Bihar: What Went Wrong? And What Changed?

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Economy in Historical Perspective

Bihar as a political entity, either as a kingdom, or as a state within the republic of India, has its own identity from the time written records were available (Thapar 1966; Rangarajan 1992). Noted historian, Romila Thapar, describes the history of ancient India as the history of ancient Bihar. Many achievements that India became renowned for, in education, governance, society, or religion, have their roots in Bihar. Significant achievements of Bihar in trade and economic engagement within the state and outside of the Indian sub-continent emerge from a past that appears to have left no living legacy in today's Bihar--a past so alien as to be either simply forgotten or treated as being completely incredible.[4]

A more recognizable, if rather dramatic picture of Bihar is that seen in a 2010 article on change in the state:

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[4] An anecdote puts the matter in perspective: a few years ago at a Right to Food seminar in Delhi, a speaker announced that the idea of this "right" could be traced to President Roosevelt and his New Deal. The second author, in a short intervention, reminded the audience that the idea went farther back and read out several passages from *Arthashastra*, a text from 350 BC by a scholar-administrator of the Mauryan empire based in Bihar, that laid down a basis for providing food for the needy as well as the definition of the needy--a definition startlingly close to the one proposed at the seminar!

"*For decades the sprawling state of Bihar, flat and scorching as a griddle, was something between a punch line and a cautionary tale, … Criminals could count on the police for protection, not prosecution. Highwaymen ruled the shredded roads and kidnapping was one of the state's most profitable businesses… Its government, led by politicians who used divisive identity politics to entrench their rule, was so corrupt that it required a newly coined phrase: the Jungle Raj.*"
Polgreen (2010)

This is an idea of Bihar that the majority of contemporary readers have encountered over and over again, especially after the 1980s. Polgreen (2010), however, in this article, goes on to describe not the decay of a once successful nation state, but rather a more remarkable change--the veritable signs of development and growth in a state that had once been considered a basket-case, or more politely, a failed state (see Figure 1). The goal is to understand how this reversal took place in the state of Bihar and to see, if possible, the role of public policy at making this change possible. In this endeavour, Bihar's experience can be understood in many ways. For example, one could profile individuals instrumental to the process of economic and organizational change in Bihar, or alternatively, Bihar's experience may be captured through a range of statistics about structural changes. A third possibility is to focus on political and social movements within which Bihar underwent many of these recent changes. While each of these approaches has its merits, we focus on using validated secondary data to quantitatively assess the pace of change and how robust this change has been and continues to be. We believe that by focusing on changes in economic measures and their determinants, we are best able to discuss Bihar's experience as it relates to the complex process of governance and is perhaps the most meaningful way to study Bihar's experience if we hope to replicate this in other contexts.

The Bihar section of the Essays on State Policies is organized in the following way: in Chapter 1 we provide a historical narrative of Bihar to provide context to much of its current state, and then we focus on its contemporary economy in the past three decades to better understand the moribund state of its economy over much of the 1980-2005 period and its subsequent rejuvenation in a number, though not in all, important dimensions; Chapter 2 documents different public policies that had significantly negative implications for Bihar's economy and continues to do so even today; Chapter 3 identifies a number of interesting public policy initiatives that were tried in the post 2005 period that are closely associated with reforms in Bihar; Chapter 4 discusses a range of issues that still need to be tackled in terms of issues in agriculture, poverty reductions, and absorption of labour outside of the agricultural sector; Chapter 5 concludes with some of the broad lessons that Bihar's experience gives us.

1.1. Bihar: A short historical sketch

The study of Bihar's history is vast and in this short sketch we cover only a few key aspects that provide a sense of the expanding and contracting economic fortunes that the state has seen.[5] From around 600 B.C., republics and kingdoms were established and "*details of Indian history began to emerge with greater clarity"* (Thapar 1996, p.50). At this time, two forms of political organizations existed: republics or monarchies. The monarchies were based in the Indo-Gangetic plain while the republics skirted around the monarchies. Thapar (1996) documents that frequent

[5] Romila Thapar's (1966) *A history of India,* Volume 1, devotes significant coverage to the history of Bihar while initiating the discussion on Indian history.

skirmish and attempts to consolidate among the monarchies and republics saw the emergence of four rival states – the three kingdoms of *Kashi*, *Kosala*, *Magadha* (modern south Bihar) and the republic of *Virjis* (covering Janakpur in Nepal and the Muzaffarpur district of Bihar). Over the next hundred years, *Magadha* emerged as the dominant state in this region. The first ruler of repute of *Magadha* was *Bimbisara*. He was not only a skilful and ambitious monarch but also an efficient administrator and was responsible for setting up a bureaucratic structure for governance that was based on the idea of autonomous village economies unified within a monarchy. He was also responsible for expanding the dominion of the kingdom to control passage and commerce on the river Ganges. Through alliances created by marriages (e.g. *Kosala, Kashi,* etc.), he was able to extended the reach of the *Magadha* kingdom to what today constitutes east Uttar Pradesh, Bihar, Jharkhand and parts of Nepal. Many important changes began during his rule; towns and cities were built, international trade began and commerce prospered. Over time, *Magadha* emerged as the main state amongst the earlier competing entities; while monarchy won over the republic, its survival over the next few centuries was based as much on good leaders as on a well-oiled governance apparatus.

In 493 B.C., Bimbisara's son, Ajatashatru, ascended to the throne and continued the expansionist career of his father; it is believed he imprisoned and starved Bimbisara to death. Ajatashatru, in his own right contributed to the expansion of Magadha, and built a fort near the river Ganges that grew into *Pataliputra*, and eventually became Patna, the capital of today's Bihar. *Magadha*'s importance grew; it not only controlled the lower Ganges, but trade and commerce provided revenue to the kingdom and a business and trade community was established. Ajatashatru's death in 461 BC was followed by a rapid succession of five weak kings, each ascending to throne, according to Thapar (1996, p.57), through *patricide*. In spite of this turbulent monarchy the administrative set-up of the kingdom of *Magadha* continued and society and commerce continued to flourish. Domestic and foreign trade flourished and led to rapid changes "*in another sphere; that of religion and philosophical speculation. The conflict between established orthodoxy and the aspirations of newly rising groups…..resulted in a remarkable richness and vigor in thought rarely surpassed in centuries to come."*[6] Of the many sects that flourished, two acquired some permanency, the Jains and the Buddhists and they matured into separate and distinct religions that continue to affect spiritualism and religious debate even today as the remain widely practiced world religions today. Both of these religions were supported by members of the *Kshatriya* ruling class "*who were opposed to brahminical orthodoxy"*[7] and the founders of both religions were approximate contemporaries of *Bimbisara* and *Ajatashatru*.

After the fifth patricide, the people of *Magdha* had enough; they revolted against the ruling dynasty and installed the royal viceroy as the King. This proved to be a transient arrangement with a number of other rulers stepping through the kingdom until the ascendancy of Mahapadma Nanda. Thapar (1996, p. 57), describes the Nanda dynasty as the "first empire builders of India" as under their rule the boundaries of the *Magdha* kingdom expanded to include parts of central India, modern Orissa (*Kalinga*), and further east towards present-day Bengal (*Anga: roughly the eastern part of present-day Bihar*). At this time, Alexander and his Greeks entered India from the west; they annexed much of north-west India but stopped at Punjab from where they returned. The Greeks left written accounts of what they found and these documents contributed in a great way to the myths and wonders of India. Although, Alexander left the Indus Valley without challenging Nanda, the Greeks left

[6] Thapar (1996), p.63
[7] Thapar (1996), p. 67.

detailed accounts of the fantastic army that the Nandas had built. This was also a period in which trade between various Greek colonies to west of the Indian sub-continent was firmly established and this continued even as various dynasties waxed and waned in their rule of the Indian sub-continent.

The Nandas prospered with a complex and effective administrative machinery built on the existing structures set in place from Bimbisara's time. This was used to collect taxes that not only enriched the treasury, but also allowed the Nanda maintain large armies as well as build canals and instituted irrigation projects. The Nanda dynasty held the throne of *Magadha* until 321 B.C. when it was overthrown by Chandragupta Maurya, and it was under the *Mauryas*, that *Magadha* attained truly great heights; as Thapar puts it, *"the imperial idea found expression"* under Chandragupta Maurya and his heirs. He was able to rapidly expand the reach of *Magadha* in the west and the north-west due to the vacuum left behind by the departure of Alexander.

Chandragupta's rise and success is associated with the shrewd advice he received from *Chanakya* (*Kautilya*), the teacher-philosopher-administrator who is also believed to be the key strategist in establishing Magadha, under Mauryan rule, to cover most parts of the India sub-continent. Chanakya also authored *Arthashastra* with the goal to codify norms associated with providing good governance. Waldeur et. al. (1996) documents how key ideas from trade theory, taxation theory, and the labor theory of value are used in the *Arthashastra* to develop norms for the monarch. Written more than 2000 years prior to Adam Smith and Ricardo, this manuscript remained lost. The role of "just" wages in society, crime and punishment, corruption within bureaucracy, right to food and a deep responsibility of the ruler to its people are all ideas developed in a rich framework with the overall goal to expand the wealth of the nation state. *Chandragupta*, with *Chanakya*'s counsel, soon controlled both the Indus and the Ganges valley and the reach of *Magadha* covered much of the north of the Indian sub-continent. Chandragupta died around 297 BC and was followed by his son *Bindusara*, under whom central India (the Deccan) came under *Mauryan* rule and by the time of his death, 272 B.C., the extensive parts of the sub-continent was being ruled from *Pataliputra*! Bindusara's rule was followed by the rule of *Ashoka* under whom the empire achieved its most significant expanse, controlling the entire sub-continent of India.

Society, economy, foreign trade, diplomacy, religion, and administrative complexity to manage the entire kingdom: each of these attributes was perhaps never richer than under *Ashoka*'s rule. After initial years of war, Ashoka's experience with horrific loss of life in the *Kalinga* War made him abdicate violence and accept Buddhism as a way of life. This proved instrumental in the spread of the religion outside of India. However, by this time the expanse of the *Magadha* kingdom was already huge – it was bounded by the Himalayas in the north, it covered areas well into Pakistan, Baluchistan, parts of eastern Iran and Afghanistan in the west, Assam, in the east, and most parts of the south of India, except for parts that paid tribute to *Ashoka*; as did Sri Lanka, and Myanmar. The reaches of the kingdom was marked by inscriptions on pillars of rock that are in *Peshawar* (in *Karoshthi* script), in Kandahar (in Greek and Aramaic), and all over India in the *Brahmi* script. These inscriptions not only proclaim the reach of *Ashoka*, but also provide an understanding of public policy of the time in terms of the commitments of the king to his people. The *Magadha* empire didn't long survive *Ashoka;* within 50 years of his death, in 232 BC, the Maryuan rule decayed and the expansive empire was lost.

A second coming for an empire centred on *Magdha* was during the course of the *Gupta* dynasty that ruled over the period 320 to 550 CE. Again, at its peak, the

empire covered substantial portions of South Asia, although it's reach into the south India was more limited than during *Ashoka*'s time. Better documentation of the military strength and complexity of governance exists for the Gupta period (Mookerji 1959). At its peak the empire was divided into 26 administrative units, or *Desas,* that were managed by governors. Each *Desa* was further divided into districts that were administered by the district officer (*Vishayapati*). Mookerji (1959) notes that additional officers were assigned at the district level to help with different departments such as *Saulkika* (revenue officer), *Gualkika* (forest officer), etc. Apart from placing an administrative structure, a range of other initiatives, either through the state or through public philanthropy, such as rest-houses, grants of land for educational institutions, hospitals, roads, temples of worship, repairs of embankments, etc. provided a semblance of public service delivery.

In sharp contrast to Polgreen's (2010) description of Bihar, Fa-Hien, a Buddhist traveller from China, notes how "... the people were allowed by the government considerable individual freedom not subject to vexations from its Officers in the shape of registration, or other regulation; economic liberty with unfettered mobility of labour, so that agriculturalists were not tied to land like serfs; and humane criminal law" (Mookerji, 1929, pp. 59). During the Gupta dynasty we also see the creation of an international university at Nalanda that flourished from 5^{th}-6^{th} Century to the 11^{th} Century and was a major contribution to academic life, society and religion (Dutt 1962 and Scharfe 2002). A range of other contributions in mathematics (Aryabhatta's work), large public works and engineering practices (irrigation, embankments, etc.), art, theatre, etc. are available from this period. The dynasty's decline set in during the late 5^{th} century when a range of invaders (Hepthalites, Huns, etc.) were able to break through the Gupta defences and within the sub-continent other dynasties began to challenge the Guptas.

The subsequent centuries did not see the emergence of any unifying empire till the rise and establishment of the Moghuls much later in the 15^{th} Century. A natural question that emerges is how do these periods of consolidation and growth emerge? Not just economic, but also cultural, and social. In a growing series of investigations that explore why civilizations, economies and societies of the past have failed or succeeded, Bihar's case is undeniably important.

On a much smaller scale, consider the Chaco Phenomenon: a pre-Columbian society with thriving economic, political and religious activity that spread out over more than 1000 square miles in the Chaco Canyon over the 850 – 1150 AD period (Vivian 1990). The Chaco people built irrigation networks 150 times larger than any known before (Friedman et al. 2003). They constructed huge houses, with hundreds of rooms, and built more than 250 miles in total of roads. Over the three centuries of the civilization's existence, thousands of trees were transported great distances for building (Lekson 1986, Lewin 1993, and Adovasio with Page 2002), and in the process the forests around the canyon were denuded. While no other pre-Columbian society reached this level of maturity, the Chaco Canyon civilization was unable to take the next step and become a nation-state. Attempts at state formation were unsuccessful. Today, what remains are the ruins and a mystery: Where did they go wrong? Was it the denuding of the forests around the canyon or something much more systematic?

Scholars from various disciplines, including physicists, historians, mathematicians, archaeologists, computer scientists, biologists, sociologists and economists, explain the Chaco Phenomenon and its subsequent failure through the science of complexity, as the evolution of an entity whose different parts interact and generate order and chaos and where non-linearity in processes is the norm rather

than the exception. State formation and governance are quite clearly such complex processes, wherein multiple agencies, institutions and organizations interact as parts of a larger whole so that non-linear evolution and unpredictable behavior are the norm. Bihar's rich history goes further back in time than that of the Chaco civilization; it thus offers itself as an example of a society that underwent multiple expansions and contractions within different and evolving social structures and governance systems.

Our investigation attempts to realize only a part of this potential. We focus on contemporary Bihar; while the Government of Bihar celebrated 2012 as the 100th year of the state's creation, the state of Bihar that was carved out from Bengal Presidency in 1912 is not today's Bihar in many senses. Contemporary Bihar actually came into being within the federal republic of India through a state Reorganization Bill in 2000 that separated Jharkhand from Bihar. It is mainly on this 12 year old Bihar that the rest of the document focuses on. However, as we shall see, to appreciate what exactly is happening to-day, we do need to go back to the earlier Bihar in many instances.

1.2 Bihar: an overview of the 1980-2010 economy

Contemporary Bihar, in terms of levels of output, has been one of the smallest among all the major states in India. Not only in terms of economic output, but also in terms of almost each and every indicator of relevance, the Human Development Index, access to infrastructure, healthcare, education, law and order, the gap between Bihar and India's achievements have been so large that from the mid-1980s, many have institutionalized Bihar's status as a `basket-case' with little expectation of growth through much of the latter half of the 20th Century. Of course, slower growth does not mean complete stagnation. Nor does it imply a lack of structural change. Some of that change was consistent with the rest of the Indian economy and in this overview we document these trends. In our overview, we partition the period 1980-2010 into three separate time periods: 1980-2000, 2000-2005, and post-2005. The basis of this classification is analytical rather than statistical. Each of these gives periods in time when numbers can be compared with each other, but it is not clear if they can be compared across these periods in an obvious way.

The first period captures Bihar's pre-bifurcation economy. This represents a period when the structure of the economy, its endowments, and its politics was markedly different from the Bihar in existence after November of 2000. The districts that constitute Bihar and Jharkhand today have always been socially and economically different; thus, for example, while Jharkhand's population is largely tribal with limited caste identity, caste has historically been the basis for polarization and exclusion in Bihar (Sharma 1976).[8] In addition, with a substantial portion of its land on the Chota Nagpur Plateau, Jharkhand is rich in mineral deposits and has been the home for manufacturing activities. On the other hand, districts constituting Bihar have large swathes of alluvial soil, often replenished by flood waters, which are particularly suitable for agriculture.

The period 2000-2005 captures Bihar's immediate post-bifurcation economy. Social dynamics, political demands for separation, and political expediency, on the

[8] Sharma (1976) provides an early account of how the Jharkhand movement took shape on the basis of administrative unity between the districts that form Jharkhand today, their exploitation by north Bihar, and the ethnic differences between the two. This distinct *Jharkhandi* identity had arguably been in place even in pre-Independent India and is based on real and identifiable differences between the areas forming present-day Bihar and Jharkhand (Prakash 2001). The political angle leading to the bifurcation is discussed later.

part of Rashtriya Janta Dal (RJD) in Bihar, and the National Democratic Alliance (NDA) government at the national level, provided the Jharkhandi movement an opportunity in the 1990s that it had not found in decades (Rorabacher 2008). While the economy of the bifurcated Bihar could no longer be compared with that of the 1980-2000 Bihar, RJD continued in power and this provided a period of political and policy continuity with the past that was important.

The third period is the period after the 2005 elections in Bihar when Nitish Kumar, and his political party Janata Dal (United) (JD (U)), came to power together with the Bharatiya Janta Party (BJP). This period saw major changes in policy, administrative, and overall governance changes as well as rapid economic growth. This period marks a clear break from the past, in both a statistical and qualitative sense. While many of the structural changes seen in the past continue, and the relative position of Bihar amongst other states remains as is, there is distinct increase in economic growth.

1.2.1 Pre-Bifurcation Bihar

Bihar's economy till the 1980s was largely agricultural in both output and employment, like much of the rest of India. After the mid-1980s, we see a decline in relative per capita output between Bihar and India as Bihar's economic growth was appreciably slower than India's (see Figure 2). Lalu Prasad's RJD came to power in 1990, and the relative output for Bihar settled down to about 35% of the national per capita income for the rest of the 1990s. This growth was accompanied by large structural changes in the economy with the services sector emerging as the dominant sector in national income; similar transformations also took place within Bihar.

Level of Growth: Absolute and Relative

In 1980-81, Bihar's economy had a per capita income of Rs. 917; this was then 60% of the national average. The Government of India's Central Statistical Organization (CSO) data on state-level per capita income shows that Bihar was the poorest state in terms of per capita income that year and has remained so since. In addition, Planning Commission (2002) data shows that even in 1981, Bihar had the lowest HDI (Human Development Index) across all the 15 major states of India. Thus, Bihar's poor performance was reasonably well-established by 1980, and any explanation of such absolute backwardness must pre-date the 1980s. However, at this point in time, Bihar was far from being an endemic failed state – in terms of per capita income over the period 1980-81 to 1984-85, Bihar grew at one of the then fastest rates of 5.3%.

Figure 2 plots the ratio of per capita income for Bihar to the per capita income for India; this 'relative per capita income' for Bihar hovers around 60% for much of the 1980s, and indeed, rises in the early part of the period, suggesting some catch-up with the rest of India. Ghosh and Gupta (2010) argue that Bihar failed to capitalize on the subsequent process of liberalization and opening of the India economy; they note that "… the growth rate of the Bihar economy during the post-reform era was the lowest of any of the regions of India in any of the decades." Thus, not only did growth slowdown in Bihar, it also accelerated in India; this is the period when Bihar was transformed from being simply a poor performer to one for whom recovery appeared to be increasingly out of the question.

The gap between India and Bihar, which started emerging in the latter half of the 1980s, expanded rapidly, so that by the end of the century per capita output for Bihar was as low as a third of the national average. As levels of Bihar's economic indicators rapidly diverged from the national levels, per capita income declined from

Rs. 1,197 in 1990-91 to Rs. 1,073 in 1997-98. For the period 1980-1998, the compound annual growth rate (CAGR) for per capita income in India was about 3.2% while it was a meagre 1.1%@ for Bihar. These rates of growth are significantly different when seen cumulatively over time. Individuals in India would see their incomes double in 22 years, i.e., at least twice in their lifetimes. In Bihar, the time for doubling income in this period was 63 years; with a life expectancy well below 63 years over this period, individuals were unlikely to ever see their incomes double.

Structure of the Economy:

While the level of economic output stagnated, there was a substantial change in the structure of Bihar's economy; from being largely an agricultural economy, it became one in which the services and industrial sectors contributed substantially. Figure 3 plots the changing composition of national income for the years 1980-81, 1990-91 and 1997-98; two things to note in this diagram are: a) even in 1980-81, the share of the services sector in Bihar's State Domestic Product (SDP) was larger than the share of the industrial sector, and the gap between the two increased over time; and b) by 1997-98, both the services sector and the agricultural sector contributed a little more than 35% of SDP; the contribution to SDP from both the services sector and the industrial sector in Bihar had grown significantly over this period. These changes followed the pattern of changes seen in the Indian economy at the same point in time. While Bihar remained more agrarian in output than India, its transformation into a services-led economy like that of the rest of India was clearly underway.

