDP grew

at 8.42 percent; Karnataka at 7.1 percent; Tamil Nadu at 7.03 percent; Maharashtra at 6.34 percent; West Bengal at 5.73 percent and Uttar Pradesh at 5.47 percent. It is noted that (i) average rate varied in different sub-periods of all cases, highlighting the presence of growth cycles with non-linear paths and asymmetric features, and (ii) from 2020-21 to 2022-23, the average rates of all declined due to covid impact.

Table 1: Average Growth Rates of (real) GDP and GSDPS of Top Six States (percent)

Periods	Mahar- ashtra	Tamil Nadu	Karna- taka	Uttar Pradesh	Guja- rat	West Bengal	Indi a
1994-95 to 1999-00	6.30	6.67	7.66	4.73	8.01	7.11	6.81
2000-01 to 2009-10	7.55	7.51	6.36	5.42	8.77	6.28	6.28
2010-11 to 2019-20	6.21	7.26	8.09	6.05	9.21	4.96	6.64
2020-21 to 2022-23	2.87	5.39	5.20	5.12	5.39	3.64	3.49
1994-95 to 2022-23	6.34	7.03	7.10	5.47	8.42	5.73	6.23

Source (Basic Data): MOSPI, GOI.

METHODOLOGY AND DATA

Since GDP/GSDP growth rates fluctuate around a higher level and are more persistent during expansions, and they stay at a relatively lower level and less persistent during contractions, a single linear model like ARIMA cannot capture these distinct behaviours. However, the popular Markov (regime) switching (MS) model of Hamilton (1989) characterizes the time series behaviours in different regimes. In particular, the MS-AR model allows for non-linearity by introducing the possibility of shifts in GDP/GSDP growth rates due to an unforeseen change in macroeconomic policies. Therefore, this study employs the Hamilton's regime switching model (i.e., MS(m)-

AR(p)) framework to forecast the future growth rates of the Indian economy, and top six economies, taking into account the non-linear behaviour of the underlying variables, real GDP/GSDP growth rates.

As the appropriate lag length is decided AR(1) to AR(4) using the information criteria, and with 2 regimes, this study employs the MS(2)-AR(4) model, which is specified as:

$$y_t - \mu_{st} = \phi_1(y_{t-1} - \mu_{st-1}) + \phi_2(y_{t-2} - \mu_{st-2}) + \phi_3(y_{t-3} - \mu_{st-3}) + \phi_4(y_{t-4} - \mu_{st-4}) + \epsilon_{st} \quad ; \quad (1)$$

and

$$\mu_{st} = \alpha_1 s_1 + \alpha_2 s_2 \quad (2)$$

where, ϵ_t is the i.i.d. normal error with mean 0 and state-dependent variance (σ_1^2, σ_2^2); μ_s is the state dependent mean; the variable y_t , is the growth rate of real GDP of India or real GSDP of top six states; the regime shift in at time t is determined by the state variable s_t , which follows the first order Markov process.⁴ It takes value from 1 to 2, i.e., $s_t = 1$ if high growth state/regime, 2 if low growth regime. α_1 and α_2 are the average growth rate for regime one and two respectively. ϕ_1, ϕ_2, ϕ_3 and ϕ_4 are the respective coefficients of AR terms

As the state variable follows a two-state first order Markov process, its transition probability matrix is given by:

$$P = \begin{bmatrix} p_{11} & p_{12} \\ p_{21} & p_{22} \end{bmatrix} \quad (3)$$

where, $p_{ij} = p[s_t = j | s_{t-1} = i]$, for $(i, j) = 1, 2$ and $\sum p_{ij} = 1$. p_{11} and p_{22} are the probabilities of being in (high growth) regime 1, given that the system was in regime 1 during the previous period, and the probability of being in regime 2, given that the system was in regime 2 during the previous period respectively. Thus, the model is a nonlinear combination of discrete and continuous dynamics with twelve parameters: ($\alpha_1, \alpha_2, p_{11}, p_{12}, p_{21}, p_{22}, \sigma_1, \sigma_2, \phi_1, \phi_2, \phi_3, \phi_4$).

