

## **ECONOMIC DEVELOPMENT THROUGH HUMAN RESOURCE: A CASE STUDY OF BIHAR**

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### ***Abstract***

*Human resources play the important role in overall development of a state like Bihar. Bihar is the third most populous state of India which also remains one of poorest state. This state is famous for agriculture but it is surprising that the economy of Bihar is largely service-oriented. The state also has a small industrial sector. As of 2012, agriculture accounts for 22%, industry 5% and service 73% of the economy of this state. However, over the past decade, Bihar has attracted a lot of attention for experiencing a turn around, recording one of the fastest growth rates within India. This paper is communicated for longer-term investigation into Bihar's relatively poor productivity. Drawing upon developments in the field of economic growth, it was examined that Bihar along the lines of convergence, development accounting, total factor productivity accounting, fertility of education trade-offs, etc. The long-term lack of convergence can be explained by its poor initial human capital stock; in 2005, its total factor productivity remained the lowest among all Indian states, standing at 20% of Delhi's; about 60% of the variations in aggregate total factor productivity can be explained by variations in poor agricultural productivity. But finally, while all states have reduced fertility rates and increased literacy rates during the post-reform era, Bihar has lagged behind relatively in terms of literacy gains. The paper also aims to serve as a useful reference point for those interested in further research on Bihar. It surveys the important contributions to growth theory as applied to the state and is also a source of relevant information and data on Bihar.*

**Key Words:** Human capital, Economy, Development, Agriculture, Productivity.

**Introduction:** In ordinary sense, human resource refers the population of the country/state but in economics, the healthy, educated, and skilled manpower is known as human resource. So, human resource is the process of improving quality and efficiency of the people. According to the National planning commission, "Human resource is the knowledge, skill, efficiency and physical and mental capacity to do work inherent in the people of the country". The idea that human resource plays an important role in explaining income differences have been present in economists' thinking for a long time. By some accounts, it can even be traced to the work of Adam Smith and Alfred Marshall. Although it was not until the middle of the 20th century that Gary Becker and others developed a theory of human capital. This theory, according to which a person's level of education and experience determine his or her (labor) income, was originally envisaged in a microeconomic context, but has subsequently been applied to macroeconomics. It is widely believed that technological change and capital accumulation play a key role in economic growth. At the same time, growth economists recognize that the development process usually decelerates without organized markets, and as a result, society gets deprived of a substantial part of growth benefits. The state of Bihar is the third most populous in India. It is located on the fertile Gangetic plain and was initially endowed with vast natural resources. It has therefore occupied a central role in India's history going back to the period of the Buddha. Sir John Houlton, writing about Bihar in 1949, called in his book "The Heart of India". In the period immediately following India's independence, per capita output in Bihar stood at 80% of the country's mean. Since then, however, the state has had a chequered history. By the early 2000s, the state's per capita GDP had fallen to about a third of India. The state was a prime example of all the things that had gone wrong: law and order problems, low human capital investments, agricultural and industrial stagnation, the list is endless. Moreover, since then Bihar has, by all accounts, experienced a minor miracle: it has recorded some of the fastest growth rates in the country and law and order has drastically improved. While it is too early to call officially it a growth miracle. There is no doubt that things have begun to improve. Indeed, in a recent business climate survey, Patna was ranked above the neighboring city of Kolkata in terms of providing a business-friendly environment. Before proceeding further, it is important to acknowledge the existing body of research on Bihar's economic performance. From a macroeconomic perspective, the literature on economic growth in Bihar is fairly limited. Nevertheless, Prasad accounting for Bihar's Productivity Relative to India. Prasad (2007) and World Bank (2005) exhaustively reviewed the various socioeconomic indicators, growth trends, policies and failures of the past sixty years. At the microeconomic level, several studies have

focused on issues of poverty and income distribution, lack of land reforms, industrial and agricultural stagnation, natural disasters (flooding), the failure of the state, public finances, etc. Beside all these overloading the the economy of this state is gradually increasing. All the sectors was taken into consideration which is responsible for economic development.

**Convergence versus Divergence:** The fact that Bihar lagged behind most of the rest of India during the pre- and post-liberalization era is well accepted. In this section the state was revisited and the well- developed literature on convergence to examine the specific extent. Over the past quarter-century since the beginning of the resurgence of growth theory, the literature has oscillated from convergence skepticism to strong evidence of conditional convergence and back to convergence skepticism. The skepticism regarding convergence across countries was documented by Romer (1986), who showed that there was no evidence to suggest that initially poor countries had grown faster than initially richer countries during the post-Second World War period. Mankiw et al. (1992) argued that the Solow model on which the notion of convergence is ensuing proliferation of research at the cross-country level finally settled on a consensus that based actually implies conditional conver- gence, i.e. among countries with similar investment and population growth rates, poorer countries should grow faster than rich ones. They went on to show that the results of the Solow model became stronger when further augmented with human capital. The suggested that the results of Mankiw et al. were very specific to their human capital measure, and that convergence across the world which was actually rather slow incomparision to Bihar..