This large restructuring of the economy over the period 1980-2000 is quite striking, not only because of the very limited expansion of economic output accompanying it, but also due to the very limited change in employment structure that took place simultaneously. Figure 4 clearly shows that employment in Bihar remained overwhelmingly agrarian even in 1999-2000, with little qualitative change from the distribution in 1977-78. Bihar, even in 2010, had one of India's lowest urbanization rates at 10.5%, and thus, the predominant source of employment in Bihar has always been rural employment. In 1999-2000, over 715 out of every 1,000 employed rural males and 845 out of every 1,000 employed rural women were engaged in agriculture. In comparison, the services sector for rural men employed a meagre 161 out of every 1,000 employed rural males, and the number was lower for women. In the few urban pockets of Bihar (largely located around Patna) employment in services was dominant, particularly for men, and over time, the number employed in services has been gradually increasing.

Ghosh and Gupta (2010) argue that the limited expansion in output in Bihar may be primarily attributable to the lack of expansion in the non-agricultural sector. Employment statistics clearly show that the non-agricultural sector was unable to draw people out of agriculture. Kishore (2004) documents that agriculture in Bihar performed better than the national average in the 1980s but had begun to stagnate in the mid- to late 1990s; this substantiates Ghosh and Gupta's (2010) and Sharma's (1995) arguments that the failure of growth in Bihar was largely a failure of the services and industrial sectors to expand. This in turn raises questions about the nature of the prevailing policy environment in Bihar during the 1990s, particularly because during the 1990s, Bihar's access to mineral resources was largely intact. Poor growth and economic expansion in this period also reinforced poor human development indicators, so that Bihar was ranked at the bottom of the HDI table in 1991 and in 2001 as well. Table 1 presents Bihar's HDI numbers in comparison with India's HDI.

Poverty – Pre-Bifurcation:

Incidence of poverty in Bihar has always been significantly higher than the national average; in 1983, the incidence of poverty, in terms of the poverty ratio, in Bihar was 62% while it was 44% in the nation (see Table 2). Beginning from the late 1980s, with Bihar growing substantially slower than the Indian economy, it is not surprising this gap in poverty incidence increased in the 1990s. However, there was progress in reducing poverty; from above 60% in the 1970s and early 1980s, the incidence of poverty reduced to 50% by the end of this period. This of course mirrored the general decline in poverty seen in India (see left panel Figure 9). However, the difference in levels of poverty persisted and even increased during this time. This widening of the gap between levels of poverty becomes even more obvious as we look at time trends in relative poverty for Bihar (see right panel Figure 9). With slower growth of per capita income in Bihar, poverty reduction was slower too. Thus, the 1990s saw an increase in the proportion of the total poor in India who were from Bihar.

Poverty in Bihar has been chronic and exists largely within the context of an agrarian economy. The literature on poverty for pre-bifurcation Bihar has centred on the performance of the agricultural sector and why its gains have been so limited. Thus, the lack of land reforms in Bihar, poor agricultural productivity, land holding fragmentation over time and caste rigidities are also important in understanding poverty. An interesting hypothesis advanced by Kishore (2004), based on a careful study of six villages, is that more than the classic sources of agrarian failure, public investment in agriculture has been unstable and erratic. Sharma (1995), on the other hand, argues that despite the loss due to flood, drought, a poor industrial sector and paucity of public infrastructure, "… the state's backwardness is more related to the iniquitous and exploitative socioeconomic structure, lack of political leadership, and almost total collapse of administrative law and order machinery – to the point that it is said that in Bihar `the state has withered away'." While it is difficult to be definitive about the single most important reason for the minimal decline in poverty in the 1990s in Bihar, it is quite clear that with regard to many key aspects, the state was in poor shape. It was also during this time that a sense of hopelessness about Bihar's economy started setting in and Bihar became increasingly identified as a failed state.

Social Indicators – Pre-Bifurcation

Human development in Bihar followed national trends during this period. While there was modest improvement in all indicators, there always remained a gap between national and Bihar specific achievements on human development. Table 3 captures time trends in literacy rates in Bihar in comparison to the national literacy rates. While at the time of independence, this literacy deficit was small, around 5% in 1951, over the 1960s and 1970s, this gap expanded steadily, so that by the 1981 census, the gap was 11%, and 14.7% by 1991. Male literacy has always been higher than female literacy in most parts of India and this pattern is also seen in Bihar as well. In percentage point terms, the gap between literacy rates between males and females in Bihar peaked in 1981 at 30.5% and has been declining since. The essential difference between gender specific literacy rates between Bihar and India essentially stemmed from the much lower rates of literacy for both sexes, rather than obviously larger gender gaps.

In terms of health indicators, two indicators used to judge health status are Life Expectancy, and Infant Mortality. Both of these indicate that the gap between Bihar and all India rates are small, particularly in comparison to the systematic gap seen in the economic domain. Life expectancy however, does have a significant gender bias in Bihar (see Table 4). Nationally, women have a higher life expectancy

than men; however, in Bihar the trend is reversed and continues to be so in the future. Thus in 1981-84, the average man in Bihar had a life expectancy of 54.5 year, while the average man in India had an expectancy of 55.2 years. Among women however, life expectancy was 51.5 while in India it was 55.7 years. This gap among women in Bihar and in India narrowed in the 1990s, but persisted even in 1999-2003 period when life expectancy for women in Bihar was 59.7, but for women in India it was 63.8. In terms of infant mortality statistics we find that Bihar follows national trends very closely. In fact, as Figure 5 shows, in much of the pre-bifurcation period, infant mortality in Bihar was a little lower than the national average. It is only in the post-bifurcation period that we see infant mortality rates at or higher than the national levels.

Given the huge disparity in economic outcomes, large disparity in education outcomes, and small differences in the health outcome, it is reasonable to expect that Bihar does poorly on Human Development Indicators (HDI) as well. The Planning Commission's HDI estimates (see Table **1**) systematically rank Bihar has the poorest performer among the major states of India; however, it is also true that HDI in Bihar has been increasing over time indicating improvements but not sufficiently large improvements to close the gap with the national average.

Finally, demographic trends in Bihar have been a few decades behind the national trend as captured in Figure 4. Since India's independence, India's population growth story is a good example of the predictions of demographic transition – after an initial decade of slow growth, the 1950-80s saw large increases in national population, India's population growth rate began reducing over 1991-2001 and substantially reduced over 2001-02. During the 1950s and 1960s, Bihar's population was growing significantly slower than India's; over the 1970s and 1980s, Bihar's population grew as fast as the national rates, however, in the 1991-2011 period, Bihar's population growth sharply accelerated and Bihar's population increased sharply. Thus, Bihar's population is a much younger population than the national average, allowing for a range of opportunity including additional time to prepare for the demographic transition.

1.2.2 Bihar: 2000-2005

The political bifurcation of erstwhile Bihar into today's Bihar and Jharkhand brought to fore the need for norms on how financial and infrastructural resources would be shared across the two new states. For practical reasons, and also to favour the newly created state of Jharkhand, this process of bifurcation was very asymmetric – while all physical assets were distributed on an 'as is, where is' basis, financial liabilities were distributed using population norms (Bihar Economic Census, various rounds). Thus, Jharkhand inherited three-fourths of all the assets of the erstwhile Bihar and picked-up only a fourth of all liabilities. Bihar grew absolutely and relatively poorer simply due to this bifurcation. At the time of bifurcation, serious concerns were expressed about whether the 'reduced' Bihar could even form a viable state on economic grounds (Bhattacharya 2000 and Rorabacher 2008).

To capture a ball-park figure of the extent of this loss in the size of the economy one should be able to compare GSDP estimates before and after bifurcation in 2000; however, this simple comparison is complicated by the fact that the Central Statistical Organization reports national income estimates for (divided) Bihar and Jharkhand from 1993-94 onwards, i.e. from before bifurcation. While we do have estimates of the undivided Bihar from the 1980-81 series and 1993-94 series for a number of overlapping years, these numbers are not comparable even if the numbers were for the undivided Bihar. However, it still is possible to compare the

structure of the economy for these two different prices series for the same year to understand the differences in the structure of the economy of divided and undivided Bihar. Looking at data for the two Bihars from 1995-96 (see Table 5) we see that a bifurcation implies a huge setback to the industrial sector – that constituted 24% of GSDP for undivided Bihar but only 4% of GSDP for divided Bihar. Thus, bifurcation implied an accentuation of the role of the services and agriculture sector in generating national income. Thus, the economy changed in a fairly major way and lost a large amount of its industrial sector to Jharkhand in the 2000 bifurcation.

Consequently, not only was Bihar's economy different prior to 2000, but the prospects for growth before and after bifurcation were also very different. Changes in statistics such as poverty ratios, per capita incomes and Human Development Indicators (HDI) across these two time-frames are thus different, not only because the people and economic resources were split across Bihar and Jharkhand, but also because these factors would accumulate in Bihar and Jharkhand at different rates.

Figure 7 captures the relative ratio of per capita incomes of Bihar to all India in the post bifurcation period; over 2000-05 this ratio continued to decline indicating slower performance than the Indian economy. One of the immediate consequences of bifurcation for Bihar was that its economy became much more sensitive to shocks such as floods. While earlier about 55% of Bihar had been flood-prone, with the reduction in land area, 73% of the area after bifurcation was flood prone. What this meant is that the opportunities to tackle the shortfall due to floods fell and had to be forthcoming from a much smaller area making such possibilities remote. A raw indicator of this is that the coefficient of variation of Net State Domestic Product (NSDP) increased from 6.2% in 1991-98 to 11.8% over the period 2000-2008. This is probably one of the key reasons that Bihar's economic growth shows more frequent peaks and troughs after bifurcation. In fact, some authors, such as Das Gupta (2010), worry about this high volatility of Bihar's economy post-bifurcation. As the left Panel of Figure 6 shows, Bihar's annual growth exhibits very high levels of volatility with the 1990s showing some of the sharpest contractions and expansions in Bihar's economy. Additionally, higher volatility in and of itself is not the real problem, as many growth processes are known to follow paths that are not straightforward.

Ultimately, whatever the growth path, the key is how it ensures deepening of economic activity and whether the processes of growth is inclusive and accessible to people across the entire range of income and asset distribution. The right panel of the same figure captures annual compounded growth rates calculated over 5 year periods (except for the 2010-12 period) and shows less fluctuations. Interestingly, right after bifurcation in 2000-05 we find a sharp increase in growth at 4.51% per annum in comparison to the 1.44 % per annum seen over 1995-99. However, India grew faster than Bihar at 5.69% per annum over 2000-05 and the gap between Bihar and India continued to increase. This was in spite of the fact that in the first five years after bifurcation Bihar grew much faster than it had grown ever since 1985.

As mentioned above, Bihar's economy was substantially transformed when it bifurcated into Bihar and Jharkhand under the Bihar Reorganization Act of 2000.[9] Most of the manufacturing units and capacity to generate power were located in southern Bihar, and these went to Jharkhand. Thus, the share of industry (excluding construction) dropped from 22.5% to 4.6% of NSDP, and there was a parallel increase in the share of the services sector from 36% to 50%, in a matter of a year. The share of the agricultural sector in the economy increased modestly from 36.5% to

[9] The full text of the Bihar Reorganization Act of 2000 is available online at http://persmin.gov.in/DOPT/EmployeesCorner/Acts_Rules/SR/BH_Act2000.pdf.

40.4%. A natural consequence of the loss of the industrial sector was a substantial drop in the state's own share of non-tax revenue from this sector. Thus, over the 1991-95 years, the industrial sector in Bihar contributed Rs. 61,119 crore to the state, i.e. about 10% of total revenue. This declined marginally to 7% of total revenue for the 1995-2000 period. However, over the 2000-05 period it accounted for a mere Rs. 12,344 crore, and this was no more than 1% of total revenue (Economic Survey, Government of Bihar, various rounds). A natural consequence of the bifurcation was that it shrank the fiscal space within which the state could finance development, relief and poverty alleviation activities.

The bifurcation artificially reinforced Bihar's transformation into a services-led economy that has become more dependent on the services sector than the Indian economy and yet remains one of its poorest states. Simon Kuznets, in his 1971 Nobel Prize lecture, notes that one of the key features of modern economic growth seen in an economically dominant nation is the structural *"… shift away from agriculture to non-agricultural pursuits and, recently, away from industry to services; a change in the scale of productive units, and a related shift from personal enterprise to impersonal organization of economic firms, with a corresponding change in the occupational status of labor"* (Kuznets 1971). Bihar's income now comes mostly from the services sector, but there was little movement of agricultural labor to opportunities outside of agriculture. Thus, while Bihar's NSDP is driven by the service sector, it remained overwhelmingly rural, with 64% of its workforce employed in agriculture (National Sample Survey Organization, NSSO (2011)). While this is the standard structural imbalance in the entire country, the extent of the balance is quite acute for Bihar.

Incidence of poverty, as measured by the head-count ratio, continued to follow the standard declining trend at the state level (see Table 2 and Figure 9) seen all over. However, within Bihar, the extent of poverty was quite abject. Careful work by Chaudhuri and Gupta (2009) enables us to look at district level poverty in 2004-5 and we use this information to plot the ranks of the districts in Bihar amongst the set of all districts in India (see Figure 14). It is immediately obvious that districts in Bihar tend have some of the highest headcount ratios in India and almost all of them have high head count ratios. Table 11 gives district specific monthly per capita consumption expenditures (MPCE) as well as Lorenz Ratio (Gini Coefficients) and Head Count ratios. In 2004-5, districts such as West Champaran had almost three-fourth of its population below the poverty line. Interestingly, much of rural Bihar, in spite of having low average consumption expenditures and high poverty ratios, has low Gini coefficients indicating that there isn't significant inequality in income distribution. Patna is quite clearly the outlier amongst all the districts in Bihar with high average consumption expenditure and low poverty ratios.

1.2.3 Bihar post 2005 Elections

Figure 1 captures, in a very raw sense, the pace of growth in per capita income has been the highest in the post 2005 period. While there have been annual fluctuations in the rate of growth, the period 2005-10 saw a compounded annual growth of 8.6% for Bihar that was significantly higher than the growth seen for India (7.04%) over the same time. This growth further accelerated over the period 2010-12 when Bihar has been returning compounded annual growth rates in per capita income of almost 14%! For a state that has been systematically growing well below the national average this has been a significant change in the level of economic activity since 2005. Thus, as Figure 7 captures, this is a period when Bihar has begun catching up with the rest of the economy. The point of course remains that while Bihar's economy has made a U-turn, it still has a significant amount of catching up to

do and this needs sustained economic growth. A number of authors have expressed concern about how real the growth is and how stable this growth has been process is.

We present evidence that leads us to believe that while the growth process has been robust, there still remain certain types of concerns with this growth process seen in Bihar (see Appendix on growth patterns at the district level). In Figure 8 we plot district specific boxplots of district domestic products (DDP) to capture the heterogeneity across districts. Quite clearly, districts like Madhubani, Begusarai, or Saharsa, experience years in which DDP grows very rapidly or contracts very rapidly However, there are also districts where fluctuations in DDP have been small or are have not been sharply contracting. Table 7 captures the relative change in districts in per capita income terms between 2001 and 2007. A range of large districts such as Patna, Begusarai, Nalanda, Jehanabad, and Sheohar, have not changed their relative positions. A number of remoter districts such as Jamui, Khagaria, Sheikhpura, etc. have significantly gained in relative terms over this period, and finally a number of districts such as Madhubani, West Champaran, have significantly lost out. Many of these districts also saw significant contractions in economy due to floods, and droughts over this span.

Thus, a significant amount of heterogeneity exists in the growth process at the district level and this requires planning and diversification of economic activities to manage this risk and would be a simple and useful policy intervention to stabilize fluctuations. One qualitative difference between the growth process in the period prior to the Nitish Kumar government, i.e. 2001-2004 and afterwards is captured in a transition matrix that captures the likely transition from this year's growth to next year's growth (see Table 6). Simple calculation show that prior to Nitish Kumar, the chance of staying in high growth regimes were almost non-existent , while after Nitish Kumar came to power there were virtually no periods when growth was very poor. In fact, of all the districts in high growth this year, almost 77% of the districts will transition into high growth in the next year. Thus, growth was persistent after the 2005 period.

In terms of sectoral growth it is also clear that the post 2005 period saw a quacking pace in each sector within India (see Table 8). While the construction sector maintained its high levels of growth, agriculture, industry and services, each grew faster in the post 2005 period. Thus, not only was the economy growing fasters, but each of its key sectors themselves was growing faster in the post 2005 period. While construction as a sub-sector was clearly the fastest growing, the services sector, the largest contributing sector in Bihar at this point, was also growing at a compound annual growth rate of 11.9 %. With almost 60% of NSDP coming from the services sector, we disaggregated the services sector in Table 9 to identify the key drivers of the services sector in Bihar. In sheer levels, the most important services sector for Bihar is Trade, Hotels, and Restaurants that forms about 27.3% of NSDP by 2010. Other Services, capturing professional incomes of lawyers, doctors, and income from teaching in non-governmental educational establishments (including tuition centers) also remains important. The fastest growth within this sector has been with Communications sub-sector establishing the importance of a nascent ITE&S sector in Bihar as well. Thus, growth in the services sector in Bihar is led by the Trade, Hotels, and Restaurants sub-sector, however, it has also shown important growth in both the Communications, and Banking and Insurance sectors as well.

The key issue for the economy of course remains that in spite of this growth, much of the employment profile within Bihar remains largely rural, in the agricultural sector and dominated by male participation. Table 10 captures the changing employment structure in Bihar from 1983 onwards, while Figure 10 disaggregates

these numbers by region (rural and urban) and gender. While there has been a move away from agriculture over this two and half decade time frame, the changes are modest given the vast changes in the role of agriculture in NSDP in Bihar. Contrasting Table 10 and Figure 3 gives a sense of the extent of the sectoral imbalance in Bihar.

Population growth in Bihar is expected to remain high in the next decade as a key determinant of the population growth rate is the total fertility rate. The total fertility rate consistent with a population that is no longer expanding is 2.1 children per woman. Data from the National Family Health Surveys (NFHS) shows that while the total fertility rate for women in India went down from 2.68 children per woman in 1998-99 to 2.50 children per woman in 2005-06, for Bihar it went up from 3.7 to 4.0 children per woman. Among other states, Kerala and Tamil Nadu have a total fertility rate of 1.7 children per woman, while the populations for Andhra Pradesh, Delhi, Himachal Pradesh, Maharashtra, Punjab, West Bengal (all with 1.9 children per woman) and Karnataka (2.0 children per woman) are in fact contracting. The fertility rate is still at 3.9 children per woman in Bihar and population projections suggest that Bihar will attain the replacement rate only by 2027 – one of the slowest states to achieve it.

Interestingly, there is a strong and negative relationship between education and fertility rates. The NHFS-3 data shows that the fertility rate for women without education is about 4.6, while for those with 5-9 years of education, it is 3.2 children per woman; finally, for those with 10 or more years of education, it is 2.4 children per woman. Considerable evidence in favor of this inverse relationship is found in the demography literature from the late 1970s, and this only re-emphasizes the role of education for Bihar. Thus, there are important cross-complementarities between demographic structure and education.

One of the implications of Bihar's population growth rate and fertility rate is that Bihar's workforce is and will remain one of the younger workforces in the future. Projections of India's demographic dividend suggest that the working age ratio, i.e., the ratio of people working to those not working, began to increase in 2001 and will continue to do so until 2025-40 (Aiyar and Mody 2011). Bihar's working age-ratio will continue to increase well past India's, as it will only hit the replacement rate in 2027. This gives Bihar a delayed demographic dividend and a window of opportunity to try to ensure that its workforce has the highest possible productivity when the demographic dividend unfolds. This has important implications for creating systems for savings, pensions, and planning for a future when a larger and larger proportion of the population is elderly and retired.

2. What Went Wrong?

Economic growth and development, like other dynamic processes, are intrinsically non-linear in nature. Non-linearity implies that if one plots any indicator over time, there is no consistent increase or decrease; instead, in some periods there may be increases and in others, a slowdown or even a decline (Easterly et al. 1993 and Quah 1993). Such processes often exhibit a 'sensitive dependence to initial conditions' or hysteresis. Initial conditions frequently determine the course of the entire trajectory or path followed and slight deviations at an early stage can lead to great divergence later on. Bihar's progress or the lack of it, even relative to the rest of the country, may be traced not only to policies in place in the recent past but also to

those from the distant past that led to unique 'initial conditions' for Bihar at the time of its formation and after Independence.[10]

The intended and unintended consequences of several policies existing over a large span of time led to systemic disadvantages with regard to economic development and wealth accumulation that have had notable negative consequences for Bihar' economic potential. Many of these disadvantages persisted over long periods of time; we argue that they hampered progress in Bihar relative to the rest of the country, and more importantly, continue to do so even today. Briefly, the list of policies that we cover includes:

1. The *Zamindari* System and the Permanent Settlement of 1793.
2. The step-motherly treatment meted out to Bihar by the Central Administration during the British Rule as well as during the Plan periods after Independence.
3. The Freight Equalization Policy of 1948.
4. The unwritten policy of non-performance during the 1990-2005 period.

Apart from the disadvantages arising from the policies mentioned above, Bihar's economy has historically been faced with a number of challenges – the loss of resources from bifurcation, repeated flooding, Naxalism, etc. In fact, the state government has been attempting to negotiate a 'special category' status with the central government to access central government and other funds on more favorable terms, citing challenges such as the Kosi floods. While there may remain ambiguities about whether Bihar merits support under the 'special category' status, usually reserved for hilly and difficult terrain and low levels of infrastructure, there is little doubt that Bihar has faced significant barriers to growth. What made these barriers insurmountable were the lack of support from the central government, before and after Independence, and the lack of leadership in the state itself. This meant that the meagre resources available for relief and rehabilitation were often wasted and Bihar frequently performed, not only far below its potential, but also far below what was required for it to catch up.