⁴It assumes that probability distribution of the state at any time t depends on state at time t-1 and not on t-2 etc. i.e., Markov process is not path dependent.

$\sigma_1, \phi_1, \phi_2, \phi_3, \phi_4$). The model is estimated using the maximum likelihood approach.

The data for real GDP growth, GSDP real growth rates of top six states (in 2011-12 prices) from 1993-94 to 2022-23 were compiled from the website of the Ministry of Statistics and Programme Implementation, Government of India and EPW. Based on the estimated MS-AR models, the real GDP/GSDP growth rates are predicted on annual basis from 2023-24 to 2047-48. The respective nominal GDP/GSDP is then estimated by adding (an assumed inflation) of 4.5 percent with the real GDP/GSDP forecasts. Projected exchange rate for future period assuming 2 percent depreciation every year (following Rangarajan and Shanmugam (2023), are used to compute GDP/GSDP in US \$. Projected population data from Report of the Technical Group on Population Projection, July 2020 are used to compute the per capita figure in US \$.⁵

EMPIRICAL RESULTS

Initially, the ADF test is used to verify whether the real GDP/GSDP growth data are stationary or not. The ADF test results in Table 2 indicate that all variables are stationary at their levels.

Table 2: ADF Test Results

GDP/GSDP Real Growth	t-Statistic	Prob.*
Maharashtra	-4.5549	0.0012
Tamil Nadu	-3.5964	0.0127
Karnataka	-2.7986	0.0547
Uttar Pradesh	-4.7566	0.007
Gujarat	-2.9962	0.0485
West Bengal	-5.5687	0.0001
India	-5.0084	0.0004

Source: Computed by authors

⁵This reports provides projected population for India and all states till 2036. Using the exponential growth model, this study projects the population figures till 2047-48.

Table 3 presents the maximum likelihood estimation results of Marko-switching models. For India, the coefficient of auto-regression term, ϕ_1 is negative and statistically significant at 1 percent level, indicating that the current growth has a negative and significant relation to its first lagged value. For Gujarat, the term is also negative, but not significant. For all others, this term is positive and significant. Almost all the coefficients of remaining auto-regression terms are significant.

Table 3: Markov Switching Model Estimation Results

Parameters	Maharashtra	Tamil Nadu	Karnataka	Uttar Pradesh	Gujarat	West Bengal	India
α_1	7.0734 (364.792)	7.6412 (47.098)	9.6588 (44.531)	7.7961 (2.774)	9.7733 (51.409)	6.2975 (173.891)	7.8266 (70.334)
α_2	6.4748 (1835.41)	5.9195 (163.659)	6.2293 (19.424)	5.9837 (4.899)	5.7916 (1.686)	6.1215 (8.935)	4.4865 (5.114)
$\ln \sigma_1$	1.6067 (8.242)	1.3824 (6.151)	-0.6339 (-1.683)	1.6751 (5.764)	-1.5294 (-5.491)	-3.3841 (-10.133)	-1.3841 (-3.765)
$\ln \sigma_2$	-6.3067 (-11.610)	-2.7145 (-8.147)	0.5679 (2.449)	0.1361 (0.586)	1.6859 (6.679)	1.3069 (7.264)	1.2044 (5.701)
ϕ_1	0.2136 (478.603)	0.4714 (41.272)	0.2092 (3.200)	0.3559 (1.924)	-0.0072 (-0.317)	0.0545 (9.597)	-0.1212 (-3.876)
ϕ_2	-0.0257 (-98.277)	-0.3938 (-30.858)	-0.1684 (-1.438)	0.0139 (0.097)	0.2139 (8.351)	-	-
ϕ_3	0.1067 (371.527)	0.1255 (7.705)	0.3524 (4.555)	0.2790 (1.981)	-0.1161 (-3.269)	-	-
ϕ_4	-	-0.2581 (-21.169)	-0.9308 (-8.632)	-	0.0489 (2.365)	-	-
ρ_{11}	0.8260	0.6239	1.16E-09	0.9020	0.3309	0.1517	0.6572
ρ_{22}	0.5506	0.1276	0.6324	0.9211	0.4198	0.7375	0.7209

Source: Estimated by Authors.

