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+91 99405 72462



+9163819 07438



ijmrsetm@gmail.com



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An Empirical Study of Intersectoral Linkages and Economic Growth in Rajasthan

Dheeraj Kumar Pareek

Dept. of Economics, SD Govt. College, Beawar, Rajasthan, India

ABSTRACT: Agriculture sector predominantly explains the economic development and human wellbeing in India. The share of the agriculture sector has declined from 26.9 per cent in 1991 to 14.46 per cent in 2018 while the industrial sector is relatively stable, 27.44 per cent in 1991 to 27.01 in 2018. Economic growth and development cannot be separated from the role of the agricultural sector. Agriculture and industrial sectors both are inter-linked through backwards and forward linkages. The purpose of this study was to investigate the long-run equilibrium and causal relationship along with the direction of causality for the variables viz. economic growth, agriculture, industrial, human capital and investment using the ARDL Bounds Testing Framework, and dynamic VECM model. The study found credence to the long-run and causal relationships between the underlying variables. Long-run and short-run coefficient of agriculture, industrial sector, human capital, and investment suggest the positive impact on economic growth. Granger causality test indicated that one-way causality running from economic and agriculture to the human capital in the short run. Whereas, in the long-run unidirectional causality running from economic growth, industrial, human capital, investment to agriculture growth. To the best of our knowledge, this is the first study on the inter-sectoral linkages in the economic growth along with the human capital index in India by using ARDL and VECM techniques. The findings direct the policymakers to improve the performance of the agricultural sector through increase the public investment in agriculture education, modern technology and developed physical and social infrastructure if economic growth is to achieve [15,16]

KEYWORDS: intersectoral growth, Rajasthan, empirical study, economic, linkages, investment, public, industrial, capital

I. INTRODUCTION

This article empirically examines the existence of inter-sectoral growth linkages among the key sectors of the Indian economy at the state level. The examination evaluates the impact of the non-agricultural sectors of the states and that of the rest of the states on agricultural output of a particular state. An annual panel data set for 15 general category states have been taken for the period 1980–1981 to 2012–2013. [13,14] Panel cointegration and fully modified ordinary least square methods have been used to study the existence of a long-run equilibrium relationship between sectors. The results suggest that there is a long-run equilibrium relationship among three sectors of the economy in the Indian states. The evaluation indicates that the industrial sector contributes positively in complementing the growth of agriculture, but the service sector advancement affects agricultural growth negatively. However, services having some direct reference to agriculture such as transport, storage and communication (TSC), trade, hotel and restaurant (THR) and banking and insurance (BI) have positive linkage with agriculture. The state specific econometric evaluation of the agricultural output varies relatively across different states, for example, in Kerala, the impact of rest of the industries and services leaves a positive significance; whereas, the study foresees the negative impact of industry and services in the states such as Bihar, Madhya Pradesh, Orissa and Rajasthan. In order to neutralize the negative linkages of service sector on agriculture, policies for promoting pro-agricultural services such as crop and agricultural insurance, agricultural loans, facilities for agricultural warehouse, marketing services, weather communication, transport services and provision of technical support to farm activities are important. Such initiatives can help agricultural sector grow along in the simultaneous development of sectors propelling growth of the economy at a faster rate. [11,12]

In 2021-22, Agriculture and allied sectors contributed to 30.23 per cent in Rajasthan's Gross State Value Added (GSVA) at current prices. In terms of growth, agriculture and allied sector again emerges as the driver with a growth rate of 4.78 per cent in 2021-22 over 2020-21 at constant 2011-12 prices. Rajasthan is India's leading producer of coarse cereals and coriander, as well as the country's second-largest producer of pulses, oilseeds, cumin, and garlic. [17,18]

Services sector in the state.

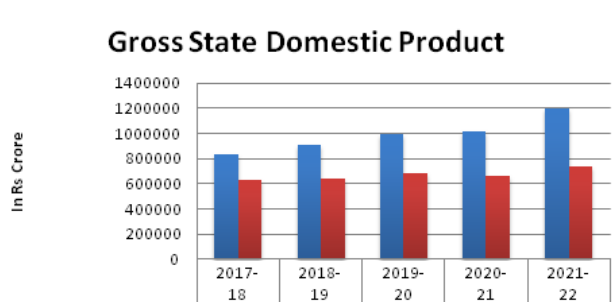
Rajasthan has a diverse range of attractions, including natural landscapes, history, art and culture, forts, palaces, lakes, wildlife sanctuaries, sand dunes, folk dance and music, handicrafts, and more. These elements contribute to the economy's advantage. The hospitality industry has developed as a result of tourism, which has resulted in more jobs in the service industry. The state's IT workforce is expanding, and IT parks with infrastructure have been built in cities such as Jaipur, Jodhpur, Udaipur, and Kota.[9,10]