2.1. Permanent Settlement

As the East India Company's, and later the British Raj's, trade and commerce expanded, it required a large amount of capital, of which there was a perennial dearth (Ghosh 2007). In due course, the Company came to realize that a possible source of financing for its administration in India as well as enhancing its trade was the agricultural revenues generated within India. In 1765, the East India Company's revenue inflow was made secure through access to land revenues from Bengal Presidency.[11] This revenue was used to fund commercial activity and to support two other Presidencies within India (Madras and Bombay); it even buttressed the Company's treasury in Canton! The larger the amount of land revenue collected, the

[10]Tripathy (2007) explains this as follows: "To those who grew up in Bihar in the 1960s and 1970s, it remains puzzling how things could have gotten *this* bad. Is it entirely because of neglect or is there an element of wilfulness to Bihar's decay?" This section argues that there was both ample neglect, and wilful omission in Bihar - not only in the recent past, but also in colonial times.

[11] Bengal Presidency is a reference to a colonial administrative unit that originally contained today's Bangladesh, Assam, Meghalaya, Tripura, Orissa, Bihar and Jharkhand. In 1874, Assam was split from the Bengal Presidency, and later in 1912, so were Bihar and Orissa. Bihar further split into Bihar and Jharkand in 2000. Thus, a discussion of long persistent challenges for Bihar requires a discussion of the Bengal Presidency, as it too suffered from a systematic policy of exploitation in comparison with other administrative units with better institutions for land revenue collection (Banerjee and Iyer 2005).

greater would be that available to finance trade. Hence, there was always inherent pressure on the Company to increase land revenues in India. In fact, from 1765 to 1793, the demand for revenue to finance the Company's various activities almost doubled (Kumar 1982).

A key challenge for the East India Company was that such revenue creation was vastly decentralized. There was an obvious need for a mechanism that would concentrate revenues and funnel them into administrative coffers through an easy-to-monitor institutional arrangement. The British East India Company eventually consolidated revenue collection by turning to the *zamindars*, who were already collecting revenue from peasants for either the Mughal Empire or for independent kingdoms that they oversaw themselves. By making the *zamindars* pay revenues for the right to collect revenues in their turn from their tracts of land, the British overcame the revenue aggregation problem. Thus, greater and greater amounts of land revenue were extracted from the Bengal Presidency. However, it soon became apparent that there was a declining trend in agricultural production in India, and hence it became apparent that there would be less revenue to appropriate.

Lord Cornwallis saw the declining agricultural productivity as a serious threat to revenue collection and, in response, implemented the Permanent Settlement Act of 1793. Under this act, the tax revenues were fixed in perpetuity for each *zamindar* at 90% of his collections for 1793. Fixing the rent thus was meant as an incentive for *zamindars* to invest in land, as there would be no further increase in rent beyond the amount settled on in 1793 (Chaudhuri 1982). It would also stabilize the Company's revenue, which would no longer be subject to the vagaries of rainfall, flood or drought--in short, the vagaries of agricultural conditions. If this fixing of the rent worked, taxation would be simpler and more transparent, requiring less overseeing and administration.

Unfortunately for Cornwallis' hopes, nothing of the sort actually happened; although the rent was to decline from the excruciating 90% in 1793 to about 28% by the end of the 18th century, few farmers were prompted to invest in land. Chaudhuri (1982) argues that, on the contrary, the very high rental rates fixed made *zamindars* demand higher and higher rents from the tillers of the land; at times, the *zamindars* could not meet the requirements placed on them and even defaulted.[12] Thus, there were changes in the land ownership pattern, with some *zamindars* increasing their holdings; many of those with increased holdings were, in fact, not originally farmers but acquired large estates as land became a more important asset under the Permanent Settlement. The Permanent Settlement, paradoxically, did not stop land revenue from increasing; the East India Company secured increases from time to time. The estates of defaulting *zamindars* were transferred to the government; huge wastelands in the transferred *zamindari* estates, which had not been included while considering the Permanent Settlement, became profitable with the spread of cultivation, and soon there was a property market with escalating land prices. The income from the rent-free lands was to be spent on public account, to establish or support facilities such as temples, mosques and educational institutes. In Patna district, between 1790 and 1870, the revenue from the rent-free lands increased by as much as 48% (Chaudhuri 1982).

Thus, delinking the amount of revenue from the actual output, which was one of the main features of the Permanent Settlement, was the undoing of Cornwallis's

[12] See Ghosh (2007), for example, for a discussion of the consequences of the Permanent Settlement Act giving little incentive to the tiller to invest in agricultural land. In this connection see Banerjee and Iyer (2005) and earlier references to the same.

intentions; for years, the Permanent Settlement areas of the Bengal Presidency saw no investment by *zamindars* or farmers in improving the productivity of land. Agricultural output reduced, and to meet rental obligations, the cultivation of cash crops such as indigo was encouraged. In Bihar, a single crop was generally produced; thus, any shock arising from either inclement weather or crop failure allowed a very limited chance of recovery. The impoverishment of farmers and tillers continued throughout; small landowners sold out, farm labor became indentured, and the dismal situation of the already poor was made worse. More importantly, since wages or rewards were unrelated to output, the work culture was destroyed in the Permanent Settlement areas: there was no incentive to work hard and even the spirit of entrepreneurship was dampened.

That the Permanent Settlement itself was detrimental was understood all around; one of the government's earliest post-independence acts was to abolish the *Zamindari* system (the states abolished it with separate acts of legislation). Bihar was among the first states to enact such legislation, abolishing the *Zamindari* system in 1947 itself. The problem seems to have been in the implementation of the act, since the parties concerned with implementation were also those who would be adversely affected. Some argue that the *Zamindari* system was never really eliminated in Bihar, in the sense that large land-owners continued to wield enormous power well after Independence.[13]

The problem that the *Zamindari* system created for the Eastern region can be best understood by looking at what transpired in other parts of the subcontinent, where this system was not in vogue.[14] In particular the differences across provinces in terms of tax burdens and the quality of public services were considerable. These differences never reduced since 'precedent was followed rather than any principle' (Kumar 1982, p. 909). The main source of the differences in taxation and public services was the differences in the land revenue systems. While the *Zamindari* system prevailed in the Eastern region, the *Ryotwari* system was followed in the Madras Presidency and later in the Bombay Presidency. The *Ryotwari* system determined the revenue in relationship to agricultural output; this had to be carefully estimated, and the government had an incentive to ensure that agricultural productivity increased. Consequently, there was a greater concentration of administrative efforts in the *Ryotwari* areas, leading to an advantageous position for them vis-á-vis the permanent settlement areas. As a result, for example, the per capita expenditure of the government on items such as health, education or infrastructure was much higher for the Bombay Presidency than for the others, and Bihar and Orissa, in contrast, spent much less.

It would, thus, appear that the tenurial system chosen by the British continues to cast a long shadow on aspects of life in these regions even today. To some extent, the gap between former *Ryotwari* and former *Zamindari* areas has been narrowed in regions where land reforms have been undertaken, but wherever this is not the case[15], differences in economic outcomes continue to persist.

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[13] See Sharma (2005) for a discussion of how the failure of land reforms continues to plague Bihar with agrarian relations rigidly locked within the ex-*zamindar* class; this continues to hamper agriculture and the economy in Bihar.

[14] Banerjee and Iyer (2005), argue that the choice of tenurial system followed in particular regions was determined by the period in which they were conquered. They suggest that since in independent India, there is no agricultural income tax, the choice of tenurial system 150 years ago continues to affect the regions in question. The tenurial system also affected the social state at the time of independence since areas with *zamindars* had an elite class that was absent in other areas and created inequalities of a type absent in other places.

[15] And in Bihar land reforms were not undertaken.

2.2. State Finances

A key component of the economy is the amount of public expenditure made by the government; from the national income accounting framework we know that public expenditure plays an important role in determining the size of the economy. Equally importantly, depending on the pattern of expenditure, it can also be used as a policy tool to stabilize and accelerate growth, encourage private economic activity and enhance equity within the economy. Transfers made by the British government in India prior to independence and under various norms by the central government post-Independence have largely defined the size of Bihar's public expenditure. Rao (2009, p. 145) argues that in an economy with significant differences in institutions and resource endowments, the transfers are important for balanced and cohesive development; he goes on to add that the transfers may not be adequate for the purpose . We discuss the implications of these for Bihar's economy in this section.

Pre-Independence Concerns

Prior to Independence, governance goals were set by the British government in India and the patterns of public expenditure were largely geared to support it. Kumar (1982) and Rao and Singh (2005) (see Chapter 3) note that while the fiscal system was highly centralized till the 1870s, it evolved into a decentralized one following the Government of India Acts of 1919 and 1935. This change was possible due to a) the emerging conflict among provincial governors over financial powers, much like the debates associated with the awards of each Finance Commission today and b) the political opposition to British rule, which implied increasing financial devolution to the provinces. Tax revenue allocation accruing to a province was not based on any uniform norms; thus, in 1887, we find that Bombay received 60% of all its land revenue, a key revenue source, while Bengal (including Bihar) and Madras received only 32% and 29% respectively, and the relative poverty of Bihar and Orissa was apparent only after they were formed in 1912.

The Memorandum for the Indian Statutory Commission (1930) on the *Working of the Reforms in Bihar and Orissa* noted that the standard expenditure of Bihar and Orissa, worked out on the basis of actual expenditure prior to 1912, came to just Rs. 8 lakh per million of the population against Rs. 13 lakh per million of the population in Bengal. It must be noted that the expenditure on administration in Bengal itself was the lowest in British India, in contrast to the Bombay or Madras Presidencies; and within this hierarchy of low expenditure, Bihar was accorded the lowest priority. Similarly, as Ghosh (2007) notes, citing the original 1930 report, while there was one police officer for every 776 individuals in Bombay Presidency, in Bihar (and Orissa) there was one police officer for every 2,372 individuals.

This led to a relative deficit of institutional capacity for governance in Bihar, as compared to the other states of India, during the colonial period. Kumar (1982) argues that over time, these initial differences were reinforced and even magnified as precedent was followed in allocating revenue to states, leading to `rough inequality' that was far from any nominal notion of equality for states such as Bihar.

Table 8 succinctly presents the provincial distribution of public expenditure under key heads and shows the historic scarcity in public expenditures for Bihar in pre-Independence India. In 1876-77, when Bihar and Orissa were a part of the Bengal Presidency, the lowest expenditure on General Administration and Education was in Bengal. Expenditures in the Health domain are distributed differently, with the United Provinces and Assam seeing lower expenditure than Bihar, but these three are together the lowest in the Health domain in 1876-77. By 1927-28, Bihar and

Orissa had been separated from Bengal and clearly had access to the least financial support for developing public services in each domain. While this is unequivocal for both General Administration and Education, the pattern is different for Health, with a few other states' (United Provinces and Central Provinces) expenditures on Health almost as low as Bihar's.

Post-Independence Concerns: The Plan Period

Unfortunately for Bihar, even after Independence, the pattern of poor allocation of public resources continued; this raises serious questions about political processes that were then in operation. After 1947, the center-state relationship in India was codified under the Constitution of India.[16] In contrast to the systematic allocation of responsibilities to the center and states, the financing and assistance given by the central government over the first three plans were ad hoc and based on needs of on-going schemes, many of which were initiated by the central government itself (Planning Commission 1997). In fact, much of the distribution of resources continued in line with the same sharing norms that existed before Independence; the colonial past institutionalized inequality and uneven regional development, and the immediate post-Independence period only accentuated it further, much to the detriment of Bihar (Kumar 1982 and Ghosh 2007).

Essentially three distinct channels of transfers exist in India: the Finance Commission, a constitutional body, recommends the sharing of central tax receipts between states and grants for non-plan purposes; the Planning Commission directly gives funds to support developmental plans, all loans in this category having been discontinued since 2005-6 after the recommendations of the 12th Finance Commission, and finally, different Ministries with the central government devolve funds to their state counterparts to support centrally sponsored schemes as well as central projects. Both the Finance Commission and the Planning Commission transfers are formula based and allow for little discretion, while the Ministry specific transfers tend to be determined within the Ministry and thus, more discretionary. Rao (2009, p. 152) documents that while transfers have been increasing overtime, there has been a decline over time in the fraction of transfers through formula based channels such as the Finance Commission and the Planning Commission and an increase in the discretionary transfers . While this in itself is not problematic, the discretionary funding allows for the possibility of large disparities in interstate transfers across states. Rao and Singh (2005) and Rao (2009) discuss the differential role that each of these channels of interstate transfer plays in equalizing access to resources and in promoting development expenditures. They argue that while the Finance Commission transfers tend to have a strong equalizing effect, the transfers from discretionary sources as well as for state plan schemes do not help balance fiscal abilities across states.

How do these discretionary transfers work? Discretion favors political alignment. Kletzer and Singh (1997) provide an analytical framework for fiscal federalism, within which they examine the opportunistic behavior of state governments that has led to discretionary transfers increasing as a proportion of total revenue. Assuming uniform lobbying abilities across states, such an increase in discretionary transfers is in principle fair; however, this assumption was far from accurate, particularly when parties in power at the center varied from those in the state, as was the case during and after the 1990s. Rao and Singh (2005; Chapter 11) present a model of political influence of interstate transfers and they also summarize

[16] Details of this are available under the Central List, the State List and the Concurrent List in the 7th Schedule of the Constitution.

a set of papers, including their own work, that documents the negative effects of political influence on the balancing nature of interstate transfers. Guruswamy (2007) documents the nature of inequality in access to funds that such discretionary schemes have generated by comparing funds allocated under various Plans for Bihar with those for Punjab. Punjab's per capita income tends to be about five times greater than that of Bihar, and Guruswamy (2007) tries to explain this in terms of differential public investment in these two states. Using data reproduced in Table 13 below, he argues that Punjab systematically got more than the national average for public investment while Bihar received progressively less over various Plans than the national average. It is estimated that there is a total deficit of Rs. 77,161 crore over time in what Bihar should have received. This does not even factor in the sort of benefits that the state of Punjab would have got through subsidies for its overwhelming use of fertilizer and electricity for agriculture, benefits from the Bhakra Nangal dam, etc. These numbers are merely indicative and suggest that there has been gross oversight in providing resources to Bihar.[17] Arulapalam et al. (2009), using data for 1974–75 to 1996–97, estimate the size of this effect for a state that is politically aligned with the central government and also a swing state, was likely to receive 16% greater interstate transfers than states which are not aligned and are not swing states. Finally, Biswas et al. (2010) also contribute to this debate by constructing some interesting measures of political lobbying in attempting to identify the causal effect of political lobbying on central government assistance. While they control for a number of observable and unobservable sources of bias in a panel regression context, one of their key innovations is the construction of measures for both lobbying and central government assistance (which we reproduce in Table 14). It is interesting to note that while Bihar ranks 6th from the top in terms of engaging in lobbying activities, it ranks the lowest in terms of the central assistance index developed by these authors. In no other state is the disparity between effort and money disbursement so great, suggesting that there were rigidities in transfers that Bihar simply could not negotiate.

While this literature provides evidence to suggest that political lobbying plays an important role in determining interstate finances, it is also the case that cumulatively, across the three channels, the volume of interstate transfers for each poor state tends to be larger than richer states.[18] However, these transfers are too low to adjust for the differential ability of poorer states to raise revenues from their own sources[19]. With aggregate receipts being determined by both central transfers and revenues from each state's own sources, aggregate public expenditure under development heads and total expenditure in Bihar tends to be far lower than in the richer states. The magnitude of these differences is disturbingly large; per capita own

[17] Particularly pertinent in this connection, is the piece, "A Bend in the River", in N. K. Singh (2009) p.58 – 60 which documents how the permanent solution to the flooding from Kosi was sought as early as 1956; experts had suggested building of a high dam in Nepal with a barrage downstream; the suggestion was shelved in favor of a temporary solution of building a barrage in Nepal; during the same time the Bhakra-Nangal project was taken up for implementation. Although during this period Bihar was politically aligned it was not a swing state and thus, taken for granted.

[18] Rao and Mandal (2009) report that Bihar received Rs. 982 per capita in central transfers in 2002-3. That year, the average per capita central transfers for richer states was Rs. 816.

[19] In an important contribution, Bagchi and Chakraborty (2004) consider among other things, Actual Statutory Transfers during the 10th and 11th Finance Commission recommendations and report it as a percentage of the Normative Statutory Transfers (see their Table 6); the figures for Bihar are 48.7% during the 10th Finance Commission and 47.76 during the 11th. Normative Statutory transfers are defined to be central transfers *"which would help bridge both horizontal and vertical imbalances in the system to a reasonable extent"*. Clearly for the case of Bihar, bridging the gap even to reasonable extent has not been possible.

revenues for Bihar tend to between 1/7th and 1/10th of the average for high income states. This has led to large and systematic differences in per capita development expenditures that Bihar has been able to make; per capita total expenditures in Bihar are almost half the national average. Figure 21 presents a time series of the ratio of per capita development expenditure for Bihar and all India and at less than 50% of the national average the standards of public service and the ability to encourage economic activity must necessarily be far poorer. Professor Amaresh Bagchi submitted the following dissenting note on the Eleventh Finance Commission:

"… *in Bihar the per capita NPRE (excluding interests and pensions) for the year 2000-01 works out to be less than 60 percent of the average for the general category States. Similar is the case with a few other low income States. Even with the State's share in Central taxes recommended by the Commission, the per capita revenue capacity of Bihar remains well below the group average for the year 2000-01. Paradoxically, Bihar does not get any non-Plan revenue deficit grant although its revenue capacity, even after it is augmented by statutory transfers, that is to say its revenue availability in the non-plan account falls significantly below the national average*."[20]

Even more worryingly, Chakraborty (2011) shows that while the recommended targets for managing fiscal deficits and other targets for fiscal consolidation remain attainable for Bihar, they also imply a substantial contraction in developmental expenditure, as this remains one of the few places where cut-backs can be made. Such policy-induced cuts in development expenditure will restrict the growth potential for Bihar even further.

2.3. The Freight Equalization Policy

The Freight Equalization Policy (FEP) was set in place in 1948 and was finally withdrawn in 1991. Under this policy, basic raw material like steel and coal, abundantly available in Bihar (prior to bifurcation), was made available at a constant price across the entire country to encourage development country-wide (Rao 2009, page 149). This meant that these raw materials in Bihar and Punjab or Maharashtra cost the same and there was no reason for any industry to move into Bihar thereby completely eroding the cost advantages of Bihar and other mineral rich states such as Orissa. Thus, the cost disabilities of developed states in India were subsidized by mineral-rich but extremely poor states like Bihar.

The asymmetry was acute, since there were no reciprocal benefits in terms of either industrial or agricultural goods and services that Bihar might have needed but had no access to. There was no parallel industrial incentive given for capital to enter Bihar either. In the process, for a period slightly longer than four decades, the policy environment directly hurt industrialization and growth possibilities in Bihar and other mineral rich states and created the paradox of a mineral rich state also being among the poorest in incomes. This continued till 1991 when this policy was repealed.[21]

Once one accounts for the cumulative gains reaped elsewhere through forward and backward linkages with industrialization and manufacturing, the dynamic losses that Bihar experienced appear dramatically large, even though there are no

[20] Quoted from a Ministry of Finance, Government of Bihar document that was the basis of a state presentation made to the 13th Finance Commission.

[21] The repeal of the law has created additional losses for industries that are now no longer cost competitive in the absence of state subsidized raw materials. For anecdotal evidence on losses in Batala, Punjab, see a report by Dhaliwal (2010).

obvious estimates available for this. Even after the withdrawal of the FEP, the industrial agglomeration bias continued; no significant policy was introduced at the national level to reverse decades of discrimination against Bihar that denied it the right to build up its 'dynamic comparative advantage' during the era of licensing and controls. Thus, even in the post-liberalization era, the gap between Bihar's manufacturing capacity and that of other states continue to further widen, particularly, after the mineral rich south of Bihar bifurcated to form Jharkhand. Apart from the direct losses, this vicious cycle of 'low investment-low growth' within which Bihar had to function also limited its internal resource-raising capacity. As we saw in the earlier section, this systematic inability to raise own tax revenues has so severely affected Bihar that the current interstate transfer system is unable to address this.

2.4. 'Designed' Governance Failure

Glaeser and Shliefer (2005) argue that James Michael Curly, four-time mayor of Boston, deliberately used public re-distribution to favor his constituents and, at the same time, used incendiary rhetoric to encourage the rich to leave the city. This not only consolidated his support base, but also led to significant economic stagnation in the city of Boston. Thus, deliberately failing economically may well be the strategy of a leader who seeks to consolidate his political position. Bihar's experience, Mathew and Moore (2011) argue, is a similar case of 'state incapacity by design', where the ruling establishment under Lalu Prasad and the Rashtriya Janata Dal (RJD) deliberately limited government presence through reduced hiring and expenditures, in an attempt to ensure that upper castes did not benefit. Such a strategy also had value when looked at through the lens of electoral politics, as it enabled the crystallization of a number of poorer and historically oppressed groups into vote banks that would see Lalu Prasad as their champion. Mathew and Moore write, *"Such was the scale of poverty among this core electoral coalition that Yadav had limited prospects of maintaining its cohesion and allegiance through the normal processes of promising 'development' and using networks of political patronage to distribute material resources to supporters. More important, that strategy would have involved a high level of dependence on the government apparatus, that was dominated by people from a number of historically-dominant upper castes."*

Lalu Prasad apparently preferred to mobilize his supporters on the basis of continual confrontation with the historically oppressive elite. Thus, he kept public sector jobs vacant rather than appoint qualified people, who were often from the upper castes. Attempts to micro-manage the state apparatus from the Chief Minister's office were aimed at ensuring that state benefits did not accrue to the upper castes. He denuded the public service of staff and was then unable to use it to deliver 'development'. It is reported[22] that the Bihar government sacrificed large potential fiscal transfers from the Government of India designed for anti-poverty programs because it was unable to complete the relevant bureaucratic procedures. Thus, it would appear that Lalu Prasad knowingly undermined the capacity of the state apparatus. While the sheer size of the government and economy of Bihar dwarfs the city of Boston, the consequences of deliberately distorting government capacity had a

[22] See for example Mathew and More (2011) Section 3- they write: "Bihar has the country's lowest utilisation rate for centrally funded programs, and it is estimated that the state forfeited one-fifth of central plan assistance during 1997–2000… The state's Annual Plan expenditure was revised downwards in the course of every year between 1992/3 and 2004/5, sometimes radically… Between 1997 and 2006, of the 96 billion rupees allocated to Bihar by the Central government in Delhi, over 22 billion rupees could not be drawn and, of the money received, only 64 per cent could be spent".

not too dissimilar outcome in terms of political consolidation and economic degeneration.