In all cases, both regimes have a positive mean rate of growth (as indicated by the positive and significant coefficients, α_1 , and α_2). For India, the conditional mean growth is 7.82 percent in the high growth regime 1 and 4.49 percent in low growth regime 2. Gujarat has the highest conditional mean growth in regime 1 (9.77 percent), followed by Karnataka (9.66 percent), and Uttar Pradesh (7.79 percent). Maharashtra has the highest mean growth rate (6.47 percent) in regime 2 among the top six economies, while Gujarat has the lowest conditional mean growth (5.79

percent) in regime 2. Interestingly, in both regimes, the conditional mean growth is positive in all cases. The reason for the positive average growth rate even in a contraction period is that the positive growth rates in some years offset the negative growth rates in other years (Ahmed and Kamaiah 2010).

Table 3 also presents that the estimated probability that the high growth regime is followed by another year of high growth is: $p_{11} = 0.657$ for India. The expected duration in state 1 is: $1/(1-p_{11}) \approx 2.9$ years; that is, this regime will persist on an average of two years and 9 months. The probability that the low growth phase is followed by another year of low growth is: $p_{22} = 0.7209$ for India and the expected duration in state two is: $1/(1-p_{22}) \approx 3.6$ years. This is consistent with a gradual slowdown of the Indian economy after 2016-17 as shown in Figure 1. This finding is in line with World Bank (2020) and Rangarajan and Srivastava (2020). Interestingly, the value of p_{11} for both Uttar Pradesh and Maharashtra is higher than in India and the remaining states. But the p_{22} is higher in Uttar Pradesh and West Bengal.

The estimated MS-AR models also provide the dynamic forecast of growth rates of GSDPs and GDP till 2047-48. It is noticed that these future growth rates are based on past growth rates, growth cycles (i.e., the non-linear growth paths). From 2023-24 to 2047-48, India's GDP (real) is expected to grow at an annual average rate of 6.02 percent (Table 4). Gujarat's GSDP is projected to grow at an average rate of 7.65 percent. The projected average GSDP growth rate is 7.41 percent for Karnataka, and 7.2 percent for Tamil Nadu. It is 6.97 percent for Uttar Pradesh, 6.82 percent for Maharashtra, and 6.16 percent for West Bengal.

Table 4: Dynamic Forecast of Average Real GDP/GSDP Growth Rates till 2047-48(percent)

Periods	Mahar- ashtra	Tamil Nadu	Karna- taka	Uttar Pradesh	Gujarat	West Bengal	India
2023-24 to 2032-33	6.70	7.34	7.21	6.92	7.65	6.16	6.08
2033-34 to 2042-43	6.91	7.11	7.68	7.01	7.64	6.16	5.99
2043-44 to 2047-48	6.91	7.12	7.26	6.99	7.64	6.16	5.99
2023-24 to 2047-48	6.82	7.20	7.41	6.97	7.65	6.16	6.02

Source: Computed by authors

However, it is noted that from 2023-24 to 2032-33, Indian economy will grow at 6.08 percent as against its growth of 5.99 percent from 2043-44 to 2047-48. Tamil Nadu economy will grow at a faster average rate of 7.34 percent from 2023-24 to 2032-33 as against its expected growth of 7.12 percent from 2043-44 to 2047-48. At the same time, Gujarat's economy will grow at 7.65 percent as against 7.64 percent. In all other states, the average growth rates from 2023-44 to 2047-48 will be higher than that from 2023-24 to 2032-33 (Table 4).