**Survey for the study of Poverty, income, and urbanization:** During the course of survey of the state it was found that the state has a per capita income of \$360 a year against India's average of \$1265 and 30.6% of the state's population lives below the poverty line against India's average of 22.15%. However, Bihar's GSDP grew by 18% over the period 2006-2007, which was higher than in the past 10 years. Hajipur, near Patna, remains a major industrial town in the state, linked to the capital city through the Ganges Bridge and good road infrastructure. The level of urbanisation (10.5%) is below the national average (27.78%). Urban poverty in Bihar (32.91%) is above the national average of 23.62%.<sup>[4]</sup> Also using per capita water supply as a surrogate variable, Bihar (61 litres per day) is below the national average (142 litres per day). Moreover, The per capita level for 2007 was higher than Bangalore or Hyderabad, which are both leading centres for global software development.In terms of income the districts of Patna, Munger and Begusarai in Bihar were the

three best-off districts out of a total of 38 districts in the state, recording the highest per capita gross district domestic product of Rs 31,441, Rs 10,087 and Rs 9,312, respectively in 2004-05.

When different sets of economic reforms are imposed on two economies with similar initial conditions, economic forces might drive these economies towards different long run equilibrium conditions. India implemented economic reforms in a different way to explore the long-run relationship between economic growth and various economic reforms. It will enable us to examine the long-run equilibrium conditions for a growth path in each economy, and to trace the effects of different types of reforms on this balanced growth path over time. The basic idea behind co integration is that each of the components of a ( $p < 1$ ) vector time series  $Z_t$  may follow a non-stationary unit root  $I(1)$  process, yet there may exist some linear combination of  $t < T Z$ , which ties the individual components together and is stationary (without a unit root). This linear combination can be interpreted in economic terms as a long-run equilibrium relationship among variables of a vector  $Z_t$ . All the hypothesis tests have been followed in this case.

**Testable predictions generated by the models:** On a theoretical level, the three models presented above differ significantly from each other. Their main distinguishing features are summarized in table 1. Given these differences, it is interesting that the empirically testable predictions which can be derived from the models do not vary as radically as the theoretical debate might lead one to expect.

**Table:1** Difference between models of economic growth which include human capital:

	<b>Augmented Solow Model</b>	<b>Lucas Model</b>	<b>Romer Model</b>
Human capital is accumulated by...	investing a fraction of income	spending a fraction of time acquiring skills	not modeled
Technology for production of human capital	same production function for C, K and H	separate sector for production of H using only human capital	not modeled
Role of human capital	input in production	input in production of Y and H	input in production of Y and A
Growth rate determined...	outside of the model	within the model	within the model
Determinant of long-run growth	Exogenous technological change	rate of human capital accumulation	stock of human capital
Effect of a permanent change in the variable governing the accumulation of human capital	level effect (relevant variable: $s_H$ )	rate effect (relevant variable: $1-u^*$ )	rate effect (though not explicitly modeled)
Effect of a one-off increase in the stock of human capital	level effect	level effect	rate effect

**Result and Discussion:** After the survey of entire Bihar the findings facts are summarized as follows:

**Agriculture:** Bihar has significant levels of production for the products of mango, guava, litchi, pineapple, brinjal, cauliflower, bhindi, and cabbage in India. Despite the state leading role in food production, investment in irrigation and other agriculture facilities has been inadequate in the recent past.

- Maize accounts for 1.5 million MT(or 10% of country production).
- Sugarcane produces 13.00 million MT.
- Litchi production is 0.28 million MT(Bihar contributes 71% of national production).
- Makhana levels are 0.003 million MT(Bihar contributes 85% of national production).
- Mango is 1.4 million MT(13% of All India).
- Vegetable production is 8.60 million MT (9% of All India).
- Honey Production is 1300 MT (14% of All India).
- Aromatic Rice 0.015 million MT.
- Milk Production (Present) :4.06 million MT. COMPFED has established 5023. cooperative societies with 2.54 lakh membership -highest among the eastern states.
- Fishery production levels are 0.27 million lakh MT.
- All the above data is from the Bihar Government can be found here.