3. What Changed?

The process of identifying determinants of growth has a rich literature with many competing variables – Hirschman, in his classic text from 1958, begins by noting that one discouraging result of economic development has been an ever-lengthening list of factors, conditions, obstacles and prerequisites for growth, etc. all broadly labelled determinants of growth. In Bihar's case these determinants can be broadly classified into those related to political changes, and key changes in governance and public service delivery by the state government. As a result of these changes a number of social and human indicators have changed in the period after 2005.

3.1 Politics: A tale of two leaders

Change in Bihar has not been ahistorical and a number of events in the late 1990s were responsible for not only ebbing political viability of the JD/RJD government in power, but also for the creation of Jharkhand and the exit of the RJD from power in the 2005 elections.

It would be convenient to begin with events in 1980: first, the Congress party was elected to government with only a slim majority in one of the most violent elections, its dismal tally of 1977 having been completely erased. Towards the end of that year however, B.P. Mandal a M.P. from Saharsa in North Bihar, chairing the Second Backward Classes Commission submitted its recommendation to the Prime Minister Indira Gandhi recommending 27% reservation in all government jobs and educational institutions for the Other Backward Classes (OBC's). The Prime Minister decided to let matters be and not act on these recommendations as they went against the traditional voter base of the Congress: the higher castes, the Dalits and the Muslims. Bihar continued with high caste Chief Ministers from Congress. Rajiv Gandhi who came to power subsequently followed suit and one high caste Chief Minister followed another in rapid succession. Much against the run of play, Lalu Prasad a champion of the OBC suddenly found himself becoming Chief Minister in March 1990. This was a stroke of luck for him and a historical error of judgement by the others.[23]

The story of what happened in Bihar is really the story of two friends and colleagues, Lalu Prasad and Nitish Kumar, how they began together only to ultimately break-up and go their separate ways. We present here a short synopsis.[24] Lalu Prasad Yadav and Nitish Kumar were young leaders of the Lok Dal with Lalu Prasad having won elections, already an MP while Nitish Kumar was losing elections. Nitish Kumar won his first seat in the Bihar Assembly in 1985. This was remarkable in itself since in that year Congress was winning everything on the strength of a sympathy factor, after the murder of Indira Gandhi in 1984. The Lok Dal was the largest party in opposition with the leader in the legislature party being Karpoori Thakur. The Yadavs were to rise to a position of pre-eminence with Lalu Prasad assuming the position of the Leader of the opposition. At the Centre, Rajiv Gandhi threw out V. P. Singh who

[23] See Sinha (2011), p. 143 about the manner in which Nitish Kumar, as an observer appointed by the Central Government of the time oversaw this process!
[24] For a detailed account, see Sinha (2011), Part 1.

was pursuing many corrupt acts far too closely for the leaders and friends of the leaders in Congress; this led V. P. Singh to mobilize various parties against the Congress and several parties including Lok Dal united to form Janta Dal. Under V. P. Singh's leadership, the Parliamentary elections of 1989 were won and V. P. Singh became Prime Minister. Nitish Kumar became an MP and was made the Minister of State in the Agriculture Ministry. The differences between Nitish Kumar and Lalu Prasad which had been brewing for some time became irreconcilable with V. P. Singh pushing the Second Backward Classes Commission recommendations for implementations. Nitish wanted the Bihar formulae[25] to be put in where the EBC (Extremely Backward Classess) were given a quota within the quota, as were the poor among upward classes, while the children of income tax paying OBCs were to be denied. Lalu Prasad wanted none of these since any one of these would be denying the full thrust of the recommendations for the OBC. Nitish Kumar first decided to go along despite his reservations but given Lalu Prasad's incendiary speeches, widening the gaps between OBC's and the upper castes and the EBC's, Nitish Kumar's dis-satisfaction grew. By January 1993, he felt he was ready to make a move; in a public meeting in the Gandhi Maidan (Lawn) in Patna, Nitish Kumar declared publicly that if the Bihar formulae proposed by Karpoori Thakur was not adhered to, 'we shall come out in the street and oppose it tooth and nail'[26], as open a declaration of war as one can get. Lalu Prasad put aside his plans to by-pass the Bihar formulae. For the first time it was felt that Lalu Prasad could be dislodged.

Nitish Kumar addressed a mammoth rally, once again in Gandhi Maidan in February 1994 and warned the powers in Delhi and Patna[27] that neglect of the Kurmis would lead to disastrous consequences. Nitish Kumar himself a *Kurmi*, did not relish the fact that he would be seen as a mere leader of the *Kurmis* and had kept himself aloof from *Kurmi* causes but at this stage, he felt he had to take on the leadership of the *Kurmi*s since that gave him a method of opposing Lalu Prasad. But there were hardly any among the Janta Dal leadership who would support Nitish Kumar and in April 1994 he left the party and together with George Fernandes and some other members formed Janta Dal (George). That Lalu Prasad's closest ally had left him did convey some message and with the desertion of some more people from the Janta Dal formed in 1994 October a new party named Samata Party at a public meeting, dissolving the Janta Dal (George). The Assembly elections of 1995 were around the corner and Samata wanted to make an impact. Nitish declared law and order as his topmost priority and resource mobilization as his second and advocated a strong developmental plank for Bihar. Their approaches were distinct; in Sinha's (2011, p.167) eloquent phrasing, " Nitish addressed the hungry stomach. Lalu conversed with the angry and fearful mind". Lalu Prasad won a very convincing victory in 1995. Samata lost heavily. The parliamentary elections at the Center were in 1996: in contention were the Congress Party on the one hand and in the opposition camp were two alliances: the National Democratic Alliance (NDA) made up of BJP, the Samata Party and some others led by Atal Behari Vajpayee and the United Front made up of the Janta Dal and the Left parties. Lalu Prasad's supreme position in the state of Bihar catapulted him to the post of president of the Janta Dal in 1996 and had the United front won, he may have even got the position of Prime Minister. The Congress Party had been diminished in stature, the belief that incumbents always have special problems having held good. Nitish Kumar won. So did the BJP which emerged as the single largest party but could not form the government and a minority coalition with Congress support from outside formed the government with Deve Gowda as Prime Minister. In the state of Bihar, the mismanagement began to be

[25] See Sinha (2011), p. 146 for details.
[26] See Sinha (2011), p. 162.
[27] Sinha (2011), p.164-65

talked about: Lalu Prasad's family members had apparently become extra-constitutional centers of power; kidnapping for ransom appeared to be common; finally the so-called *fodder scam* surfaced. Crores of rupees were discovered to be siphoned off from the state treasury as payment for fodder supplies to poor peasants – supplies which were never made. Income tax officials found large stocks of cash in the homes of several officials, in offices and there was even a report about cash found in airlines baggage[28]. Lalu Prasad had been sent these files for necessary action but he had not acted upon them. The fodder scam, together with the general atmosphere of lawlessness that prevailed in Bihar worried the Janta party leadership; it was clear that the investigation into the fodder scam was leading up to the door of the Chief Minister. In 1997 the Governor of Bihar granted the Central Bureau of Investigation (CBI), the prime investigation agency pursuing the trail of the fodder scam, permission to file a charge sheet against Lalu Prasad. He refused to quit and interpreted the move as one which was out to get him since he championed the causes of the backward classes. He organized a massive rally in his support in front of the Patna high court. Nitish Kumar and other state leaders of the NDA took out processions against Lalu Prasad. In June 1997, the Governor permitted the CBI permission to prosecute Lalu Prasad. In fact the then Prime Minister, Inder Gujral belonged to the alliance of which Lalu Prasad was an influential leader but no help had come.

Lalu Prasad was thus forced to consider resigning from the Chief Minister's post but to have a say in who would succeed him, he wanted to be the party president. Unable to seal this matter quickly, in July 1997 he organized a meeting of his supporters and announced the formation of a new party, the Rashtriya Janta Dal (RJD) and assumed leadership, made an alliance with the Congress and was intent on continuing to rule Bihar. He did not resign and kept filing appeals, one after another; these were rejected too and soon it was clear that he would not be able to avoid being arrested. In July 1997, he had his wife Rabri Devi, a simple housewife completely unprepared for ruling, nominated as Chief Minister. Lalu was sent to judicial custody but was released on bail in December. The mismanagement of Bihar continued unabated.

Nitish Kumar strived to get Samata and Janata Dal together since he realised that otherwise each of them would be eating into the other's vote share, as happened during the 1998 Parliamentary elections. Samata Party candidates were unable to win, although Nitish won himself. This was how JD(U) came into being: Janta Dal United with Samata Party. The BJP had won big and Vajpayee was the PM and Nitish became the Railway Minister in the NDA government at the Centre. Bihar under Rabri Devi was withering fast and the Polgreen quote in Chapter 1 was an apt description.

The grip of Lalu Prasad and the RJD government on Bihar was firm but there were evidences of some weakening. Lalu Prasad continued to rule from the wings and his wife blamed the officers, who were mainly high caste, for all the shortcomings. Meanwhile, Nitish Kumar grew in stature and his decision to befriend BJP proved to be a master stroke. The 1999 Parliamentary elections saw the BJP-JD(U) alliance register a big victory in the Bihar parliamentary seats; Nitish Kumar of course won but what was unprecedented, Lalu Prasad lost. It was clear that Nitish Kumar would become the Chief Ministerial candidate for the alliance in the state elections. Meanwhile at the Centre, the NDA began a clear stint of five years with Vajpayee at the helm. Nitish Kumar was first the cabinet minister in charge of surface transport and then later put in charge of agriculture. The gain in stature for Nitish

[28] See Sinha (2011), p. 158.

Kumar was phenomenal. Almost simultaneously, Lalu Prasad had started losing first face and then he lost everything but not before pulling off a master coup.

It all began with the masses leaving the RJD fold because the poor backward classes saw that while the people surrounding the RJD leader were people of their own kind, they were not really interested in improving the lot of the common. But the possibility of dislodging Lalu Prasad in the 2000 state elections, in-fighting amongst his rivals strengthened Lalu Prasad. The elections almost did him in but the wily politician managed to retain power with Rabri Devi as Chief Minister[29]. The surprising end was helped by Nitish Kumar pulling out Samata Party from the JD(U) formation while remaining within the NDA fold. The NDA won on its developmental stand; but this was not enough for a majority. RJD supported by the left parties was closer to a majority and the Congress decided to support them from outside. This Congress support cost the people of Bihar dear, since the Bihar Reorganization Bill, which saw the bifurcation of Bihar, was passed and the President assented to the creation of Jharkhand in August 2000. We have already seen what a tremendous cost this imposed on Bihar.

The creation of Jharkhand reduced BJP membership in the Bihar assembly; in the NDA fold, the larger group was the Samata Party and JD (U) combination. Nitish Kumar saw the writing on the wall and to avoid the mistake of the 2000 election, set about transforming Samata Party into the JD(U) and by the end of 2000, the reforming of JD (U) was completed with some detractors[30] having quit. Meanwhile Rabri Devi's government disintegrated and all decisions were left to Lalu Prasad to take. However like the proverbial cat with nine lives, RJD continued to hold on to power. The NDA which had seemed invincible at the Centre, lost in 2004 and the United Progressive Alliance with Congress and RJD and others won and Sonia Gandhi was slated to become Prime Minister; she refused and Manmohan Singh became the Prime Minister. In all this squabbling, Lalu Prasad stood by Sonia Gandhi and suddenly became an important leader with enough members in the Parliament; his claims that he should be home minister was not acceded to but he did become the Minister for Railways. Nitish Kumar had stood for election from two constituencies: Barh and Nalanda; he lost from the former. Thus, suddenly it appeared that Lalu Prasad was back with a bang. But in getting the Railways ministry he had denied Ram Vilas Paswan and who later took the decision to have nothing to do with Lalu Prasad.

Since the February 2005 Assembly elections brought a hung house with no party receiving a clear majority, the Assembly was placed in suspended animation by the Governor of Bihar. During the months of the President's rule, RJD lost power but NDA gained ground[31]; specially, the March for Justice, or Nyaya Jatra that Nitish led throughout Bihar stating that he had enough support from smaller parties which had been ignored when the President's Rule was imposed. It was during the march that Nitish Kumar began to plead that voters should rise above caste considerations and vote for a strong government, that a hung Assembly was good for no one and appealed to the Bihari identity. These pleas seemed to have had its effect in November 2005; the NDA won an absolute majority and Nitish Kumar became Chief Minister of Bihar. Lalu Prasad had lost: the unthinkable had happened. The NDA continued to go from strength to strength and won an even larger victory in 2010 and Nitish Kumar continued his rule defying the anti-incumbency nature of electoral politics that has been common over the past two decades.

[29] For details of this maneuvering and resultant intrigue, see Sinha (2011), Chapter 8.
[30] Chiefly, Ram Vilas Paswan who quit to form his own party.
[31] See Sinha (2011), Chapter 9 for details.

3.2 Public Service Delivery

A World Bank report dated 2005, presumably timed to be of important for the winner of the 2005 election, identified three important challenges for Bihar (Sundberg et al. 2005). These were poor growth, strengthening social service delivery, and strengthening public administration and governance. Social service delivery and public administration and governance jointly reflect the ability of the state government to provide high quality public services in the state. Not only was the ability to provide these services low due to understaffing in the preceding years, but together with non-performance and in many instances crime, there was gross negligence as well (Mathew and Moore 2011; Mukherjee 2010). In addition, there were little expectations from the government machinery for services from the citizens. A result of this was that on many indicators public services were abysmally low when the Nitish Kumar government took over in 2005.

Not only did the Nitish Kumar government have to contend with low levels of achievement when it took over, the public service delivery mechanism needed to create improvements was in disarray. In spite of seriously undermined ability to provide services the Nitish Kumar government created a number of important changes. We look at changes in managing public finance and reforming government expenditures to be enhancing the fiscal space for public service delivery, changes in law and order, and public investments in building infrastructure that took place post 2005. All of these changes provided an important enabling environment for economic activity and reform.

3.2.1. Fiscal Reform and restructuring of public expenditures

We begin with a discussion of fiscal reforms, since this determines the fiscal ability of the state to undertake reforms. Creatively using a state's budget is critical to ensuring that the government works to promote social and developmental goals. This has long been understood as a part of the National Plan process, and in principle, each state has its own State Planning Commission to ensure that the government spends and achieves its goals. One of the first things to note is that over much of the 2001-10 period, India as a nation has been growing rapidly at a rate of about 5.7% per annum; this accelerated further in the latter half of the decade. Rising national incomes have also meant larger tax revenues that can and have been redistributed in this time frame. In addition to the propitious rise in tax revenues, the Fiscal Responsibility and Budget Management (FRBM) Act was passed in 2003, and a number of other schemes were created, to retire expensive debt for states, etc., that held the potential for improving the fiscal space of a state. While the potential was created at the centre, it was left to individual states to take advantage of these opportunities.

Bihar took advantage of this opportunity and undertook many changes that have improved its fiscal space, by expanding it and also re-orienting it to promote development expenditures in the state in a way it had not before. Bihar approved its own FRBM Act in 2006 in response to the national FRBM Act and committed to containing the fiscal deficit to 3% of GSDP by 2008-09, a target that it achieved. It was also committed to a range of other goals, such as eliminating the revenue deficit altogether, in order to raise non-tax revenues while maintaining costs; retiring expensive debt; and increasing developmental expenditures to match the national average by 2015.

Between 2001 and 2004-05, Bihar's per capita public expenditure on developmental heads was between Rs. 943 and Rs. 1,138 in 1999-2000 prices. This amounted to between 30-40% of the national average per capita public expenditure. Figure 13 plots the ratio of Bihar to all-India per capita development expenditures and there is a distinct rise from the 30-40% range in 2001-2005 to the 40-50% range in the 2005-10 period. However, the fact of the matter remains that Bihar is still able to spend, at best, about half of what is being spent nationally on developmental heads; this not only leads to poor economic prospects today, it also has future effects in terms of lack of public infrastructure and investments in human capital. It is important to note, however, that whatever little gain Bihar was able to make in its per capita development expenditures relative to India, it met these goals within the ambit of its FRBM commitments so that it was able to convert its revenue deficit to a modest surplus and keep fiscal deficit well below the 3% of GSDP norm.

Apart from being able to expand fiscal expenditure due to increasing central government assistance[32], the government of Bihar has worked hard at reallocating expenditure away from non-developmental heads to developmental heads to further raise the amount of expenditure on development in the state. Figure 14 shows that till about 2004-05, about half of all expenditure was on developmental activities and the other half was on non-developmental activities. From 2005 onwards, there has been a deliberate attempt to re-direct expenditure toward developmental heads. Figure 14 shows that Bihar was able to ensure that development expenditure went up by cutting down on non-development expenditures. One of the key challenges on this account will be how the fiscal space changes once the transition from indirect taxation to Goods and Sales Tax (GST) is implemented. Preliminary estimates by Chakraborty (2011) show that 'higher than proposed' GST rates will have to be explored if Bihar is to maintain its revenue levels. A fall in revenue levels may lead to a decline in the development expenditures of the state government when it is already far below the national average. This will naturally significantly constrain growth.

3.2.2. Law and Order and Crime Statistics

Law and order, while easy enough to conceptualize, is also extremely difficult to measure, as the very extensive literature on this in political science, legal studies, economics and public administration shows (see Nardulli, Peyton and Bajjaleih 2011). Bihar had a particularly poor perceived record with respect to crime incidence throughout the 1990s and later. One unambiguous way to track law and order conditions in Bihar is to track crime statistics in Bihar. Crime incidence in Bihar was higher than for India in some key categories, such as murder, dacoity or kidnapping.

Figure 11 plots this ratio of crime rates in Bihar to crime rates in India for a number of key categories of crime. Crimes such as burglary and theft tend to be about half as frequent in Bihar as in the rest of the country; however, murders, kidnappings, dacoity and robbery happen more frequently in Bihar. Looking at this ratio for each crime type over time, we see that this rate increased till about 2004-05 and has systematically declined since then for all categories except burglary and crime - the ratio for burglary and crime is unchanged throughout this time frame, and these crime types are less frequent in Bihar than nationally. A decline in this ratio simply indicates that crimes that were more frequent in Bihar than in the rest of the country prior to 2004-05 now occur less often. However, absolute levels remained higher than the national rates; for example, even in 2008, dacoity in Bihar was twice as likely as in India, down from three times as likely in 2003.

[32] However, it may be recalled in the light of our earlier discussion on state finances in Section 2, these increases were never enough to make up for the state's fiscal disabilities.

Table 15 presents the changing rates of crime within Bihar across a much wider range of crime categories over the period from 2001 to 2010. Thefts are the only category of crime for which crimes per 1,00,000 people have actually gone up systematically in this time period. From Figure 11, we know that thefts and burglaries are well below the national average in Bihar, and this may indicate that with improving law and order within Bihar, crime may decline in categories such as kidnapping and dacoity and there may be a move towards more thefts and burglaries. For almost all other categories, there are very sharp declines over this time period. All high-profile crimes that were often reported in the media, such as kidnapping for ransom, dacoity (at home and on the road), bank robbery and murder, have much lower incidence rates in 2006-2010 as compared to the 2001-05 period.

In parallel with diminishing crime rates, there have been major changes in prosecutions under the Indian Penal Code (IPC) as well as under the Arms Acts. Table 16 presents counts of cases registered, counts of convictions made and the distribution of punishments given out for the 2006-09 period. Interestingly, over this time span, cases registered under the IPC have increased rapidly in number as there has been a sharp decline in cases involving fire arms and explosives that are typically covered under the Arms Act.