NOMINAL GDP/GSDP AND PER CAPITA GDP/GSDP OF INDIA AND of INDIA AND TOP SIX STATES TILL 2047-48

As indicated, the nominal GDP/GSDP growth rates are computed by adding 4.5 percent inflation with the forecast of future annual real growth rates provided by the estimated MS-AR models. Using the projected future exchange rates and population figures, the nominal GDP/GSDP and nominal per capita GDP/GSDP figures are computed. Table 5 presents the projected nominal GDP of India and GSDP of top six states in US \$ trillion till 2047-48.

(i) India's 7 US\$ Trillion Economy and High-Income Country Status: The GDP forecast in Table 5 indicates that the US\$ 5 trillion mark of Indian economy will be achieved in 2027-28. The target of US\$ 7 trillion

economy will be achieved in 2032-33 (instead of 2030-31).⁶ Achieving a US\$ 7 trillion economy by 2032-33 will also pave the way for India's transition into the minimum per capita income level of an upper middle-income country of US\$ 4,466 in 2031-32 itself (Table 6). In 2046-47 (i.e., India @99), the Indian economy will cross US\$ 22.91 trillion and the per capita income will be US\$ 14,143, which cross the threshold level of US\$13,845 in that year.

Table 5: Nominal GDP and GSDP (in US\$ Trillion)

Year	Maharashtra	Tamil Nadu	Karnataka	Uttar Pradesh	Gujarat	West Bengal	India
2023-24	0.47	0.32	0.30	0.30	0.31	0.21	3.64
2024-25	0.51	0.36	0.35	0.33	0.33	0.22	3.94
2025-26	0.56	0.40	0.39	0.36	0.37	0.24	4.28
2026-27	0.61	0.43	0.42	0.40	0.40	0.26	4.63
2027-28	0.67	0.47	0.47	0.43	0.44	0.29	5.02
2028-29	0.73	0.51	0.50	0.47	0.49	0.31	5.44
2029-30	0.80	0.56	0.52	0.52	0.54	0.34	5.89
2030-31	0.87	0.61	0.59	0.57	0.59	0.36	6.38
2031-32	0.95	0.67	0.63	0.62	0.65	0.40	6.91
2032-33	1.04	0.74	0.69	0.68	0.71	0.43	7.48
2033-34	1.13	0.80	0.81	0.74	0.78	0.47	8.11
2034-35	1.24	0.88	0.85	0.81	0.86	0.50	8.78
2035-36	1.35	0.96	0.95	0.88	0.95	0.55	9.51
2036-37	1.47	1.05	1.06	0.97	1.04	0.59	10.30
2037-38	1.61	1.15	1.08	1.06	1.15	0.64	11.16
2038-39	1.76	1.26	1.21	1.16	1.26	0.70	12.09
2039-40	1.92	1.38	1.34	1.26	1.39	0.76	13.10
2040-41	2.10	1.51	1.40	1.38	1.52	0.82	14.18
2041-42	2.29	1.65	1.62	1.51	1.67	0.89	15.36
2042-43	2.50	1.81	1.78	1.65	1.84	0.97	16.64
2043-44	2.73	1.98	1.89	1.80	2.02	1.05	18.03
2044-45	2.99	2.17	2.18	1.97	2.23	1.14	19.53
2045-46	3.26	2.37	2.30	2.15	2.45	1.24	21.15
2046-47	3.56	2.59	2.44	2.36	2.69	1.34	22.91
2047-48	3.89	2.84	2.80	2.57	2.96	1.46	24.82

Source: Estimated by authors.

⁶It is noticed that in 2023-24, the top 6 states together contribute 52.5 percent of India's US \$ 3.64 trillion. But in 2032-33 when India reaches the US\$ 7 trillion, the top six states will contribute about 57.4 percent.