**Sugar Industry:** The Indian Business Directory states that the Sugar Industry in Bihar has flourished in the last couple of years due to the efforts taken by the state government to revive the industry. The Sugar Industry has been helped by the climate of the state, which is very suitable for the growth of high-grade sugarcane. The main benefit of the industry is that it provides employment to many people, especially in the rural areas. Further, it provides facilities of transport and communication, and also helps in the development of the rural areas by mobilizing the rural resources. The total number of sugar mills in Bihar is 28 out of which only 9 are operational. The total area under sugarcane production is 2.30 lakh hectares and the total production of sugarcane is around 129.95 lakh M.T. The location of the sugar mills of Bihar Sugar Industry are Samastipur, Gopalganj, Sitamarhi, West Champaran, Chorma, Dulipati, and Supaul.

**Brewery sector:** Bihar has emerged as brewery hub with major domestic and foreign firms setting up production units in the state. Three major firms - United Breweries Group, Danish Brewery Company Carlsberg Group and Cobra Beer - are in the process to setting up new units in Patna and Muzaffarpur in 2012.

**Leather:** The state is very rich in cattle population. There are 50,000 footwear artisans in the state. State has tanneries in the private sector. More tanneries & footwear units are to be set up in the private sector.

**Textile:** Total number of weavers in Bihar is more than 90,000. Bhagalpur is known as leading silk city. Gaya is another major weaving centre having around 8000 workers. There is a strong traditional handloom clusters in the districts of Bhagalpur, Gaya, Nalanda, Darbhanga, Madhubani, Siwan and Patna. Infrastructure Leasing and Financial Services is preparing Project Report for Textile Parks and also for Cluster Development Programmes. However, most of textile centres in state on decline, producing low value goods. Now Gaya is developing very fast in textile sector, approx 10000 looms are running and several new projects are coming soon. Shuttle less and hitech technology is also adopting very much, and in Nalanda Rajgir is also developing in Textile sector. A large number of employment is due to this industry.

**Small-scale industries:** The small-scale industries have contributed to Bihar's economic upsurge. The total investment of SSI's is Rs 88.75 crore. Small/artisan-based industries are generating 5.5 lakh man days in the area.

**Sudha Co-operative:** Sudha, a dairy co-operative, is one of the most successful government companies in India. The Co-operative was founded by IAS officer from Bihar, Ram Chandra Sinha. The co-operative's revenues from a range of milk and milk products has risen from \$73.5m in 2001-2002 to \$136m in 2007. The co-operative has 6,000 outlets covering 84 towns in the state. Over 260,000 milk farmers are members of the co-operative. Sudha also sells its products to other Indian states like Uttar Pradesh, West Bengal, Jharkhand and Delhi.

**Husk Power Systems:** Husk Power Systems (HPS) is a Bihar-based start-up that provides power to thousands of rural Indians. HPS has created proprietary technology that cost-effectively converts rice husks into electricity. The organization uses this technology to produce, own, and operate 35-100 kW "mini power-plants" that deliver electricity as a pay-for-use service to villages of 2000-4000 inhabitants in the Indian "Rice Belt. In 2009, the company won an inaugural global business plan competition sponsored by venture capital firm Draper Fisher Jurvetson and Cisco Systems. The company has since received two rounds of financing from the Shell Foundation. Two of the key founders of HPS are graduates of the top-ranked Darden School of Business (University of Virginia).

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**IOC Barauni:** IOC Barauni in the Bihar state of India was built in collaboration with the Soviet Union at a cost of Rs.49.4 crores and went on stream in July, 1964. The initial capacity of 2 MMTPA was expanded to 3 MMTPA by 1969. The present capacity of this refinery is 6.00 MMTPA. A Catalytic Reformer Unit (CRU) was also added to the refinery in 1997 for production of unleaded motor spirit. Projects are also planned for meeting future fuel quality requirements. Union government has plan to develop a petrochemical plant along with the refinery.

**East Central Railway, Hajipur:** Hajipur is the only twin city of Patna and lies nearest to the capital and shares most of its government works, headquarters, educational institutions in the name of the capital city. Being another district headquarters, it is equal to the capital in terms of powers. It is one of the railway zones in Indian railway system i.e. East Central Railway zone; it comprises the following railway divisions: Samastipur, Danapur, Mugalsarai, Dhanbad & Sonepur. A number of workers are the beneficiary of this sector.

**National Thermal Power Corporation:** Eastern region headquarters of Indian power major NTPC is situated at Patna; following are the major power plants under this region: Kahalgaon, Talchar & Farakka. Upcoming power plants in the region are as follows Barh(Patna), Nabinagar(Aurangabad).This corporation is also helpful in the economic development of this state.