Much of this is attributed to changes made in managing law and order in Bihar after Nitesh Kumar came to office (Mukherjee 2010). One important act of the government was the creation of the State Auxiliary Police (SAP) force, staffed entirely by ex-army personnel who were trained in conducting warfare and were better prepared than the State Police to stand up to criminals and armed radicals. Beginning with a few thousand personnel, this force played a major role in controlling not only criminals but also the Leftist extremists. Although the SAP carried out most of these duties, the government did not neglect the police and allocated an increased amount of funds to them during the first term. Police administration and training had to be strengthened, and a number of proposed measures for this are in the process of being implemented, such as the establishment of the Bihar Police Academy over 2007-08, increased in-take into the police force, and deliberate monitoring from the Chief Minister's Office to ensure limited political interference in routine police activities.[33]

Further, Speedy Trial Courts have been set-up to effectively expedite convictions for hardened criminals across a range of cases (PTI 2007 and Balachand 2008). Speedy Trial Cases were finally passed into law under the Bihar Special Courts Bill for 2008. This Bill pertains to crimes in which there *"… is prima-facie evidence of the commission of an offence alleged to have been committed by a person, who has held or is holding public office and is or has been public servant within the meaning of section 2(c) of the Prevention of Corruption Act, 1988 in the State of Bihar, the State Government shall make a declaration to that effect in every case in which it is of the aforesaid opinion*."[34] A number of well- known criminals and criminals-turned-politicians have been successfully investigated and prosecuted under the Bihar Special Courts Bill. While this Act became law in 2009, much of the background for it was motivated by careful action from 2006 onwards. Speedy trials and the SAP together helped restore to some extent the image of the Government of Bihar. But more importantly, in the aftermath of the installation of the new government, police and the criminals were made aware that it would not be business as usual. Mukherjee's (2009) interview with Mr. Abhayanand, then Additional

[33] See Mukherjee (2010) for more on this.
[34] Quoted from the text of Bihar Special Courts Act of 2009; for further details see the text of the Bill available online at http://vigilance.bih.nic.in/docs/Bihar-Special-Court-Bill-2009-EN.pdf.

Director General of Police in Bihar, captures a number of ways in which the police service creatively responded to the poor law and order situation and prosecuted criminals across party lines. While there remain significant challenges to be faced in terms of crime, there was a noteworthy qualitative change in reputational and operational aspects of maintaining law and order.

The less visible but equally potent problem of graft and corruption has also been considered carefully in Bihar. A large number of high-profile entrapment cases since 2006 have exposed scams in public offices and have checked corruption. In 2006, a total of 66 persons were arrested on the basis of 60 entrapment cases; in 2007, this rose to 126 arrests from 108 cases and in 2008, there were another 99 cases. A steady increase in registration of anti-corruption cases is reported in the Economic Survey of 2010-11. A number of innovations in dealing with vigilance concerns have been tried out in Bihar. These include setting up additional special courts for entrapment cases, empowering District Magistrates to apprehend government employees taking bribes, and rapid prosecutions under disproportionate assets cases. Public officers and elected and non-elected bureaucrats are currently expected to list all assets on government websites to encourage transparency (Singh 2011). Apart from focusing on better policing, the state government has also put in place measures for improved jail administration. The earlier laxity of having criminals operate with mobile phones while jailed has been replaced with active placement of phone jammers in jails and better monitoring, as a part of national (not state) judicial reforms originally initiated by the Supreme Court of India in 2005. Occupancy rates have ranged between 125% to 523% of total capacity across various district and central jails in the state. The state government has been working towards improved conditions and rehabilitation programmes for the entire jail system in Bihar. Another major problem that the government of Bihar had to tackle was the problem of Maoism. In this particular case the government of Bihar took steps which seemed to be at variance with the steps being taken by the government of India. The speedy trials described above were used even in the case of Maoists insurgents; beginning with two dozen Maoist cases between 2006 and 2007, as many as 109 were convicted in speedy trials between 2007 and 2009 (PTI 2010). As an example of even-handedness, members of various landlord militias (some of whom even enjoyed the protection of members of the alliance forming the government) were also put on speedy trials. In the latter cases, those proved to have engaged in massacres were given death sentences. In the face of abductions and killing of policemen and villagers, the Government of Bihar experimented with a strategy called *Apki Sarkar Apke Dwar*, which translates as 'your government at your doorstep'; this was introduced at a public meeting in Sikaria, in Jehanabad district in January 2006, within two months of the new government taking office. The basic premise was to maximise all possible developmental activities: build roads, irrigation canals, houses, schools, health clinics, in other words, social security--anything which provided benefits to all eligible persons. While the experiment was not an unqualified success, it did bring growth into Sikaria, creating jobs for men and women. Arun Sinha, a Delhi journalist described the outcome, saying, *"Indeed Sikaria has become symbolic of the changes sweeping through what were once 'the killing fields of central Bihar'. The bloody clashes which left hundreds dead in Jehanabad, Gaya … now seem as a thing of the distant past"*(Sinha 2011, p. 269). The *Apki Sarkar Apke Dwar* programme was extended over the next four years to 65 other Left wing extremist affected *panchayat*s. An attempt was thus made to strike at the root of the problem. The promise of delivery of the fruits of development at grass roots level is still far from being realized, but for the first time, a strategy has been formulated and steps have been taken towards its fulfilment.

3.2.3. Floods

While floods do not typically constitute any part of the framework of determinants of growth, they are a regular feature in Bihar and hence do affect growth in the state. Bihar is one of the most flood-prone states in India, and the size of the shock induced by a flood has increased significantly since bifurcation, as all the flood-prone areas remain with Bihar. These floods are neither new nor unexpected and records going back to the era of British rule indicate a systematic pattern of flooding with regard to the multiple rivers criss-crossing Bihar. These rivers flood during the monsoon season and change course to wreak havoc, resulting in a significant loss of life and property and affecting the state's income. Most of Bihar's rivers joining the Ganga from the north are perennial, with their sources in glaciers in the Himalayas, often passing through Nepal; this makes flood management and control in Bihar an international matter. Rorabacher (2008) discusses the failure of coordination between Nepal and India in terms of controlling flood waters that emerge in Nepal and flood the plain in India. Of the rivers emerging from Nepal, the Kosi (the 'River of Sorrow') flows from Nepal into Bihar, after traversing the region to the west of the Kanchenjunga hills. Due to the vast amounts of silt that it brings, the river bed often rises to levels higher than that of the surrounding areas, causing widespread and unpredictable course deviations, so that areas not usually at risk of flood are suddenly inundated by the Kosi waters during periods of heavy rainfall[35]. In recognition of these concerns, the Kosi barrage has been in place since 1963 and has usually worked well, except in 2008 when the Kosi entered a channel it had abandoned over a century ago, i.e., before the barrage was in place. The essential challenge leading to the failure in coordination is in terms of coming up with a viable way to maintain the dam and keep it silt free in perpetuity, considering that the costs are in Nepal and the benefits in Bihar.

While the 2008 Kosi floods led to large scale devastation, even historically, Bihar has had to routinely deal with floods[36] (see Table 18). Almost every year, some part of Bihar gets flooded; this leads to major loss of life and property and needs systematic planning to implement ex-ante (usually maintenance of barrages, embankments, de-silting of river beds, etc.) and ex-post (usually relief and rehabilitation) risk mitigating activities. Additional complications are quite likely to emerge in the near future as climate change sets in, making it essential to develop flood control and management strategies to counter more frequent and possibly larger shocks in Bihar. Thus, Bihar experiences not only predictable and expected floods on an annual basis but also, every few years, large catastrophic floods. In flood-prone districts of Bihar, poverty, lack of human and physical investment and the incidence of floods are deeply interconnected. A standard regression analysis with controls for household covariates show that even after accounting for differences in socio-economic and district characteristics, flood prone districts tend to do poorly by 5-10% points on the head count ratio (Dasgupta 2007). While this analysis is not specific to Bihar, it is indicative of the effect of floods on poverty.

Policy formulation relevant to floods and its implementation are the mandate of the Disaster Management Department of the Government of Bihar. The literature on flood control and management in India is rich, with much ground already covered in trying to understand how best to deal with floods in Bihar (Ganga Flood Control Commission, GFCC, 2007). Flood-related uncertainty is covariate uncertainty, in that it affects everyone in the catchment areas, leading to problems in insurance design.

[35] See for instance N. K. Singh (2009), referred to earlier, for a very lucid examination of the relevant matters.
[36] See World Bank and Government of Bihar (2010) for details.

In addition, large relief operations have to be rolled out once floods start, given that there are regular floods and the population density is also relatively high.

While the ex-ante-ex-post differentiation is more popular in development economics literature, flood management literature classifies measures as taking (i) structural approaches and (ii) non-structural approaches. By and large, all measures with structural approaches are ex-ante and seek to build embankments, reservoirs, detention basins, systems for inter-basin transfer of water, means by which the village ground level is raised, etc. The non-structural approaches are a mixture of ex-ante and ex-post risk mitigating activities that broadly include flood plain zoning, watershed management, flood forecasting, disaster mitigation and preparedness, etc. Sinha (2008) argues that both are complementary and not exclusive; however, there are large differences in cost-benefit ratios. While structural defences are an indispensable tool in controlling flood damage, they also come with prohibitive costs and land use commitments that are restrictive, and in general, they do not provide complete protection from floods. Flood zoning and watershed management work more gradually and are long-run strategies with sustained advantages even though their implementation is much cheaper.

The appropriate mix of strategies to pursue is a keenly debated matter in Bihar. There are strong cases made for using structural approaches, such as building embankments to channelize surplus flood waters away from rivers when they are in flood.[37] On the other hand, with at least eight major breaches in the embankments, a number of scholars argue that prior to the construction of the *bunds*, rivers would gently sweep across the landscape, depositing silt (Sinha, 2008; Mishra, 2008). In fact, even as early as 1937, the then Chief Engineer of Bihar came to the conclusion that embankments were harmful and led to excessive flooding.[38] As the rivers were channelized, their velocity increased, allowing the waters to carry sand and gravel and rocks in addition to silt. The river gradients changed and sediment deposition upstream of the barrages increased rapidly. Initially, this excess sediment was deposited in the river channels, as defined by the levees. This led to a rise in the level of river bed vis-a-vis its banks. Instead of permanently protecting the surrounding area from floods, the embankments thus changed the morphology of the rivers, raising the straight-jacketed channels above the surrounding land. As a result, flood water no longer flows in one or a few clearly defined channels, but instead spreads out across 30-40 km, filling entire river basins, low-lying lands and ponds. Somanathan (2011) specifically studies the Kosi basin comparing gross value of output in villages that are regularly flooded and in control villages. The study categorized villages as those that were regularly flooded, those that were unexpectedly flooded whenever the embankment was breached and those that were control villages viz., they were neither regularly flooded nor were they unexpectedly flooded during the period of the study. It was found that the regularly flooded villages lying within embankments do no worse on all counts, while *"gross output is higher or at least no lower for them"* (Somanathan 2011). Thus, learning to live with floods by building suitable infrastructure may in fact be the way ahead.

Even outside of explicit efforts to control water flow, augmentation of traditional rehabilitation strategies is necessary. It is possible to take advantage of technology to provide a better information base for rehabilitation and improved flood management. A large number of lessons emerge from experiences in Bangladesh and Pakistan, both of which have large flood-prone areas. For example, there is a

[37] See, for instance, World Bank (1990), Appu (1973); the latter thought that embankments would provide protection besides allowing extra crop to be grown.
[38] Quoted in Mishra (2008a). See also Somanathan (2011).

discussion of a 'no village left behind' policy for floods in Pakistan that seeks to combine GIS maps, public supply information, potential response resources (availability of safe structures), etc., that may be collected using real-time satellite imagery in order to reach people faster and formulate rehabilitation strategies that are better aligned with on-the-ground realities; an excellent implementation of some of these ideas is the FloodMAPS project.[39]

3.2.4. Infrastructure Index for Bihar

Access to infrastructure within Bihar differs vastly from place to place, and many districts are easily identifiable as being much worse than the others. To capture diversity in infrastructure in Bihar at the district level, we collected data on 34 different variables using data from the Economic Surveys and the District Level Health Survey from 2007-08. We capture data on different infrastructural dimensions, such as water supply (piped water, toilets and drainage), health infrastructure (access to the Integrated Child Development Services programme, sub-centres, primary health centres and district hospitals), education infrastructure (primary schools, middle schools, higher secondary schools and higher education), transport facilities (all-weather roads to health facilities, all-weather roads in general, national, state and district highways, distances to railway stations, bus stations, etc.), communication (post, computer kiosks, community TVs, STD booths, etc.), energy (percentage of villages electrified), and banking facilities (access to agricultural banks, percentage of households with a member in a self-help group, per person Kisan Credit Cards distributed). Thus, we have a fairly rich base to use when looking at district level infrastructure.

Using a principal component analysis, and subsequent rotation of the factor loadings, we find that three key factors collectively explain over 50% of the variation within the data matrix. The first principle component loads heavily on a range of variables measuring village level infrastructure, for example, availability of sub-centres in the village, and access to a post office, STD booth, bank, private clinic, pharmacy and computer kiosk. District rankings vary widely on each of these orthogonal dimensions, indicating that there are few districts that perform uniformly well on all dimensions of infrastructure. For ease of discussion, we plot the district ranking on the basis of the first principle component, which explains 25% of the total variation in our data in Figure 16.[40]

Analysis such as that in Figure 16 captures the qualitative difference with regard to within-village infrastructure when comparing districts like Patna and Samastipur with others like Araria and Banka. One of the Bihar government's agenda-setting attempts in the infrastructure sector has been to ensure that the road networks are strong enough to enable people to reach Patna in a matter of six hours from anywhere else in Bihar. Similar standards need to be set for a range of other infrastructural variables, such as communication, energy availability, and access to credit and markets. There are vast differences even today across districts on these fronts, which need attention going forward to enable greater and more egalitarian participation in the growth process unfolding in Bihar.

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[39] See http://floodmaps.lums.edu.pk/

[40] We do not mean for this analysis to be anything more than indicative, since a richer and more balanced set of district level variables should be used. Ideally, we would have liked to be able to use additional details on power, road infrastructure, mobile penetration, access to agricultural *mandis*, etc.. In so far as the variables we use are correlated with these unavailable variables, we capture infrastructure at the district level; however, a better analysis is possible with richer data.

3.2.5. Roads and Bridges

One dimension on which Bihar does well is expansion of roads and bridges. Today, Bihar has on average 90.1 km of roads per one lakh persons, which is relatively low compared to the national average of 256.7 km per one lakh persons. This, of course, is not an indicator of the ideal length; in fact, if we look at spatial spread instead of density, Bihar has 50.8 km of roads for every 100 sq km of area, while the equivalent number for India is 75 km of roads for every 100 sq km. On the other hand, even today, about half of all villages in Bihar do not have access to all-weather roads and are cut off during the rainy season. Thus, there are serious and obvious challenges that the road network in Bihar must meet for better connectivity, in terms of both reach and quality. A much higher volume of investment is needed, and the challenge is not only harnessing this investment, but also identifying areas and zones that need to be specifically developed on a priority basis.

The Bihar government has initiated a number of projects under its own schemes, such as the Mukhya Mantri Gram Sadak Yojana (translated as Chief Minister's Rural Roads Programme), under which some of these issues are tackled. From 2007 to 2010 there has been an increase of almost 25% in the total length of roads making up the state highway network, from 3021 km to 3787 km. Most of these gains have been distributed in remote districts such as Nalanda, Madhubani or Saupal, rather than the more centralized area of Patna, which was endowed with a road infrastructure base. There has been limited expansion in the road network with respect to major district roads, the total length of which only increased by about 1.7% over the same period, suggesting that last mile connectivity is still a major issue in Bihar and will need to be targeted to ensure complete road connectivity in the state. Of the various types of roads, the ones nearest to villages are 'link roads' that join remote habitations to either national, state or major district highways; almost 73% of such link roads were unpaved in 2010. Thus, while expansion has taken place, this expansion is incomplete and continues to exclude the majority of villages. Much of this has been possible due to a rapid increase in plan outlay on road construction that went up from Rs. 236 crore in 2005-06 to Rs. 3,045 crore in 2009-10. This reflects the conscious efforts of the government to re-allocate expenditure in order to support social sector expenditures.

In terms of building bridges, Bihar's achievement has been very impressive; over the 2006-2009 period, the Bihar Rajya Pul Nirman Nigam (or the Bihar State Bridge Construction Corporation Limited) constructed a larger number of bridges than all those constructed in Bihar from 1975 to 2005. A total of 518 bridges have been completed over the period starting from 2006-07 up until the end of December 2010. Great support from the state leadership has made this possible, with the Chief Minister announcing additional funding for the Corporation and personal rewards for engineers who render exemplary service. Interestingly, the Corporation has now become a source of revenue for the government and is expected to have generated a profit of Rs. 9,150 lakh in 2009-10, up from Rs. 596 lakh in 2005-06.

A related matter, the phenomenal increase in the number of registered vehicles in Bihar is noteworthy. Over the period from 2005-06 to 2009-10, the total number of registered vehicles has increased from 80,000 to 3.19 lakh – i.e., a four-fold increase. This increase has often been attributed to the improved law and order situation but surely with better connectivity, vehicular traffic must have increased as well. This increase in vehicle ownership encompasses the spectrum of vehicle categories, from commercial vehicles such as trucks and buses to personal vehicles such as cars, scooters, bikes, etc. The receipts from taxes on registration have gone up as well, from Rs. 133 crore in 2001-02 to Rs. 372 crore in 2009-10. Thus,

expenditure on roads and bridges has improved the state government's ability to increase its own tax collection in a number of ways, suggesting that these sorts of infrastructure investments have released substantial amounts of pent-up demand in Bihar.

As we have seen earlier, construction of roads and bridges was a high priority for the Nitish Kumar administration's first term, beginning 2005. The project focused on providing roads connecting rural areas with cities and state capitals received a major boost from the Central Government in 2000 under the Pradhan Mantri Gram Sadak Yojana (PMGSY) scheme (the Prime Minister's Rural Roads Programme); under this scheme, Bihar was to be allocated Rs. 150 crore per annum by the central government so that all human settlements with a population of 1,000 or more would be connected by 2003, and smaller settlements with populations between 500 and 999 would be connected by 2007. The Bihar government of the early part of the decade identified over 25,000 unconnected settlements. The scheme's implementation was very slow, with it having connected only 6% of the settlements with a population of over 1,000 and less than 2% of those with populations between 500 and 999; therefore, the central government significantly reduced its allocation during the 1990s due to poor performance. Thereafter, several central agencies were entrusted with the task of road building in Bihar. But these agencies also failed to make any substantial headway, having completed only 27% of the task by August 2004, four years after taking on the responsibility. After 2005, the new administration realized that it was not within its powers to make the central agencies work faster and brought the task of building roads back within the jurisdiction of the state. However, the success of the Nitish Kumar government in its first term (2005-10) in building roads was mainly with regard to state and national highways rather than rural roads. There were two state agencies involved--the Rural Works Department (RWD) and the Road Construction Department (RCD); the splendid performance of the RCD hid the abysmal performance of the RWD. There were real problems too that impeded improvement of road connectivity; the land acquisition process, which was essential whenever road building or road widening was considered, had to be made to operate more smoothly. A new land acquisition policy was introduced, which considered the market rate to some extent, to make the process of such acquisition appear more reasonable than it had before. Government expenditure on roads rose from Rs. 133 crore in 2004-05 to almost Rs. 2,500 crore in 2008-09; and against 384 km of roads constructed in 2004-05, 3,474 km were built in 2009-10 (Aiyar 2010).

3.2.6. Power

One of the consequences of the bifurcation of the erstwhile Bihar into today's Bihar and Jharkhand, is that while 70% of the power generating capacity went to Jharkhand, about 70% of the demand comes from Bihar. For the last ten years, Bihar has been operating with only two old thermal plants with diminished production capacity; the state needs to purchase 90% of the power to meet its requirements from central utilities. Currently, the per capita power consumption in the state is 100 units, far from the national average of 717 units. Peak demand in 2009-10 was 2,500 MW, while the availability was 1,508 MW, indicating a deficit of 39.7%. The Economic Survey estimates that the deficit in 2010-11 will be around 44.5%, and it will increase to 66% in 2012. This deficit was as little as 4.6% in 2002-03, suggesting that demand for electricity has grown over time. Over the 2006-09 period, there has been a cumulative growth in demand of 10%; it is anticipated that demand will continue to grow, even if only until the state catches up with national trends.

Quite clearly, electricity consumption is a critical constraint with regard to economic growth. Secure, easily accessible and cheap electricity is an important

catalyst for industrialization. Even for a services-dominated economy such as Bihar, electricity is crucial to initiating and sustaining activities that may not be possible without it, for example, being able to securely run back-end offices that work 24 x 7. One critical problem that is relatively easy to target is the inordinately high transmission and distribution (T&D) losses. In Bihar, this loss has been in the 37.4% to 44.7% range over the 2005-2009 period, whereas the national T&D figures are in the range of 25% and international ones are in the 6-9% range (Economic Census, various rounds). Apart from T&D losses, there are also serious concerns with regard to cost recovery for the Bihar State Electricity Board, with a deficit as great as 47% in 2010-11. Not only are there cost recovery issues but tariffs have also not kept pace with costs, so that costs have far outstripped revenue collection. While longer-term expansion of local supply is inevitable, and plans for this are being implemented with investment in restoring existing plants and developing new ones, stringent management of the power sector may allow for short-run efficiency gains that are sorely needed.

3.3 Changes in Social and Human Indicators

3.3.1. Education

One of the key measures of human capital in the economy is the literacy rate. India's decennial census shows that Bihar's literacy rate increased from 48% in 2001 to 63.8% by 2011; the gap between this and the national average reduced from 17 percentage points in 2001 to 10.2 percentage points in the last decade. Apart from literacy rates, the other variable keenly tracked with regard to education is the enrolment ratio. Bihar made key gains with regard to enrolment ratio between 2006 and 2011; from having 14.5% of all school-age going children out of school in 2006, Bihar was able to achieve an out-of school rate of 4.4% by 2011. This decline has been far more dramatic than the decline seen in rural India, which saw a decline from 8.75% in 2006 to 5.15% by 2011; see various Annual Survey of Education Report (ASER) Center reports (ASER Center 2007; ASER Center 2012).