(ii) Towards One Trillion Dollar Economy and High-Income Status of Top Six States:

A few top states set an ambitious target of achieving one trillion-dollar economy. For instances, Tamil Nadu has set its target to make Tamil Nadu a US\$ 1 trillion economy by 2030⁷. Karnataka has placed a road map to achieve the status of US\$1 trillion economy by 2032⁸. Gujarat has also set its goal to become US\$ 1 trillion economy by 2030⁹. Maharashtra has announced its target to be achieved by 2027¹⁰. Uttar Pradesh has aimed to reach a trillion dollar economy by 2027¹¹.

Our analyses indicate that Maharashtra will be the first one amongst the top six states to reach one trillion-dollar economy mark in 2032-33 (Table 5). That is, there will be a delay of 5 years to reach the target. Tamil Nadu and Gujarat will reach this ambitious target in 2036-37, instead of 2030. Karnataka will attain the target in 2036-37 instead of 2032. Uttar Pradesh will become one trillion-dollar economy by 2037-38 as against its target year of 2027. West Bengal will become one trillion-dollar economy only in 2043-44. It is noted that West Bengal has not announced this target officially. It is also noticed that when five top states achieve 1 US\$ trillion mark, India would have crossed 11 US\$ trillion mark.

Interestingly, in 2037-38 the per capita income of Tamil Nadu, Karnataka and Gujarat will reach US\$13845, which is the minimum threshold required to be classified as high income by World Bank (Table 6). That is, these three states per capita income will reach this mark at least 9 years before when India will reach this target. Maharashtra will reach the high-income status in 2040-41 and the West Bengal only in 2047-48. But Uttar Pradesh has to go a long way to reach this ambitious target.

⁷The Chief Minister of Tamil Nadu had announced this ambitious target at the Investors Conclave in July 2021.

⁸An official statement in May 2023 the chief Minister of Karnataka has asked his administration to execute the recommendations of a report prepared by the Planning Department committee to scale up the state economy to create massive opportunities for the people of Karnataka.

⁹The chief minister of Gujarat announced at the FICCI's National Executive Committee Meeting in October 2023.

¹⁰The chief minister of Maharashtra announced in the first meeting of Maharashtra State Economy Advisory Council in February 2023.

¹¹The chief minister of Uttar Pradesh said that the state will become a benchmark for the policy of 'sabka saath, sabka Vikas' with a trillion-dollar economy in August 2022.

Table 6: Nominal Per Capita GDP and Per Capita GSDP (in US\$ Trillion)

Year	Maharashtra	Tamil Nadu	Karnataka	Uttar Pradesh	Gujarat	West Bengal	India
2023-24	3690	4210	4432	1262	4220	2068	2595
2024-25	3994	4659	5133	1368	4559	2233	2791
2025-26	4330	5108	5702	1492	4972	2411	2999
2026-27	4693	5541	6030	1615	5393	2607	3225
2027-28	5091	6018	6799	1753	5881	2819	3468
2028-29	5525	6556	7103	1906	6391	3049	3730
2029-30	5996	7156	7402	2069	6963	3297	4011
2030-31	6508	7834	8369	2245	7574	3565	4314
2031-32	7073	8595	8844	2442	8260	3862	4645
2032-33	7687	9417	9748	2656	9000	4184	5003
2033-34	8355	10307	11290	2888	9814	4533	5387
2034-35	9081	11273	11890	3140	10697	4910	5802
2035-36	9870	12327	13173	3415	11664	5320	6249
2036-37	10731	13469	14667	3714	12719	5753	6725
2037-38	11669	14736	14919	4041	13875	6232	7243
2038-39	12690	16126	16602	4396	15136	6751	7801
2039-40	13801	17647	18271	4782	16513	7313	8402
2040-41	15009	19310	19034	5203	18016	7922	9050
2041-42	16323	21126	21991	5660	19657	8582	9749
2042-43	17753	23111	24096	6158	21448	9297	10501
2043-44	19308	25283	25418	6699	23405	10071	11312
2044-45	20999	27659	29259	7289	25541	10910	12186
2045-46	22840	30261	30763	7930	27873	11818	13128
2046-47	24842	33108	32470	8627	30421	12803	14143
2047-48	27019	36224	37180	9387	33202	13869	15237

Source: Estimated by authors.