#### Economic indicators:

Average per capita income, 2007		
City	trend	Per capita income
Patna		Rs 31,441
Bengaluru		Rs 29,394
Kolkata		Rs 27,868
Hyderabad		Rs 28,768
Greater Mumbai		Rs 40,768
Delhi		Rs 43,155
All India		Rs 22,946
<b>Average Per Capita Income in various Indian Cities</b>		



### GSDP at current prices 2000–2007

From the *Ministry of Statistics and Programme Implementation (Feb 2008 Data)*

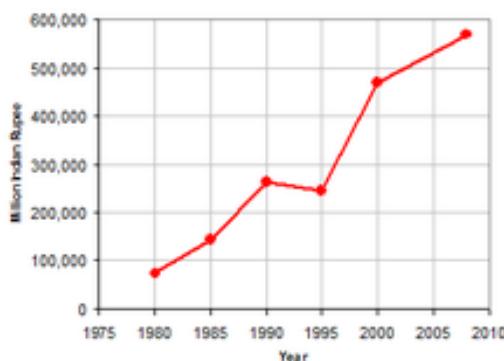
Rupee value in Crores

Year	GSDP	Percentage Change
<b>1999-2000</b>	50200	N/A
<b>2000-2001</b>	57279	+14.10%
<b>2001-2002</b>	57804	+0.92%
<b>2002-2003</b>	65117	+12.65%
<b>2003-2004</b>	66961	+2.83%
<b>2004-2005</b>	73791	<b>+10.20%</b>
<b>2005-2006</b>	79682	<b>+7.98%</b>
<b>2006-2007</b>	94251	<b>+18.28%</b>

### Net State Domestic Product (NSDP) at factor cost at current prices

From Reserve Bank of India Handbook of Statistics on Indian Economy 2011-12 (Rs. crore)

Year	NSDP	Percentage Change
<b>Base Year : 1999-2000</b>		
<b>1999-2000</b>	46,071	-
<b>2000-2001</b>	52,519	14.0%
<b>2001-2002</b>	52,323	-0.4%
<b>2002-2003</b>	59,302	13.3%
<b>2003-2004</b>	59,701	0.7%
<b>2004-2005</b>	66,041	10.6%
<b>2005-2006</b>	75,311	14.0%
<b>2006-2007</b>	94,111	25.0%
<b>2007-2008</b>	108,096	14.9%
<b>2008-2009</b>	139,061	28.6%
<b>2009-2010</b>	163,555	17.6%
<b>2010-2011</b>	201,264	23.1%
<b>2011-2012</b>	243,116	20.8%



Macro-economic trend, This is a chart of trend of gross state domestic product of Bihar at market prices by *Ministry of Statistics and Programme Implementation*

**Human Resources and Population Growth:** One of the central contributions of growth theory over the past couple of decades has been the integration of human capital into the debate. The literature is now so large that it is impossible to do it justice with a brief discussion. Here, I will briefly review three areas of advancement that are more relevant in the context of Bihar. First is the

vexing issue of causality. While early papers such as Mankiw *et al.* (1992) seemed to provide evidence of both economically and statistically significant effects of investment in human capital on economic growth, this finding was quickly called into question. Indeed, the effects of schooling on growth turned out to be one of the most fragile relationships in the growth regression literature. This led to two strands of thought.

**Conclusion:** This communication has dealt with the role of human resource in the process of economic growth. A number of theoretical approaches to incorporating human capital in models of growth have been presented, ranging from the augmented Solow model to the endogenous growth models. Although the empirical predictions derived from these models are to a large extent "observationally equivalent". In the sense that it is difficult to distinguish between them empirically, they tend to agree that human capital should matter for growth. The channels through which it may affect output growth include direct productivity effects and more indirect effects due to externalities, facilitated technological adoption, or enhanced productivity of R&D. The evidence on the importance of human capital for growth which it has produced is somewhat mixed. Nonetheless, understanding the economic benefits of education, and human capital in general, is undoubtedly of significance, not least because human capital accumulation is one area in which government policy can truly make a difference. Temple and Wößmann argue that in order to be more useful to policy makers, economic research will have to go beyond the simple question of whether human capital matters for growth, and address issues such as how to efficiently allocate resources and improve the quality of schooling. Yet, given the lack of solid knowledge on the role of human capital, replicating and extending the results of recent research concerning the contributions of both quantity and quality of schooling to economic growth should also remain a high priority.

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