This is a very substantial achievement in such a short period of time. Quite interestingly, if one looks at the access to schooling, Bihar has been able to reduce the number of out-of-school children by having a larger and larger fraction of the school-going children attending government schools; over the 2006-11 period, the proportion going to private schools has declined from 13.4% to 5.4%, indicating a large movement of students from private schools to the public school system. This move towards government schools is very interesting and is contrary to the national trend, where we see a sharp increase in the proportion of school-going children attending private school – from 19.6% to 25.2%. Figure 12 captures the asymmetric ways in which Bihar has been expanding its enrolment through the public sector, while on average the nation has been expanding its enrolment through the private sector in the last 5-6 years.

Thus, Bihar has come a long way towards meeting the target of universal enrolment. In 2004, in an average district in Bihar, the allocation of funds for activities under *Sarva Shiksha Abhiyan* (SSA), the government programme for universalizing elementary education, was around Rs. 10 crore. By 2008, this figure had risen to Rs. 100 crore. According to the Economic Survey of Bihar, in 2007-08, 67% of the state government's social sector expenditure was on elementary education. The survey also highlights Bihar's expenditure of almost 20-25% of its total state budget on education--possibly the reason enrolment ratios in government schools in Bihar have been rising rather than enrolments in private schools, as is more commonly seen.

While literacy rates in Bihar have been increasing faster than the national average in the last decade, Bihar still remains the state with the lowest literacy rates across all states in India. Equally importantly, what does being literate really mean in the context of human capital? Enrolment, after all, is an intermediate school outcome, and more appropriate measures of learning are needed to capture what students learn in school during the time that they spend there. In terms of learning, perhaps ASER data is the only nationally representative data for India that includes measures for reading and arithmetic learning; here, Bihar's comparative achievements are simultaneously surprising and worrying.

Figure 13 captures reading outcomes; these show a rather complex picture. Bihar has had a larger proportion of people who are unable to read anything ('nothing' in Figure 13) than the national average. Surprisingly, in spite of the increase in enrolment, there appears to be a modest increase in the proportion of people unable to read anything in both India and Bihar; however, this is also accompanied by increases in the proportion of school-age children who are able to recognize letters. Trends with regard to the proportion of school-age children who are able to read words, paragraphs (consistent with Class I level of reading ability) and stories (consistent with Class II level of reading ability) are much more mixed, and there appear to have been no qualitative gains in the last few years. In fact, the trend for stories suggests a very modest decline for the national levels and a sharper one for Bihar.

Outcomes on arithmetic are captured in Figure 14. As with reading abilities, the proportion of school-going children who have no arithmetic abilities ('nothing') is higher than the national average, and there is a modestly increasing trend at both the national level and for Bihar, with Bihar's number always higher. However, unlike reading abilities, other indicators show key gains in the last few years; thus, there is a modest increase in number recognition ('numeric1', i.e., numbers from 1-9 and 'numeric11', i.e., numbers from 11-99) and the proportion of school-age children who can do subtractions. Quite interestingly, a larger proportion than the national average of school-age children in Bihar can handle division problems, suggesting that numeric abilities are better in Bihar, provided students start learning.

Thus, in spite of increased enrolments, learning within school remains a serious challenge; this is true for not just Bihar, but also India at large. Apart from some skills in mathematics, Bihar's learning levels are systematically lower than the national average, raising a number of additional concerns about how soon Bihar's economy will be able to participate in productive and high-skill jobs, both of which are critical for long-term economic growth. Given the high level of structural dependence on the services economy, it also implies that the usually observed relationship between economic growth and growing dependence on the services sector may not work out for Bihar unless there is a rapid and overt drive to improve skills for the job market.

While political will and improvements in educational inputs are evident, data from ASER 2006-11 shows that there is been no systematic increase in school attendance in Bihar, even though enrolment ratios are high; Banerji (2011) reports that Bihar has perhaps one of the lowest attendance to enrolment ratios across states in India. Clearly, delivery of education will be incomplete with low attendance rates, and studies based on five districts in Bihar (Banerji et al. (2008) suggest that only 65% of those enrolled actually attend school. In addition, primary school organization still tends to be around multi-grade classrooms, with almost half of the students in the SchoolTells study in multi-grade classrooms. This implies that teaching dynamics vary, and with some evidence to suggest that the composition of multi-grade

classrooms is unstable (in some years, Class I may sit with Class II and in others, with Class III) teaching and learning become very challenging. Lack of organization is also acute, with few schools making and following time-tables, which will perhaps become more meaningful only with reduced teacher absenteeism. Clear evidence of the lack of teacher training and teaching skills is observed in any study that monitors the ability of teachers to teach and explain concepts to primary school students.

Chanda's (2011) work shows that low levels of education have had strong negative implications for economic growth, particularly in Bihar. In addition to this, the literature on the quality and quantity trade-off tells us that as people are able to invest in education for their children there is a plausibly causal decline in the demand for more children and a consequent decline in fertility ratio. Chanda's (2011) work shows that quite apart from literacy, declining fertility ratios are also important to growth. Thus, Bihar will need more schools and colleges than most other states, given its age profile.

Interestingly, the government had identified a number of policy responses to counter the dismal state of education in 2005. Some of these are: empowering village education committees to enable active monitoring of schools, increasing the recruitment of primary school teachers, expanding the Mid-Day Meal scheme's reach, and developing the Bihar Education Project as a nodal organization for roll-out of a number of education schemes, such as the SSA. In addition, there have been significant efforts to support professional education, including a Bihar Universities Amendment Act to support the mandate of the existing Bihar State Universities Act. The state government has also worked hard at evolving clear and easy to monitor targets for schools. For example, having a teacher-pupil ratio of 1:40 in government schools, improved school infrastructure, reorganized Mid-Day Meal schemes. A range of reforms with regard to syllabi, examinations and teacher training institutions have also been discussed. If implemented, these measures will go a long way towards reducing key structural problems by advancing enrolment, converting the enrolment into high attendance, and reducing the dependence on multi-grade classrooms. Improved teacher-pupil ratios and exposure through training institutes can in principle be used to improve school organization and the creation of course plans and time-tables to follow. However, implementation and follow-up within the education sector need to be effective, and this will be one of the many responsibilities for the state government to deal with. Apart from the concerns of setting up a fully functional school, there are also concerns about how this education will lead to any employment and what the nature of such employment should be. We discuss this in greater detail in Section 4.4.

3.3.2. Implications of Demographic Trends for Human Capital

The most obvious way in which demographic trends are known to affect the economy is through demographic transition - population birth rate and death rates adjust differentially to growing prosperity. Death rates fall immediately as medicines, hygiene and sanitation become available to the entire population. Birth rates, however, tend to fall much more slowly since they are based on behavioural variables. Figure 4 plots the decadal population growth rates for India and Bihar. India's population growth rate peaked in the 1961-71 period, when it expanded by 24.8%, followed by 1971-81, when it expanded by another 24.7%. Since then, population growth in India has declined in each decade, so that in the last decade 2001-11, the population expanded by 17.6%. Bihar's population had more or less been systematically accelerating in terms of growth till the 1991-2001 period, when it expanded by 28.4%. In the last decade, Bihar's population expanded by 25.07% -- the first slowdown in growth. Population in Bihar still continues to expand faster than

that in the entire country ever did, and even in the last decade, it grew about 7% faster than the rest of the country. This has rather important implications for the age pyramid for Bihar, the age profile of the workforce, and the profile of health system reforms that will be needed to support it.

Population growth in Bihar is expected to remain high in the next decade as a key determinant of the population growth rate is the total fertility rate. The total fertility rate consistent with a population that is no longer expanding is 2.1 children per woman. Data from the National Family Health Surveys (NFHS) shows that while the total fertility rate for women in India went down from 2.68 children per woman in 1998-99 to 2.50 children per woman in 2005-06, for Bihar it went up from 3.7 to 4.0 children per woman. Among other states, Kerala and Tamil Nadu have a total fertility rate of 1.7 children per woman, while the populations for Andhra Pradesh, Delhi, Himachal Pradesh, Maharashtra, Punjab, West Bengal (all with 1.9 children per woman) and Karnataka (2.0 children per woman) are in fact contracting. The fertility rate is still at 3.9 children per woman in Bihar and population projections suggest that Bihar will attain the replacement rate only by 2027 – one of the slowest states to achieve it.

Interestingly, there is a strong and negative relationship between education and fertility rates. The NHFS-3 data shows that the fertility rate for women without education is about 4.6, while for those with 5-9 years of education, it is 3.2 children per woman; finally, for those with 10 or more years of education, it is 2.4 children per woman. Considerable evidence in favour of this inverse relationship is found in the demography literature from the late 1970s, and this only re-emphasizes the role of education for Bihar. Thus, there are important cross-complementarities between demographic structure and education.

One of the implications of Bihar's population growth rate and fertility rate is that Bihar's workforce is and will remain one of the younger workforces in the future. Projections of India's demographic dividend suggest that the working age ratio, i.e., the ratio of people working to those not working, began to increase in 2001 and will continue to do so until 2025-40 (Aiyar and Mody 2011). Bihar's working age-ratio will continue to increase well past India's, as it will only hit the replacement rate in 2027. This gives Bihar a delayed demographic dividend and a window of opportunity to try to ensure that its workforce has the highest possible productivity when the demographic dividend unfolds. This has important implications for creating systems for savings, pensions, and planning for a future when a larger and larger proportion of the population is elderly and retired.

3.3.3. Health

Becker (2007) argues that health plays a key role in shaping human capital through investments made by individuals, hospitals and the government to shape individual and population health, through people's valuation of life itself (as embodied in the statistical value of life), and through cross-complementarities with education. In a developing economy context, health is first measured through child and maternal health statistics. On child health statistics Bihar does well. Infant mortality in Bihar has been steadily decreasing; this is confirmed by both NFHS data and the Sample Registration Survey (SRS) data. SRS data estimates suggest a steady decline in infant mortality from 117.8 deaths per 1,000 live births in 1981 to 69 in 1991, 62 in 2001 and 52 in 2008. NFHS data on infant mortality are a little different but support the idea of decline with an estimate of 78 deaths per 1,000 live births in 1998-99 and 62 deaths per 1,000 live births in 2005-06. The rural-urban gradient in infant mortality is relatively small, and in general, follows the national trends. The all-India average is about 57 deaths per 1,000 live births with estimates ranging from 15 deaths per

1,000 live births (in Kerala) to 73 deaths per 1,000 live births (in Uttar Pradesh) according to NFHS-3. Full immunization against the 6 key vaccine preventable diseases in Bihar has increased modestly from 22.4% in 1998-99 to 23% in 2002-04; however, within Bihar, there are some districts that have been able to expand coverage wonderfully – some like Patna and Rohtas were able to double or even more than double full immunization coverage.

NFHS-3 data reveal that of women who gave birth in the five years preceding the survey, only 34% received antenatal care from a health professional (29% from a doctor and 5% from other health personnel) for their last childbirth . The majority of women (66%) received no antenatal care. Further, only 17% received three or more antenatal care visits and only 19% received care within the first trimester of pregnancy, as recommended. Half of urban women received antenatal care from a health professional for their last childbirth, compared with 32% of rural women. The percentage of women receiving antenatal care in Bihar is less than half the national average (74%) and is also the lowest of any state in India. These numbers are virtually unchanged over the NFHS-2 and -3 survey periods. A similar lack of care for women emerges in terms of access to iron and folic supplements and a range of other health inputs to maternal care, all of which are limited. Thus, maternal healthcare has not seen as significant strides as child healthcare.

Stepping back from just child and maternal care and looking at the entire disease burden, one can classify the economy according to the ratio of communicable to non-communicable diseases. All economies began with a high incidence of communicable diseases and, with greater maturity of health systems and an increase in prosperity, have transitioned to states in which a larger proportion of the diseases are non-communicable diseases. The Ministry of Health and Family Welfare's 2010 reports state that deaths due to communicable diseases and maternal, peri-natal and nutritional disorders account for 38% of all deaths, while non-communicable diseases account for 42% of all deaths in India. The remaining 20% of the disease burden is shared equally between injuries and other ill-defined causes. Official estimates for Bihar's burden of diseases were not available to us; however, the expectation is that Bihar would have a higher than average prevalence of communicable diseases than the national average. Lymphatic filariasis is endemic in Bihar. Japanese encephalitis, leprosy and HIV/AIDs are also reported in Bihar and while their prevalence is not dangerously high, all of them are close enough to alert levels to cause concern.

The prevalence of non-communicable diseases has been increasing in Bihar. NFHS-3 data records that there are 1,024 diabetes cases per 100,000 women in Bihar, while the national average is 881 cases per 100,000 women. The prevalence of blindness in Bihar is one and a half times the national average at 0.78%. Surprisingly, women in Bihar report a much higher prevalence of asthma, at 1,696 per 1,00,000, than either men in Bihar (981) or the national average (1,627). A range of other non-communicable diseases such as goitre, cardiovascular diseases, cancer, etc. are diseases to which the health system must be prepared to respond.

The health system itself is in dire need of re-invigoration. Ali et al. (2007) report incomplete infrastructure and poorly staffed health facilities at both the preventive levels of the public health system, such as the sub-centres and primary health centres, and at the curative levels, such as the district hospitals. Issues of financial and geographical access abound, and out-of-pocket payments to private providers, for those who can afford them, are the norm. The state government has attempted to respond to these challenges. For example, a new nursing programme

has been started in the premier Indira Gandhi Institute of Medical Sciences, Patna, and a range of other initiatives are on to control communicable disease. One area of success has been with regard to efforts aimed at reducing the incidence of new polio cases. However, access to quality healthcare remains a challenge that will need to be addressed to improve state-wide health.

3.3.4. Migration and Remittances

For households in Bihar, migration has long been a strategy to seek better livelihoods outside the state and to support family members left behind. Systematic and large-scale migration from Bihari households has been documented from as far back as the 19th century.[41] While much of the pre-Independence migration from Bihar was international and frequently permanent in nature, post-Independence migration from Bihar has been overwhelmingly seasonal and within India. Before discussing the causes and patterns of migration, it is important to note that migration has played an important role in shaping Bihar's economy.

NSSO estimates that the Net Migration Rate for Bihar, adjusting for in-migrations, was 56 per 1,000 persons in 2007. Among the large states, this is the highest volume of out-migration, immediately followed by Kerala that has an out-migration of 44 per 1,000 persons. In terms of absolute numbers, the 42 crore net migrants from Bihar are second only to the 52 crore from Uttar Pradesh, and Kerala is a distant third with 13 crore migrants. With almost one out of every five out-migrants coming from Bihar, independent of whether they migrate within or outside India, migrants from Bihar form a very large part of the total pool of migrants. The NSSO estimates that almost 584 of every 1,000 Bihari out-migrants is economically active and that 524 of every 1,000 Bihari out-migrants remit income back to their families, indicating strong ties with Bihar; again, this number is the highest among all states in India.[42] On average, Bihari out-migrants remit income five times in a year and the average size of their remittance is Rs. 13,500; the size of average remittances is below the average for the country, which is Rs 19,600. Thus, on average, households that received remittances got an additional Rs. 4,500 per month, not an inconsequential figure considering that the monthly per capita consumption expenditure was Rs. 695 in rural areas and Rs. 1,312 in urban areas in 2007.[43] Thus, for those households that have out-migrants in the family, remittances are an importance source of economic support. The Indian Institute of Planning and Administration (IIPA) study (2010) estimates that remittances may account for as much as 5% of Bihar's Net Domestic Product and this often accrues to poor and marginalized families in extremely backward castes.

Two key studies that have looked at the migration issue in greater depth are the work of Deshigakar et al. (2006) and an IIPA (2010) study led by Girish Kumar and Pranab Banerji. They both conduct independent and original surveys in key districts where migration is a common phenomenon. Migration is almost universal in Bihar and excludes only the poorest of the poor or the very rich, even after accounting for migration for education or due to marriage. While much of the post-

[41] Migration from India over the period 1764-1920 took place in large volumes to places such as Natal (South Africa), Mauritius, Fiji, Trinidad-Tobago, Guyana, etc. Tables on migration of labour from different sources inside India to destination abroad are documented on http://www.aapravasighat.org/indenture.htm. Amitava Ghosh acknowledges a large amount of original source material on migration from Bengal and Bihar in his 2008 book *Sea of Poppies*.

[42] In Uttar Pradesh only 246 of every 1,000 out-migrants remit money while 261 of every 1,000 out-migrants from Kerala remit money. Jharkhand is closest at 486 per 1,000 out-migrants.

[43] This back of the envelope calculation is quite close to the Rs. 4,500 that the IIPA (2010) study observed in the field.

Independence migration originally tried to serve the wage labour needs of states that had implemented the Green Revolution technologies (e.g., Punjab and Haryana), this has changed over the last decade-and-a-half, towards greater participation in the urban informal sector.[44] Even members of educated and wealthy households began migrating as local economic prospects remained stagnant through the 1990s. Migration increased substantially in the early part of the last decade, as the Indian economy experienced growth while there was little change in employment prospects in the pre-2005 Bihar economy (Deshigakar et al. 2006).

Migration choices are largely defined by caste, clan and social network ties, usually with links between the places from which migration took place and the place of work. These are much more important than distance or transport. In fact, social ties facilitate the process of migration and, at the same time, act as a mechanism to keep migrants in the same profession through variously linked contracts across a number of dimensions (Deshikaar et al. 2006). Migration has systemically increased in the post-2000 period so that today, Bihari migrants are spread far and wide, particularly within India. Policies like the National Rural Employment Guarantee Act (NREGA) have played an important role in reducing the very short-run seasonal migration after 2005; however, long-term migration remains. A key concern for many migrants is the lack of access to cheap and easy institutional arrangements for remittances. These are often handled by informal intermediaries that charge them for this service. Accessing banking services in order to channelize remittances remains difficult for many migrants as they are unable to provide basic 'Know Your Customer' or 'KYC' documentation, which is critical to opening bank accounts. Migrant households have systematically worked around such requirements with the help of their social networks that assist with remittance and provide a range of other services, such as help at the time of illness, and other social protection. The lack of remunerative employment options within Bihar has often driven migrants out. As economic conditions within Bihar improve, the impetus for out-migration may reduce and economic development may bring back a group of migrants with skills acquired through experience that may be particularly useful in raising the productivity of work in the already very large services sector in Bihar.

4. Governance Matters and Reforms

Does governance matter? Olsun (1993) argues that the incentive structure for the 'ruler' latent in any governance framework is essential to determining the kind of economic outcomes that society enjoys. For example if the governance system is one that allows frequent and extensive loot of state revenue by multiple competing interests, colourfully called 'roving bandits' by Olsun, then not only is there no incentive to invest in that society, but eventually there is little to loot as well and thus economic failure is inevitable. If one of these looters were to assert control over the state, and become a 'stationary bandit', then it would be in the 'stationary bandit's' interest to enable investment and economic growth, in order to encourage output so that there is more to appropriate. Clearly, the enabling mechanism there is provision of public goods and services within a functional governance structure. Usually, strong institutions are considered essential for growth and development. Whether there exist strong institutions or not depends in large part on the past. For example, a colonial

[44]Deshikagar et al. report that work in brick kilns, rickshaw pulling, casual labour in construction and farm wage labour were the four most common professions in 2005 in the six districts they collected data from.

past is difficult to change, and there exists evidence to suggest that depending on the colonizing power and the conditions of colonization, there are differences in the quality of institutions created.[45] So while governance matters, the type of governance that evolves is often itself reflective of the precise history of the place under consideration.[46]

Exactly what, then, is meant by 'governance'? The ordinary sense of the word 'governance' is the act of governing, and it should hence encompass a wide variety of actions that allow an organization or the government to function smoothly. To explain this in greater detail, "*No theory of governance could be intelligible unless it is seen in the context of its time. India's democratic experience of the past six decades has clearly established that good governance must aim at expansion of social opportunities and removal of poverty"* (Singh 2008). Good governance, means securing justice, empowerment, employment and efficient delivery of services. Explained thus, governance is not only absolutely necessary but crucial for any government to bring about betterment in human conditions.

With the advent of the NDA government led by Nitish Kumar in 2005, there was a strong emphasis on governance. In fact, when asked by the press what the priorities for his government were, the Chief Minister famously replied that the first priority for his government was governance; he went on to list his second and third priorities as governance also. To judge the performance of Nitish Kumar's government, we attempt to identify what constitutes 'good governance'.

To that end, we start with a reference to Kautilya's *Arthashastra*:

> "*In the interests of the prosperity of the country, a king should be diligent in foreseeing the possibility of calamities, try to avert them before they arise, overcome those that happen, remove all obstructions to economic activity and prevent loss of revenue to the state'; further, 'The pursuit of the people's welfare as well as the maintenance of the philosophic tradition, the Vedas and the economic well-being of the society is dependent on the sceptre wielded by the King. The maintenance of law and order by the use of punishment is the science of government"* (Rangarajan 1992, p. 108). And further on the same page: *"When no punishment is awarded [through misplaced leniency and when no law prevails], then there is only the law of the fish ... Unprotected, the small fish will be swallowed up by the big fish. In the presence of a king maintaining just law, the weak can resist the powerful."* Thus there is an assertion that justice is essential for governance since this protects the weak.

Consequently, it is clear what good governance was for Kautilya: law and order, a just and efficient judiciary, protection from natural and other disasters, and a healthy state of government revenues. Writing almost two thousand years later, in 1755, Adam Smith had an almost identical view, saying, "*Little else is required to carry a state to the highest degree of opulence from the lowest barbarism, but peace, easy taxes, and a tolerable administration of justice; all the rest being brought about*

[45]Acemoglu et al. (2001) argue that European colonizers choose a variety of institutions depending on the type of colony they entered. In colonies with high mortalities they set up extractive institutions, while in others they initiated institutions that support wealth creation and settled down. The nature of these institutions is associated with long-term growth. Similarly, North (1990) argues that British colonies did better than colonies of other European settlers as they created strong political and legal institutions that are more conducive to long term growth.