(iii) Alternative Scenarios: It is noted that the above model-based forecasts are based on past data. One may argue that the long-term forecasts based a time series model may not be reliable. Further the future technological advancements and initiatives of the government's growth induced policies will lead to higher growths. Therefore, we consider the GDP/GSDP forecasts in two alternative scenarios: (i) in scenario1, the projected growth rates of India and top six states in every forecast year

are assumed to increase by 1 percent, and (ii) in scenario 2, they are assumed to increase every year by 2 percent.

In the alternative scenario 1, Maharashtra will reach the one trillion-dollar economy status in 2031-32 (not shown). Karnataka, Tamil Nadu and Gujarat will reach the target in 2035-36. Uttar Pradesh will attain the target in 2036-37 and West Bengal in 2041-42. The target of US\$ 7 trillion Indian economy will be achieved in 2031-32. India will become a developed country in 2044-45. Karnataka will reach the minimum threshold level of developed country's per capita income in 2035-36 and both Tamil Nadu and Gujarat in 2036-37. Maharashtra will attain the high-income status in 2038-39, West Bengal in 2045-46 and Uttar Pradesh in 2049-50.

In scenario 2, India will reach the 7 trillion-dollar economy in 2030-31 and developed country status in 2042-43 (i.e., 5 years before 2047). Maharashtra will reach the one trillion-dollar economy status in 2030-31. Tamil Nadu, Gujarat, Karnataka and Uttar Pradesh will achieve this landmark in 2034-35. West Bengal will attain this target in 2039-40. Interestingly, both Karnataka and Tamil Nadu will reach the high-income status in 2034-35 and Gujarat in 2035-36. Maharashtra will attain the status in 2037-38. West Bengal and Uttar Pradesh will reach the high-income status in 2043-44 and 2047-48 respectively. That is, these two top states will reach this status after a few years later the year when India reaches the status.

STRATEGIES TO ACHIEVE THE TARGETS

Our model-based analyses indicate that India will become US\$ 7 trillion economy in 2032-33 (and not in 2030-31) and developed country status in 2046-47 with an average growth rate of about 6 percent from 2023-34 to 2047-48. To attain the seven trillion-dollar economy in 2030-31, India GDP needs to grow at an average rate of about 8 percent (i.e., two percentage points higher). This will also help India to get the developed country status in 2042-43 itself.

EY (2023a) indicates that given the immense capability of Gen AI with respect to its productivity and efficiency enhancing effects, its adoption will have the potential to accelerate India's growth trajectory over seven years (2023-24 to 2029-30). It is, therefore, necessary to increase investment in Gen AI, education and upskilling to fully capitalize on the demographic dividend.

IFC (2022) argues that various reforms the government has launched over the last few years are a solid foundation to build on. But India will have to address three challenges. (i) shared prosperity challenge: India's growth is strong and accelerating, but weak social progress, rising inequality and lack of convergence across regions are hurdles to translate this growth into the expected improvements in quality of life of many citizens; (ii) job challenge: As India has a large and growing working age population, it needs to create jobs for a large part of its labour force, particularly women and less skilled; and (iii) policy implementation challenge: India faces a shifting external environment with rising geopolitical tensions and changing patterns of globalization, climate change and policies to achieve the transition to net zero, digital transformation and other technological changes all embedded in a complex macroeconomic context.

According to EY (2023), the enthusiasm for India's growth prospects is palpable given the slowing global growth, unprecedentedly high levels of global debt to GDP, inflation, decelerating global population growth and plateauing global trade to GDP. These trends have been further exacerbated by rising protectionism amidst rising geopolitical tensions. It further argues that India's current strengths of high services exports, a growing digital ecosystem, availability of a large working age population, track record in creating renewable energy capacity, low private debt to GDP ratio, growing entrepreneurship and start-up ecosystem, making Indian manufacturing globally competitive, funding and facilitation of infrastructure development, improving the competitiveness of the economy will help India in sustaining its growth over the next few decades.