Industry and Manufacturing sector in the state

The manufacturing and industries business includes:

1. Cement -
Rajasthan is a cement producer since it has one of the largest limestone reserves in the world.
 2. Mining & Minerals –
Rajasthan is India's second-largest mineral producer and the country's sole producer of lead and zinc. It also has reserves of granite, marble, and sandstone.
 3. Auto & Auto Components –
Over 100 auto component manufacturing units are located in Rajasthan, and an industrial area has been established in Neemrana.[19,20]
 4. Textile –
Rajasthan produces cotton, which is a basic raw material in the textile industry, and the Bhilwara district of Rajasthan is one of India's largest suiting fabric and yarn manufacturers.
 5. Agro-based industry –
According to the climatic conditions, Rajasthan grows a range of bajra, fenugreek, cumin, fennel, mustard, pulses, oilseeds, garlic, and many other crops. Kota, Jodhpur, Ganganagar, Alwar, and Ajmer all have agro parks. In the food processing market, the state has over 850 factories.
 6. Ceramics -
In ceramic minerals, the government has a monopoly. Glass and ceramics are two of the industrial policy's thrust fields. Ghiloth and Sathana are planning exclusive ceramic and glass zones.[17,18]
- Salt-
- Rajasthan is one of the leading producers of salt (Sodium Chloride). Sambhar Lake located at Phulera in Jaipur it is the largest inland Salt Lake in India & Panchpadra Lake located at Barmer was marked 98% of salinity
7. Small scale industry cluster -
Blue pottery, Leatherware, Painting, Block printing, Kundan, Regal & exquisite ornaments.
 8. Renewable Energy –
Rajasthan produces a variety of renewable energy sources, including solar, wind, biomass, and solar roof top.