[46] Acemouglu and Robinson (2012) discuss the telling contrast between living in Nogales, Arizona (USA) and Nogales, Sonora (Mexico); this is explained by different governance, and it also explains more generally why nations may fail.

by the natural course of things." Thus four things are required: adequate, but not oppressive taxes to collect adequate revenue; providing public goods of high quality; the rule of law and courts functioning well to provide justice; Besley and Persson (2011) put this succinctly as *"state authority, tax systems, court systems and democracy co-evolve in a complex web of interdependent causality."* Thus, it seems that the requirements for good governance have long been well understood. However, achieving these conditions must be difficult, since we seldom see the ideal situation in actual fact. One idea subsumed among the requirements is that the state leadership must be sufficiently efficient and competent, since this wisdom would otherwise not be available.

The World Bank in turn has identified the following six key indicators of governance: voice and accountability, political stability and lack of violence, government effectiveness, regulatory quality, rule of law, and control of corruption; it has also constructed indicators of governance (Kauffman et al. 2010). As is clear from the quotes from Kautilya and Adam Smith, or even Besley and Persson (2011), these six indicators actually overlap, e.g., government effectiveness and regulatory quality on the one hand, and rule of law and control of corruption on the other; thus, we can without too much further discussion settle on the four indicators as encompassing the various facets of good governance: peace and tranquillity, adequate revenues, quality public services, and a just and effective legal system.

We proceed to find out how the Bihar government measures up to these requirements. Many of the actions taken by the government of Bihar seem to be broadly consistent with these. In Bihar, as discussed earlier, there was a significant lack of state planning and expenditure throughout much of the 1990s. This in turn led to a retreat of the state from almost each and every activity of governance during that time. Redressing such omissions and spending available funds as per approved state plans would have considerably improved state presence and governance. However, the state government in Bihar went well beyond that in its efforts to restructure its expenditure patterns in the post-2005 period, and a large number of interesting innovations were attempted to improve the delivery of public service and governance in Bihar.

Mukherjee's (2010) interviews with key players in the government in Bihar capture the fact that governance changes in Bihar were driven right from the top, the Chief Minister's Office, to ensure that requests and procedures for access flowed systematically. We use Figure 18 to identify the overarching structure within which many of the government of Bihar's initiatives may be placed.[47] In an attempt to create trust and faith of citizens in governance, the Bihar administration quickly worked on implementing a Central Government Right to Information Act through the introduction of *Jankari* after coming to power in 2005. The lack of transparency and access to the government under the earlier regime needed to be reversed, and the first step toward this was the creation of this e-governance network through which information could be sought by anyone. Thus ease of access was substantially improved making it possible for people to simply call up from anywhere in Bihar and file an RTI (Right to Information) request over the phone (Kumar 2007). This award winning e-governance portal not only made it possible for citizens to access information, it also provided an easy mechanism for the state government in Patna to understand the citizen's

[47]Figure 18 was used by Chanchal Kumar, an IAS officer of the Bihar cadre, and Secretary to Chief Minister, Nitish Kumar, at a conference in IIM Bangalore to report on the Government of Bihar's attempts to improve state capacity and governance (Kumar 2011).

immediate concerns and follow up on these from the Chief Minister's office to ensure smooth functioning of public administration.[48]

To ensure that the Chief Minister and his office were apprised of citizen concerns through direct dialogue, a weekly program called *Janta ke Darbar mein Mukhyamantri* (JKDM), was started in 2006; the program name loosely translates as 'the Chief Minister in the People's Court'. The naming is significant: it suggests that the Chief Minister would be answerable for any shortcomings in the state; in the semi-feudal environment of Bihar the common person associated the holding of *darbars* or courts with the rulers. Thus the naming of the program was signalling who the rulers were: the people of Bihar; and the Chief Minister, a mere public servant, was being summoned before them. This was powerful imagery certainly. The durbar was taken online from 2007 as the Bihar's Public Grievance Redressal System which allows citizens to file applications and follow their progress, allowing for a slow but all-important build-up of faith in the government process; most importantly, it is a way of assuring both citizens and public service providers that the other levels of the government are easily accessible to citizens. Given that seeking public services was seen as the last resort prior to 2005, encouraging demand for public services in its citizens was seen to be a necessary strategy for delivering on governance (Kumar 2011). While under the JKDM scheme the Chief Minister would informally allocate a senior officer to follow-up with and commit to a time-line for the applicant, this was formalized into the Bihar Right to Public Service Act in 2011. Over 50 services spread across ten key departments in the government were brought under this Act. In a sense, Bihar was attempting to ease friction with regard to both demand and supply of public services through greater transparency and effective monitoring from Patna. Clearly, both transparency and monitoring are necessary to ensure that governance remains focused on the needs of citizens and responds when a demand is made.

The final lynch-pin in this Bihar government's governance framework is the ability of Bihar's legal system and associated policing system to effectively provide peace and security to its citizens. Moving on from the in many ways catastrophic failure of security in the past demanded great political will, which was clearly visible, but it also needed legislation to ensure that long trials of well-known criminals with long histories could be concluded quickly. To ensure that due process was followed throughout, prosecution under the Speedy Courts was explicitly legalized under the Constitution of India through the Bihar Special Courts Act of 2009.

With Bihar being known as one of the most corrupt states in India, it was also necessary to ensure that corruption in public office was swiftly suppressed, to ensure the citizen's faith in the new system and also so that public servants remained aware that the government was vigilant and not tolerant of corruption. Gupta (2011) identifies that leaks from government funds prior to 2004-05 were at the 'input stage', that is, before anything was done with the funds, as with, for example, the fodder scam or the recruitment scam. These funds were not invested in the state but were rather spent on acquiring real estate in metropolitan cities or on other items of conspicuous consumption. These intentions of restricting rent-seeking activities were instituted in law under the Bihar Lokayukta Act of 2011. Rent-seeking activities by bureaucrats were heavily curtailed by the Bihar Special Courts Act, which enables the

[48] See http://www.humanrightsinitiative.org/programs/ai/rti/india/states/bihar.htm for more on RTI norms in Bihar. 22,600 calls were placed through *Jankari* within the first two years. This e-governance system was the first ever in India and won a Gold Medal in a 2009 competition conducted by the Department of Administrative Reforms, Union Ministry of Personnel, Government of India. *Jankari* was given a Gold Medal for being the 'simplest and the best' (TNN 2009). It has been adopted in other states.

government to confiscate property if it is established to be disproportionate to known sources of income. The government can then re-use such confiscated property for whatever purposes it deems appropriate. In fact, this Act has been used to seize palatial buildings constructed by a senior bureaucrat and convert the property into a school (Ahmad 2011). The Right to Public Service Act also plays an important role in this battle with corruption, in tandem with the Bihar Lokayukta Act of 2011. The Right to Public Service Act explicitly stipulates a time frame within which citizens must receive service; additionally, there are penalty clauses for employees or officers in case the necessary service is not provided in the time frame. Thus the ability of employees to gain from corruption was significantly curtailed, first by making it difficult to ask for compensation to perform routine duties and second, by confiscating whatever has been identified as illegal income from graft.

This self-identified complex of governance changes, consisting of legislative action and almost frenetic monitoring out of the Chief Minister's Office (CMO), is one obvious way of establishing and maintaining a governance system. While this provides an overarching framework for governance reforms in Bihar, there have also been also major variations and adaptations to tackle a number of Bihar-specific concerns that made the experience in Bihar go beyond just building governance to leading and providing stewardship in order to help the economy grow and expand. Thus, challenges such as those arising out of the Maoist insurgency that had come to occupy the space vacated by lack of governance in the 1990s needed to be confronted; however, creating greater fiscal space to encourage spending in social and infrastructure sectors required greater understanding, use and even cajoling of the national fiscal system in order to take advantage of existing schemes for retiring debt and to access funds under various schemes. Clearly, this called for careful and deliberate thought and action and careful follow-up during implementation of new schemes to ensure success. The Chief Minister and his team of officers set a terrific pace of change and monitored the process closely to identify deviation and develop strategies for correction; this is, thus, a case of leadership-determined recovery rather than an institutionally led recovery.

We cite two examples to identify the way leadership led Bihar's government and polity into places it may not have entered on its own. The first concerns tackling Maoism in Bihar: just before the new government came to power in 2005, the Maoists carried out a very well-planned and coordinated attack on the Jehanabad district jail. Some 200 heavily armed Maoists attacked the jail to free some of their leaders; before launching this attack on the jail and the police barracks in the center of the town, party workers went around telling people to stay indoors because they might otherwise be hurt. The attack allowed the Maoists to escape with 100 of their jailed comrades and brought to the government the realization of how unprepared it was to deal with Maoist related threats in some places (PTI 2005). The government of Bihar was among the few governments that understood that controlling Maoism was distinct from fighting crime.

Nitish Kumar's stance on dealing with Maoism was very clearly outlined when he said that Maoists are rebels, whereas the people in government are democratically elected and that steps taken by Maoists could not and should not be mimicked by the state. On the contrary what the state needs to do is to take development to them (Express News Service 2010; PTI 2010). This view gave credence to the complaints of Maoists that the fruits of development had passed them by; further, the regions of Maoist influence are also among the poorest in Bihar and indeed the country as a whole. This led the Chief Minister to announce, in a meeting with the Prime Minister, the Home Minister and other Chief Ministers in July 2010 that *"… Bihar has adopted an integrated approach which can be the appropriate strategy for its effective and*

permanent solution…. Only intensive, holistic development can be the final solution of left wing extremism…. The state government is committed to establish the rule of law by protecting human rights…"(Sinha 2011, p. 260). This was perhaps the only statement from a major political leader that described the Maoists not as "enemies of the state" but as rebels entitled to human rights. Interestingly, on capturing important Maoist leaders, the government did not insist on speedy trials. Whether this was accidental or by design, it was criticized by the media. A view was expressed by some that this was aimed at preventing an all-out offensive against Maoists (Sinha 2011, pp. 260-263).

The second example is that of the particularly influential scheme granting Rs. 2,500 to every girl studying in Class IX and X to purchase a bicycle that could be ridden to school and providing uniforms to children. This scheme was announced in 2006 and achieves several things at once. To begin with, it targets the extremely poor state of education for the girl child in Bihar (Debroy 2010). Apart from these gender and education aspects, the scheme was also an extraordinary litmus test for law and order in the state and has proved to be one of the world's largest and most successful cash transfer programs ever, with over 9,00,000 cycles purchased over the 2006-10 period. This became so symbolic of the Nitish Kumar administration that Lalu Prasad attacked it in the build-up to the 2010 elections by offering free motorcycles if he was elected. However, he was forced to retract this once Nitish Kumar pointed out that underage school girls could not drive without a license and should they be caught doing so, they would be arrested.

We have also discussed the increasing role that domestic (within India, but outside Bihar) remittances played in Bihar's economy. Such remittances in principle provide households in Bihar with access to unearned incomes, and much of the existing theoretical and empirical literature argues that access to such unearned income either in the form of aid or remittances is strongly associated with reductions in public goods and spending, and poorer public investment on economic activities.[49] It is to the credit of the leadership in Bihar that, alongside such remittances, the government continued to increase its development expenditures and did so by cutting back on non-development expenditures (see Figure 22).

Thus, the new government managed to make the citizens believe that good things were in the offing and that change was in the air. This was seen to be a major achievement, since the Chief Minister in one of his speeches mentioned that the major drawback to development was the mind-set of people who believed that nothing can happen (or as he said in Hindi, "*kucho nahin hoga*" or the people he described as "Nirasha ke masiha" literally the prophets of gloom)--the naysayers (Banerji 2011). It is said that the Chief Minister is very sensitive to managing public perceptions to facilitate progress and development. The 2010 elections were fought and won on a pro-economic development plank by the Janata Dal (United) (JD(U))and Bharatiya Janata Party (BJP) combine; they were triumphant in Bihar where development had hardly seemed possible when Ashish Bose classified it as a BIMARU state as early as the mid-1980s.

Once the JD(U)-BJP combine came back to power, it published a very interesting statement of intent in the Bihar Gazette (Government of Bihar 2010b). The document sets out what the government would like to achieve. The areas picked for special attention were agriculture, infrastructure and urbanization, water resources,

[49] See Ross (2001) for an argument in the context of oil-economies and Ahmed (2012) for a more specific argument in the context of aid and remittances.

human capital, state capabilities and, of course, governance. Roy (2011) captures some of the salient features of the program:

- Agriculture: One of the objectives was to seek a substantial increase in allocation to agriculture and target a growth rate of 7%, which was well above the national average.
- Infrastructure and Urbanization: The aim was to address the acute power shortages and add more roads, especially rural roads. The target was to travel to Patna from the interior-most part of Bihar in six hours.
- Water Resources: Water resources management (flood control and management and flood forecasting systems) was important; irrigation systems were to be augmented, and groundwater management and irrigation were to be improved.
- Human Capital: It has now been understood that economic growth is sustainable only when human capital is available; to make this human capital effective and healthy, several targets were set. This included reducing malnourishment from the current 27% to less than 20%, increasing routine immunization to 90% at least by 2015, making available round–the-clock healthcare in all healthcare facilities, reducing the infant mortality rate to 28 and maternal mortality rate to 1 per 1,000 live births, and reducing anaemia among women and girls by 50%. Apart from health, skill formation has to take place, and on the education front too, several targets were assigned: 100% primary enrolment by 2015, reduction of dropout rates for secondary education to less than 25% and primary to less than 20%, raising the quality of teaching, an increase in capacity and quality of educational institutions, and narrowing the gender gap in educational attainments.
- Migration is an important and noteworthy aspect of the Bihar economy. The economy of Bihar depends heavily on migrant incomes, which accounted for as much as 7% of GSDP (more than industry's contribution). The objectives in this regard are to provide better training to potential migrants so that they can obtain higher wages in their place of work and to improve their bargaining power; to consider some steps to increase employment opportunities at home to reduce out-migration (NREGA has contributed to this, but it is a centrally-sponsored scheme); to emphasize creation of rural livelihoods so that migration does not remain a necessity but gets transformed into an act of choice.
- State Capabilities: The priorities here are rural development (Panchayati Raj and women's participation) and food security (improvements in targeting and delivery by the Public Distribution System).
- Governance: To promote greater transparency, citizens' committees are to be set up wherever there is a public interface, with the assigned task of monitoring development schemes and suggesting improvements. The law and order machinery is being revamped and courts are being exhorted to use novel methods of reducing backlog.

The above list clearly outlines some of the diverse and comprehensive steps being taken and planned. There are, of course, some probable problem areas. The functioning of courts and general law and order (see our section on crime) may not respond as desired; for the moment, there does not appear to be any incentive for them to change. Corruption is being tackled but what has been uncovered and made to cease is, it seems, only some part of what actually happens. But there is another reason why the government's program may falter. The government of Bihar does not appear to be paying too much attention to quality of public services, confining itself generally to quantity. The provision of high quality public goods and services may be difficult; however, if that is the case, the entire exercise will become pointless.

There has thus been a concerted move to tackle many problems. The government seemed to have woken up to the fact that unless a concerted move is made on all fronts, success will not be achieved. Altogether, therefore, the betterment of governance has been entirely in terms of better access to justice and public services and greater transparency and access to the government so that the first person interacted with for services is no longer the last person and citizens can actually make and follow up on requests. Is this enough to make the turn-around permanent?

The Nitish Kumar-led government, whether by serendipity or design, appears to have achieved some success and can be expected to continue to deliver on these aspects with by now excellent experience of mobilizing and delivering public services. To keep himself aware of the concerns and challenges of ordinary Bihari citizens, the Chief Minister undertakes frequent Sewa Yatras that span 38 districts; he stays in each district for a few days, holding meetings with the common people, listening to their complaints, and calling departmental heads whenever required to solve the problems being raised. It is reported that these visits have been warmly welcomed by the common people, but the bureaucracy is uncomfortable since it is under scrutiny (ET Bureau 2011). In fact, which departmental head will have to accompany the Chief Minister is never divulged beforehand; the surprise element is maintained to keep all personnel alert and ensure that standards are kept up. The objective of these Yatras is to monitor and review issues vital to improving governance. Consequently, the system is being subjected to great regulation and examination. The worrying thing is that the Chief Minister realizes that it is he who must do the regulating. Given this point, one may argue that the system may not be changing after all. In the larger discussion of whether institutions can create development or the leader must create it, Bihar's experience currently is one of the leadership creating the institutions to support growth. Concerns emerge about what would happen in the absence of such tight monitoring and careful overseeing at the top. We have summarized all that was done by the government of Bihar during the period between 2004-05 and 2009-10, the first five years that the government was in power. Looking back at Kautilya, Adam Smith, or Besley and Persson on governance, it would appear that the government is doing everything right. Can it continue to govern consistently in such a manner in the future?

Since governance is the main plank of the current government, it is fair to examine this aspect closely. Clearly, governance in Bihar has been strongly led by Nitish Kumar; this has been its strength, but it is also its weakness once one thinks of long-term growth. It is a strength, because it has allowed the unrolling of governance in a centralized fashion to deal with the deeply entrenched lack of public service delivery. However, it is also of concern in the long run, since this leadership is not very broad-based; it not only limits growth today, but should Nitish Kumar engage in politics at the central government level, it would be a matter of concern for Bihar's economy. In such a situation, who will support, monitor, and follow-up on the logical consequences of existing policies?

A disciplined political party, with a strong organizational structure, that is able to convey issues, capture debates and provide a sense of citizenship within which disagreements can be resolved is strongly associated with not only improved electoral results, but also improved governance outcomes in the long run.[50] Within the

[50] See Olsun (1986) and Caillaud and Tirole (2002) on better organized parties winning elections more frequently, and Boix (1998) for an articulation of how better organized political

context of India, Atul Kohli (1987) argued that a reason for the systematic persistence of poverty, or the failure of good economic outcomes, was poorly utilized state power and incomplete land reforms. Both reasons remain valid in Bihar's context; while the latter's importance has not diminished since Independence, it remains an agenda without a political champion within electoral politics, and the former remains critical for long term growth. A more broad-based political leadership tends to also provide a more supportive environment for private investment and greater industry commitment that the state will necessarily have to seek in order to encourage long-term growth. In this context, it is interesting to return to Olsun (1993) who argues that the key difference in incentives between a 'stationary bandit' and a democratic system is that in a democratic system, broad-based leadership ensures that political parties can remain engaged in governance, while in the former, it is dependent on the individual; growth in such autocracies is most threatened at times of transition.

Finally, it is still true that there are politicians in every party who have a criminal past. What appears to have changed is that when they step out of line now and violate the law, they are hauled up irrespective of the party they belong to. At least this much is clear from past evidence. But so long as such elements are present, it would have to be assumed that they perform some role helpful to the government. It is this aspect of apparent collusion with criminal elements that continues to make people uncomfortable with the governance in Bihar.

What next?

Even if it has begun catching, Bihar's economy still remains overwhelmingly poor. What are sort of reforms needed? As discussed, the first five years of the Nitish Kumar government have been focussed on improved access. Clearly, something more is required, and that is quality in the delivery of public services. The easiest gains possible through ensuring recruitment and oversight to ensure functionality of different public service mechanisms have already been achieved. However, unless the quality of public service delivery in education, health, and public distribution improves substantially, growth will peter out in the near future. The difficulty is in monitoring the quality of service, a process harder to carry out than monitoring existence or creation of services. Apart from these governance challenges, other major economic challenges too remain. A strategy for robust economic growth for Bihar must take into consideration the following:

- Our analysis shows that much of the unevenness in economic growth in Bihar is due to fluctuation in economic outcomes in a set of key districts. Thought and public service in these districts needs to be oriented towards diversifying economic activity in these districts to ensure all-round stable growth at the state level.
- With a significant dependence on agriculture Bihar must improve its agricultural and factor productivity. Given the long history of poor productivity, this is an endemic problem and there are few models that offer an easy path to improved productivity. In this regard, reform in Agricultural Produce Market Committee (APMC), enabling contract farming and high-value produce (horticulture and plantation) may provide easy to access gains.
- Closely tied to the issue of improving agricultural productivity is also the issue of the unequal distribution of land in Bihar. Land reforms has been and will continue to be strongly needed in Bihar as would laws for easy and transparent norms for sale, and lease of land. However, just as strongly as is needed, it will remain

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parties are better able to build a consensus across interests and deliver better economic outcomes.

even more problematic to implement politically. This has been and will continue to be an important bottleneck for both the agricultural sector as well as the economy.

- Another key short-coming has been the availability of credit to farmers and programs such as the Kisan Credit Card provide some relief, but more needs to be done since much of rural borrowing in Bihar remains non-institutional and informal (Kamath et. al. 2010)
- Development of rural infrastructure, such as irrigation projects, roads, and electrification is important for the economy. While much has been to improve roads, other areas such electrification and irrigation remain areas where much more can be done.
- Finally, and importantly in light of the poor poverty reduction seen over the period 2005-2010 in Bihar, growth in Bihar is centred in sectors in services and construction sectors, while most of the labour continues to be employed in agriculture. A number of question of transition arise on the transition of labor from agriculture to non-agricultural sector: clearly industry today in Bihar doesn't have the size to absorb a significant fraction of the labor employed in agriculture. However that doesn't mean it can't in the future. Similarly, the services sector is large in size and can potentially absorb large components of the agricultural labor force. This could in principle lead to significant equity gains as well, but a long-run question that emerges in this context is what kind of a service economy could Bihar become as it considers the service sector as a way forward for growth and development. One of these two strategies will play out and the role of policy will be critical in enabling this transition.