The MS-AR model forecasts indicate that from 2023-24 to 2047-48, Gujarat will grow at an average rate of 7.65 percent, Karnataka at 7.41 percent, Tamil Nadu at 7.2 percent, Uttar Pradesh at 6.97 percent and Maharashtra at 6.82 percent. Our analyses based on the above forecast indicate that Maharashtra will reach one trillion-dollar economy in 2032-33. Karnataka, Tamil Nadu and Gujarat will reach the goal in 2036-37. Uttar Pradesh will achieve the one trillion-dollar economy mark by 2037-38 and West Bengal in 2043-44.

With 2 percent higher average growth during the same period, Maharashtra will reach the target in 2030-31, Tamil Nadu, Gujarat, Karnataka and Uttar Pradesh in 2034-35 and West Bengal in 2039-40. The extra 2 percent average growth will enable Karnataka and Tamil Nadu to reach the high-income status in 2034-35, Gujarat in 2035-36 Maharashtra in 2037-38, West Bengal in 2043-44 and Uttar Pradesh 2047-48.

To increase their average growth rate by 2 percent, the following strategies may be useful. As per our analyses, Maharashtra would need to grow 8.82 percent in future years to reach the one trillion-dollar economy in 2030-31. For this the following policy measures in eight sectors/areas suggested by the Economic Advisory committee might be useful: manufacturing, services, energy/renewables and sustainability, infra real estate and logistics, ease of doing business, MSMS enablement, skill development and agriculture and allied services.

Tamil Nadu would grow at 9.2 percent to reach a trillion-dollar economy by 2034-35. TNIDB (2024) suggests 7 key tenets as guiding principles for achieving the target: driving investments, enhancing human capital, pioneering innovation, developing best-in-class infrastructure, driving market efficiency, and ensuring efficient governance, while ensuring climate sensitive, regionally holistic and socially inclusive growth. 9.41 percent growth rate is required for Karnataka to attain the land mark of 1 trillion-dollar economy by 2034-35. A committee constituted by the Planning Department of Karnataka Government recommends that the

agriculture should increase its growth from 13.3 percent to 16.3 percent, industry from 8.8 percent to 16.8 percent and services from 13.6 percent to 16.9 percent so that the GSDP would grow at 16.8 percent to reach the target by 2032.

For Gujarat to become a trillion economy by 2034-35, it should register an average growth of 9.6 percent percent. The state industries minister, addressing a plenary session on Gujarat's G20 Connect, suggested that Gujarat should focus on farsighted policies and green production processes for the new generation in alignment with the global agenda. The chief minister of Gujarat said while addressing a road show of vibrant Gujarat Global Summit 2024 that the higher growth in manufacturing sector including semiconductor manufacturing, green hydrogen, electric vehicles, pharmaceuticals, textiles and technical textiles would help to achieve the goal.

Uttar Pradesh would need 9.87 percent growth to reach the target in 2024-35. The state planning department suggests that the focus is on accurate assessment of the economic activity across sectors. All efforts should be taken to improve the agriculture productivity. To improve the growth figures in both secondary and tertiary sector, the state should encourage formalization of the economy.

While West Bengal has not yet announced its one trillion-dollar economy target, it would need to grow 8.16 percent to attain the task in 2039-40. Basically the state needs to progressively increase the share of services and industry in its GSVA compared to agriculture. The basic point is that faster growth of these top six economies will speed up the target of reaching US\$ 7 trillion Indian economy and make India to become the developed nation well before 2047.

We hope that this study will be useful for policy makers and stakeholders to take appropriate strategies such that India will achieve a US\$ 7 trillion-economy by 2030 and become a "developed" economy by 2042 and top six states will reach a trillion-dollar economy soon.

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