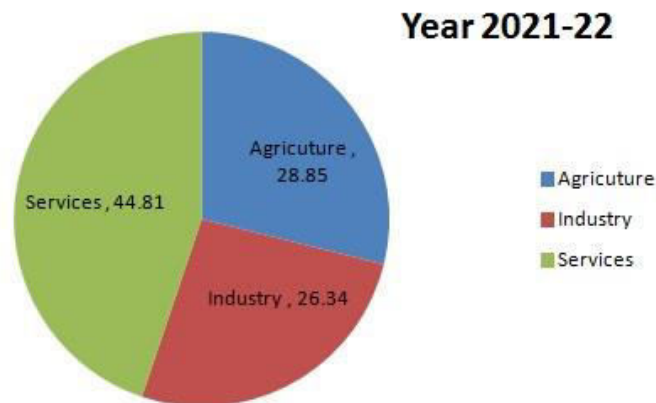
II.DISCUSSION



Gross State Domestic Product

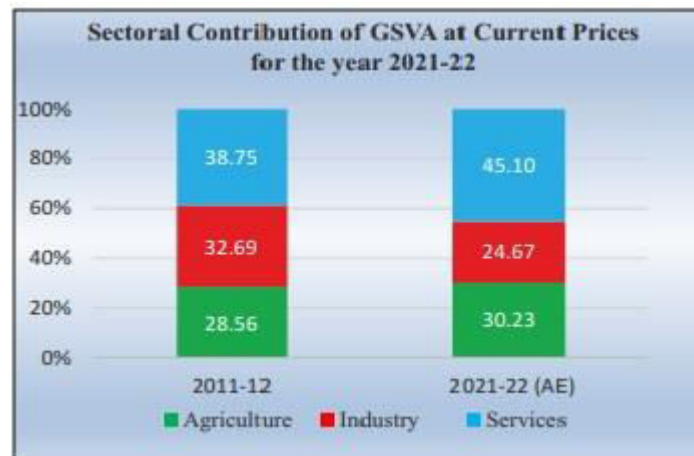


Economic Growth Rate as per GSDP

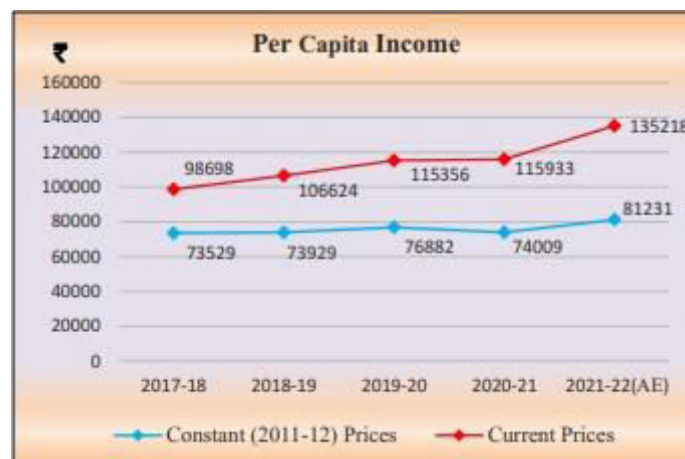


Sectoral Contribution of GSVA at Constant (2011-12) Prices





Sectoral Contribution of GSVA at Current Prices



Per Capita Income

Rajasthan, with varied agro-climatic conditions shows inter-district economic inequalities. The districts of the state are covered under arid, semi-and and perhumid situation depending on rainfall and moisture index. They have different potential for development in different sectors of economy. This study on InterRegional Economic disparities was undertaken with the main objective to measure inter-district inequalities prevalent in various sectors of the economy and livelihood to take necessary measures to reduce inter-regional inequalities. A similar study was done by this Institute based on the year 2001 data whereas this study covers year 2005 to make a comparison also in the process of economic development of the state. The study covered all the 32 districts of the State [7,8](new district of Pratapgarh was included in Chittorgarh, as separate data for this district were not available for all parameters.) [21,22]The sectors included Agriculture & Live-Stock, Industry, Power, Population & Demography, Water, Roads (Connectivity), Medical & Health, Banking, Communication, Net State Domestic Product & Per capita Income, Poverty and Education. The total number of Indicators were 91 pertaining to 12 sectors. There are number of methods that have been used so far to measure interregional economic disparities. These include: (i) Mehers Composite Index of Development. (ii) Shastri's Composite Index. (iii) Modified Principal Component Analysis Technique. These have been described in detail by Anon. in 2005 in earlier similar Study. [5,6]That study used Composite Ranking Method, which has an advantage over other methods as it is simple and does not involve subjectivity. This study also adopted the same method as used by Anon. (2005). Economic development of a region depends on a number of factors like geography, natural resources, political and social parameters. Rajasthan is the largest state of India with a total geographical area of 3.42 lakh Km² of which 61 percent is under arid and rest is semi-arid zone. Such areas like west of Aravali hills with low level of precipitation, which is much lower to state average of 58 cm. Rainfall is not only low but also erratic and uncertain resulting in frequent droughts in the state. In fact, State experienced 19 droughts between 1967-68 and 2002-03 and the recent one of 2009-10. [15,16]The intensity of the drought situation varied in different regions of the state and created setback to development process. Although state is quite rich in mineral resources but not in essential water resources as there is no perennial river system

except Mahi and Chambal and they also have to depend on rainfall in their catchment areas. Over and above these, state has to depend on the neighboring states for its water resources, which is also a cause of concern. Even though the mineral wealth of the state has rather less inter-regional concentration, minerals found in the southern and eastern regions of Rajasthan have been exploited optimally and very little or no attempt has been made to fully use the lime stone, lignite, gas and other resources which are available in plenty in the western districts of the state. Only recently some efforts have been made to exploit petroleum from some of the western districts like Barmer. There could be a number of factors or reasons for regional or district inequality in the development like physical and natural barriers, economic barriers, social barriers, administrative barriers, etc.[22,23]

III.RESULTS

Rajasthan, the largest (area-wise) state in India, is in the northwest part of the subcontinent. It is surrounded on the north and the northeast by Punjab, Haryana, and Uttar Pradesh, on the east and southeast by Uttar Pradesh and Madhya Pradesh, and on the southwest by Gujarat.[13,14]

The state has an agricultural economy with nine agro-climatic zones and various types of soil that help during the cultivation of crops. It is among the largest mineral-producing states in India. Around 81 varieties of minerals are available in the state and 57 minerals are produced on a commercial scale in the state. It also contributes significantly to production of dimensional and decorative stones, such as marble, sandstone, and granite etc. The state is one of the leading tourist destinations in India. Historic palaces, especially those in Jaipur and Udaipur, offer opportunities to expand the luxury tourism segment, with increasing number of tourists visiting wildlife sanctuaries and desert locations.[24,25]

Between 2015-16 and 2021-22, the state's GSDP increased at a CAGR (in Rs.) of 10.07 % .At a CAGR (in Rs.) of 10.86% between 2011-12 and 2020-21, the tertiary sector has been the fastest-growing sector and the largest contributor to Rajasthan's economy in 2020-21, with a 45.44% share in the state's GSDP. The growth was driven by storage, communication & services related to broadcasting, financial services and public administration. According to the Department for Promotion of Industry and Internal Trade (DPIIT), foreign direct investment (FDI) inflows in the state stood at US\$ 1,566.03 million between October 2019-June 2022.[3,4]

- Home & Cooperation Minister Mr. Amit Shah, laid the foundation stone and performed Bhoomi Pujan of Shri Tanot Mandir Complex Project under Border Tourism Development Programme in Jaisalmer in September 2022.[26,27]
- In August 2022, Mr. Narendra Singh Tomar, Minister of Agriculture and Farmers Welfare inaugurated four new facilities at the Central Arid Zone Research Institute (CAZRI), which has been rendering excellent services for more than 60 years under the Indian Council of Agricultural Research (ICAR).[1,2]
- In July 2022, NTPC Renewable Energy Limited signed an MOU with Government of Rajasthan for development of 10 GW ultra mega renewable energy power parks.[11,12]
- As of August 2022, Rajasthan had a total installed power generation capacity of 36,113.09 MW, of which 3,937.36 MW was under the central utilities 8,890.35 MW under state utilities and 23,285.38 MW under private sector. Of the total installed power-generation capacity, 14,102.19 MW was contributed by thermal, 1,941.93 MW by hydro and 21,454.16 MW by renewable energy.[28,29]
- The state is the leading producer of cement-grade limestone in India. Production of limestone reached 66.26 million tonnes in April 2020-February 2021.
- Tourism is one of the key sectors in the state. In 2021, 219.88 million domestic tourists and 0.34 million foreign tourists visited Rajasthan.
- As of July 2022, the state was home to six notified Special Economic Zone (SEZs)
- In July 2022, the government approved the construction of Taranga Hill-Ambaji-Abu Road new rail line to provide connectivity and improve mobility.
- The Rajasthan cabinet approved the Rajasthan Film Tourism Promotion Policy 2022 with the objective of promoting film production activities in the state.



- In FY22, the total exports of plywood & allied products from Rajasthan stood at US\$ 625.35 million (6.47%)[30,31]
- Mining and Mineral Processing is another key sector for the state. Export of Zinc and Products made of Zinc reached US\$ 367.67 million in FY22.
- In February 2021, value of all minerals produced^ in the state stood at Rs.1,479.95 crore (US\$ 202.45 million).
- Food grain production was estimated to have reached 38.96 million tonnes in 2020-21. Production of cereals and pulses was estimated at 22.25 million tonnes and 4.88 million tonnes during the same period.
- In 2020, 40 investment intentions were filed in the state with total investment of Rs. 12,698 crore (US\$ 1.71 billion).
- The policy environment has been favorable for the establishment of industrial units. A single window clearance system (SWCS) for investment approvals is operational in the state and the Bureau of Investment Promotion (BIP) was set up to focus on investment above US\$ 2.2 million. Rajasthan stands sixth among Indian states in rankings based on ease of doing business and reforms implementation as per a study by the World Bank and KPMG.[32,33]

IV.CONCLUSIONS

Rajasthan Chief Minister Ashok Gehlot said that it is our priority to provide relief to people. The economy of Rajasthan is continuously growing despite the ill effects of Covid. The growth of the state's GDP at the rate of 11.04 per cent is a good sign of the economy[9,10] and the growth in double digit has been possible due to the positive policies of the state government. Gehlot was addressing a function organised at his official residence on the completion of four years of the state governme Accusing the BJP of spreading lies on farmers' loan waiver issue, Gehlot said cooperative loans of 22 lakh farmers have been waived by the government with Rs 14,000 crore. He alleged that loans from nationalised banks could not be waived because the central government was not cooperating. On the law and order situation, Gehlot said his government introduced a new system of registering all FIRs due to which the number of registration of cases increased and that was expected.[34,35]

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