5. Conclusions

The transition from a moribund economy to an expanding economy with a state government actively engaging in governance has been remarkable. However, Bihar remains a poor economy with key structural imbalances and is still well below the national average in terms of well-being, productivity and public investment. The key question for Bihar today is "What next?" Will this be a short-lived expansion -- similar to expansion seen in historical Bihar under Sher Shah around 1500 AD? Or similar to the Chaco Phenomenon, so that after a period of frantic activity, the economy will hit another slump? Either would be a tragic post-script to Bihar's story, and while we believe that this will not happen, there still remain fundamental challenges for the economy to resolve in the near future to sustain growth and include larger and poorer sections of the economy in the expansion process.

We have dwelled on the importance of leadership in the government in the context of both historic notions of governance as well as contemporary academic thought; we also related this to the current functioning of the government of Bihar. A strong leadership that seeks to understand its citizen's demands, provides an appropriate supply of public services, ensures a fair and just law and order mechanism, and manages its revenues to support development is a foundation recognized over centuries for promoting economic activity. This was perhaps achieved during the Great Mauryan Empire and a flourishing civilization which was at its height during the reign of Ashoka and not only spanned vast areas but also enjoyed peace and healthy commerce (Thapar 1966). Some peace and healthy commerce were in evidence in Bihar in the past seven years. Will this continue in the future? And will this alone drive growth in Bihar in the future? A number of challenges

remain to be addressed, and these are probably harder challenges to deal with than those that have already been managed.

A key concern with the growth experienced so far has been its lack of inclusiveness. Data released by the Planning Commission shows that poverty ratios in Bihar remained stagnant over the period 2004-05 to 2009-10. The poverty ratio in Bihar declined from 54% to 53.5%, at a time when equivalent or poorer states like Orissa have managed to reduce their poverty ratios from 57% to 37%. This is worrisome and will be the one statistic that the Nitish Kumar government will work hard on by redirecting its many public policy schemes. While it has established the possibility of rapid growth within a short period of time, the issue of inclusive growth remains of significant concern. In Bihar's context, reducing poverty will necessarily mean raising rural incomes and pursing policies to rationalizing the sectoral distribution of income and employment in Bihar. With income overwhelmingly being generated in the services sector and employment overwhelmingly in the agricultural sector, it is not surprising that growth has not made the income distribution more equitable or the poverty ratios significantly lower.

The services sector has been leading growth in India since the early 1990s and this is the case for Bihar too, although the services sector started expanding in earnest only after the 2005 elections. Eichengreen and Gupta (2011) estimate that within the services sector, sub-sectors such as communications, business services, financial services, education, health and hotels account for roughly half the services growth seen in India between 2000 and 2008. Bihar, however, still remains largely rural and substantially informal, and thus, its services sector is far narrower. Consequently, the expansion in the services sector in Bihar has to be very different from what we see elsewhere. This is not to say that those sub-sectors that have grown rapidly in India will not do so in Bihar as well.[51] However, with sub-sectors such as trade, hotels and restaurants capturing 27-28% of NSDP in an economy with very low urbanization rates, it is imperative to engage differently with the services sector at the state level. While India's growth experience deviates from the natural progression seen historically, in Kuznets' work, for instance, even this may not be the right model for Bihar at its current stage and with its present economic structure. It is imperative that the government identifies ways in which employment can be moved from agriculture to other sectors. At the same time, Bihar's existing comparative advantage lies in agriculture; with vast swathes of some of the world's most fertile lands, access to perennial rivers and the ability to grow a hugely diverse basket of food-grains and horticultural commodities agriculture can produce sustained income growth. However, significant efforts are needed to realize that potential through better inputs for higher productivity and outreach to markets; the entire agricultural value chain is in need of reform.

Apart from a structural transformation of the economy, the other aspect that we would like to re-emphasize is the issue of productivity, the lack of skill generation, the absence of vocational training and the absence of job ready candidates that can engage in growing sectors and sub-sectors of the economy. Productivity is low in Bihar and there is little that we see today that will change this. Extensive and creative investment in creating institutions to develop skills with clear links to business is imperative. Overt attempts at targeting the differential sectoral distribution between

[51] Most of these sub-sectors are consistent with engaging in business and business services in India. The World Bank's Doing Business in India ranks Patna 14th in a set of 17 cities for ease of doing business. However, on two key dimensions – Starting a Business and Enforcing Contracts, Patna is ranked 2nd, showing that business and IT services can in fact be easily set up in Patna.

national income and the labour force are needed. Such attempts all have long gestation periods and while these investments are needed today, they will not immediately resolve the shortage of skills and productivity in Bihar. These skills, however, are not in short supply in the country; in fact, the large migrant population from Bihar may itself be able to bridge some of the current gaps, provided it finds the right incentives to return to Bihar. The business climate is improving, and there has never been a shortage of Bihari enterprise, provided the incentives are institutionally embedded by the state. The state has begun using Bihari pride as a way to reach out to people (TNN 2011). However, to attract migrants back to Bihar's economy and stimulate them to participate in a useful way, the government needs to go beyond pride and appeal to tangible economic motives.

To summarize, at least four major policies in the past have held Bihar at a serious disadvantage. Any one of them on its own has the potential to create long-lasting economic disparity and we suggest that Bihar has been at a disadvantage historically. These policies are:

- The Permanent Settlement; areas with alternative land tenure system such as the Raiyatwari system have clearly prospered (Banerjee and Iyer (2005)). In fact, some of the areas where the Permanent Settlement was institutionalized also prospered but in almost all of them significant land reforms have been carried out (W. Bengal and Bangladesh). ..
- Policies such as the Freight Equalization Policy destroyed any comparative advantage that regions such as Bihar and Jharkhand enjoyed; industries which could have located themselves in this region due to cost advantages had no reason to. And Bihar continued to pay more for commodities not covered by this policy: petroleum, for example. Thus, industrialization was postponed and relative prices changed during the time that such policies were in place leading to significant losses from forward and backward linkages that could have developed in the absence of this policy.
- Governance and specially law and order were an issue, as we have shown above. Raiyatwari areas were better administered (Kumar (1982), p. 909): " The raiyatwari provinces, where agricultural output had to be estimated and government benefitted from increases in output needed much more administration than permanent settlement areas". Consequently these areas were in fact better looked after and as we have seen, law and order maintenanceis a basic requirement for development. It is of no surprise therefore that Bihar prospered after 2005 with the emphasis on law and order.
- Designed government failure was not only a facet of the RJD government but this too had its origins in the long areas of neglect that we have documented. In fact a look at Figure 2 will show that Bihar was doing far more poorly than the rest of India since 1980. Matters went really out of hand during the RJD years of course but then the situation arose because of the way Bihar was then.

In the near future a range of challenges and opportunities await Bihar. Some of these are

- Bihar is largely rural; urbanization has been very limited with urbanization in 2011 at 10.8 % which is approximately equivalent to India's urbanization rate in 1901! Combined with incomplete demographic transition and bourgeoning population growth rates, public service delivery still is a challenge in Bihar

With a very weak industrial sector the chances of sustaining growth through strengthening industry seems very limited currently. In addition, with power situation being very constrained there is little ability to support industrialization. While plans are under way to ease this constraint, until it is eased industrialization will remain slow in Bihar. Even land may not be easily made available; since doing so may be politically infeasible given that the high density of population implies that displacement population would be very high. Thus, only small or very niche enterprises are likely to flourish[52]. In this respect, agro-and horticulture based industries have begun entering Bihar. The framework of governance that the Bihar government has successfully used in the last few years to tackle law and order issues, encourage transparency, give a voice to citizens, and push hard to roll-out public programmes and public service delivery, '*Susashan*', will remain extremely important. The example described in the last foot-note provides a telling example. Much of this achievement is being driven from the CM's office, with senior bureaucrats working extended hours to monitor, follow-up on and so ensure access of services to citizens. The importance of such close monitoring will remain undiminished. The state needs to maintain this and tackle longer-term structural issues within its current political reality. How well will it succeed? The current evidence from Bihar seems to indicate that we could easily be surprised by what the government delivers[53].

[52] In fact there is evidence of one such remarkable establishment in Patna in M. G. Rao (2005) which was converting black and white movies into color for Sony Corporation; the valued added per worker was as high as $4 per second per worker, as mentioned by the author; there were 30-40 Bihari workers involved. Sadly they had relocated to Goa when the author encountered them in 2005. This brings us to the next point of concern, the maintenance of law and order the failure of which must have been the relocation.

[53] A discordant note was struck in June (2012) during the funeral of the murdered Ranvir Sena leader in Patna. For a short time the state had ceased to function! Gupta (2012) describes the incident and cautions the state to ensure that it must "perform its mandated role". Clearly Bihar can ill afford such instances of breakdown of law and order. Nor can the Bihar economy afford a description of what is happening in Bihar in the special article titled "Nitish's Bihar" in the weekly magazine, Outlook, dated June 18, 2012. Investor confidence is notoriously fickle.

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Appendix: Growth Patterns in District Level Growth

That the Bihar economy's gains in the post-2005 period were robust and qualitatively different from those in the pre-2005 election period is captured in Figure **13** where we plot district level growth rates over the period 2001-2008. Using a piece-wise linear regression of growth rates over time in the pre-2005 period and the post-2005 period, we capture how the trend in growth rates altered over the two periods. The tight 95% confidence intervals (the shaded region in Figure 13) demonstrate that the average growth rate across districts in Bihar was quite robust. While the average growth rate appears to have been stagnant in the pre-2005 period, there is a sharp rise in growth rates post 2005, indicating a period of unprecedented acceleration for the Bihar economy. A simple fixed effects panel regression of growth of per capita income on a dummy variable for the observations made in the years after the 2005 election gives a positive and statistically significant coefficient; this indicates that, on average, district growth rates were higher by 9.45% points in the post-election period. This provides a summary statistic to quantify the changed growth seen after the 2005 election.

Growth over the period between 2000-01 and 2007-08 varied widely across districts and even for the same district over time. This is consistent with the argument of overall volatility in economic performance that has been made. Quah (1993), in his seminal paper challenging the conventional approach to growth regressions, argues that such volatility is standard for any growth process and shows this to be the case for a frequently analysed collection of countries for whom growth data exists. Quah (1993) and others suggest that it is natural to think of a growth process as one in which units (countries, states, regions, or districts, whatever the unit of analysis may be) are exposed to a number of shocks over time and that these units transition from one state of growth to another; thus, analysing a time-series of average growth rates may be misleading in testing if a cross-section of economies converge over time. We adopt this alternative econometric strategy to look at the quality of the growth that Bihar experienced in the post-bifurcation period.

We first describe the distribution of growth across districts in Bihar. Figure 12 plots per capita income for the various districts of Bihar in 2001-02 and again in 2007-08, in descending order. This diagram captures a number of important aspects of Bihar's economy. First, per capita income in Patna is much larger than in any of the other districts in Bihar, and therefore, Bihar's economy without Patna's is extremely impoverished in comparison to the rest of the country. Thus, Bihar's average per capita income is larger than 32 districts in 2001 and becomes larger than 34 districts in 2007 as Patna's economy doubles. While Figure 11 shows that almost all the districts have made improvements in per capita income in absolute terms, Table 1 captures the fact that this growth has been uneven across districts and that some districts have made rapid gains in relative terms. Thus, Jamui, which was ranked 35th in 2001, had a rank of 17 in 2007-08 -- an increase of 18 places; similarly, Khagaria, Lakhisarai, Sheikhpura, Buxar, Araria and Saran have shown important gains. Kaimur, Madhepura, Sitamarhi, Supaul, Samastipur, Madhubani and West Champaran have had significant declines in their relative ranks. Quite clearly there has been all-round growth, and per capita incomes have increased one-and-a-half times in this period, but the pace of this growth has been uneven and some districts have been able to grow much faster than others.

Undoubtedly, a related question pertains to the robustness of the district level growth process – do districts that are in a high growth state one year continue to experience high growth in the next year? As a preliminary indicator, Figure 9 shows district-specific box-plots for District Domestic Product (DDP) growth rates; it is quite

evident that there have been periods of large negative and positive growth rates across almost all districts, as discussed in Quah (1993). Districts like Madhubani have seen consecutive years of large negative and positive growth (such as 2003-04 and 2004-05), while others such as Khagaria, Saran and Sitamarhi have relatively stable growth. Of the latter group, while Khagaria and Saran have had steady growth, Sitamarhi has just had very limited growth throughout the period; this difference accounts for Khagaria and Saran gaining substantially in the rankings while Sitamarhi, already doing poorly in 2001, sank even further in 2007 to the 38th position out of the 39 districts in Bihar. Thus, the growth process within Bihar is inherently uneven.

The pattern of growth across districts may be better understood by trying to see if districts with high growth in year t also had high growth in the next year, i.e. in year t+1. Bihar's growth would be deemed stable if districts continue to maintain their growth profile – this, of course, means that districts with high growth see high growth in the subsequent period, but it also implies that those with low growth continue to see low growth. Conversely, an unstable growth process is one in which districts are rarely able to reproduce their growth in subsequent periods; such transitions in growth profile are very neatly captured by Markov Transition matrices. Each element of the Markov matrix is an estimate of the conditional probability of entering a certain growth phase (or growth state) in period t+1, conditional on being in some growth phase (or growth state) in the period t. For Bihar, we define five growth states to capture each of the five quintiles of the distribution of annual district growth rates seen for all the districts in the period 2001-2008. Some Markov matrices, known as regular Markov matrices, have the appealing property that, in the long run, it is possible to summarize the transition process by identifying what fraction of time the object of analysis 1(here Bihar) will spend in each growth state. This long-run or limiting distribution is independent of the initial distribution of growth states and captures the stochastic nature of the growth process.

Markov Transition matrices are thus a natural choice to study the district level process of growth within Bihar. We look at district level growth profiles over the period between 2001 and 2007-08 and categorize all growth into any of three well-defined growth states – when DDP growth is less than 0.05 %, between 0.05% and 11%, and greater than 11%. We construct transition matrices for annual transition between each of these states today to one of these in the next year, with these probabilities estimated empirically using the observed levels of growth for each district in each year. reports our estimates for these transition matrices for the entire period 2001-02 to 2007-08 (Panel A), and also separate estimates for the period 2001-02 to 2004-05 (Panel B) and 2004-05 to 2007-08 (Panel C), so as to evaluate district level growth rates before and after the 2005 elections.

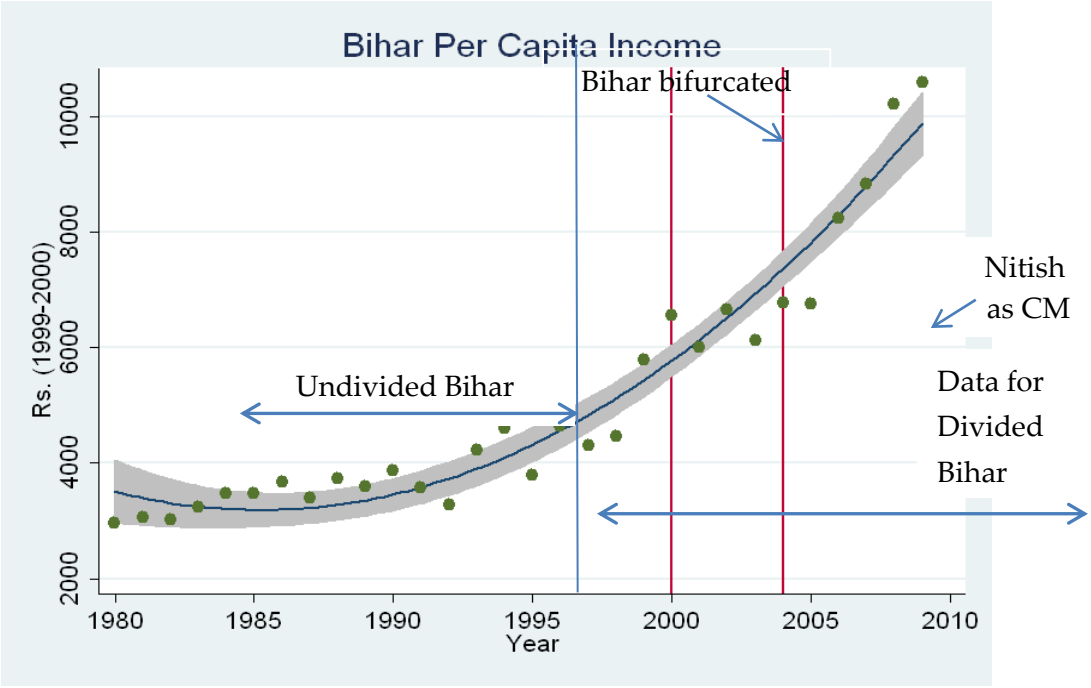
Panel A captures the fact that during the entire period 2001-02 to 2007-08, districts in Bihar were entering different growth regimes and were not caught in any specific growth state from which they could not move. Thus, if a district was in the lowest growth state, i.e., with a growth rate less than 0.05%, then there is a 19.70% chance of staying in the same growth state in the next period, a 40.91% chance of moving to a growth state where growth is between 0.05% and 11% growth in the next period and a 39.39% chance of moving to a growth state where growth is higher than 11% in the next period. Panel A also constitutes a regular Markov matrix and thus, has a well-defined limiting distribution in the long run, given by {0.3353, 0.2343, 0.4302}; this indicates that the growth process that Bihar experienced in the period 2001-02 to 2007-08 was one with regard to which, in the long run, the state could be expected to grow at a rate less 0.05 % for 33.53% of the time, at a rate between

0.05% to 11% for 23.43% of the time, and at a rate above 11% a 43.02% of the time. This is what we anticipated based on the observations made for these years.

Panels B and C make for an interesting contrast with Panel A and capture changes in the nature of the growth process before and after the 2005 election. A clear difference between Panels B and C is in the distribution of zero probabilities within the transition matrix; thus, in Panel B, all the zeros are located in a way that indicates that the highest growth rates are not easy to access and that even if accessed, they remain impossible to maintain in one-step transitions. Panel C, however, shows that after the election, poor growth rates have been relatively rare and do not self-perpetuate in one-step transitions (i.e., over annual changes); if districts are in the lowest growth states then in subsequent periods they end up entering high growth states, and a fairly large fraction of districts in high growth states remain in them. Both Panels B and C constitute regular Markov Matrices (see footnote to Table 2) and have limiting distributions of their own. However, these distributions are quite different from each other and indicate that the growth process was very different in these two periods. The limiting distribution for the Markov matrix associated with Panel B is {0.5488, 0.3117, 0.1394};; this indicates that prior to the 2005 elections, we would expect districts in Bihar to spend only 13.94% of their time in the highest growth phase, with the remaining time allocated to lower growth phases and the largest amount (54.88%) of time being spent in the lowest growth state where growth rates are below 0.05%. After the 2005 elections, the growth process changed substantially so that the limiting distribution of the Markov matrix in Panel C is {0.1109, 0.0904, 0.7986}; in the period after the 2005 elections, the long-term prospects for districts in Bihar look very different – 79.86% of the time in the long-run is spent in highest growth state where growth rates are at least 11%. Thus, the post-2005 growth has been fast and quite robust. With growth rates remaining high even after 2007-08 for Bihar, we hypothesize that this is likely to have remained the case, although we are unable to test this in the absence of district level data from after 2007-08. On the whole, there appears to have been a robust acceleration in the growth process in Bihar after the 2005 election that is quite broad–based, across Bihar's districts.

Appendix: Figures and Tables

Figure 1: Time Trends in Per Capita Income for Bihar



Source: Data collated from Central Statistical Organization, Government of India records. All per capita income data is deflated to be at 1999-2000 prices. Per Capita Income for the period 1980 to 1993 is for undivided Bihar. From 1993-94 CSO presents data for divided Bihar even though the actual bifurcation took place in 2000.

Figure 2: Ratio of Per Capita Incomes in Bihar to India (1981-2010)

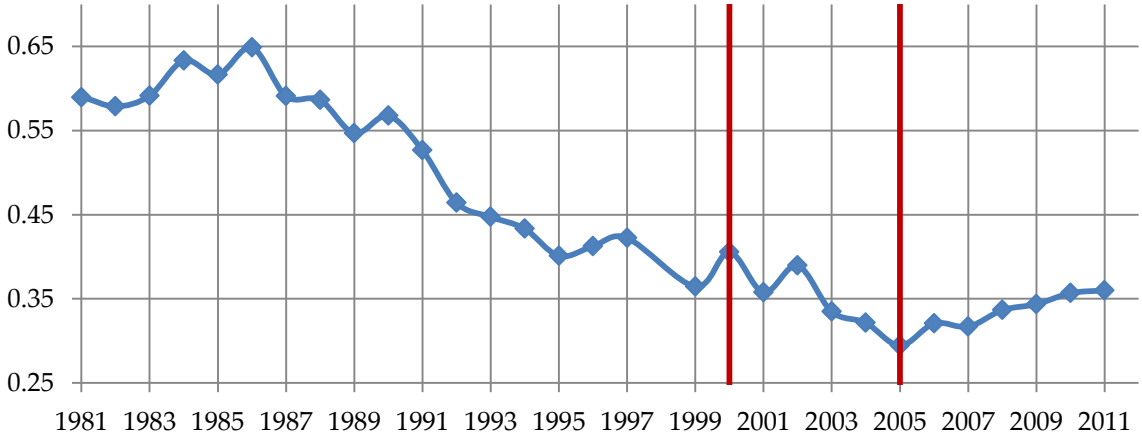
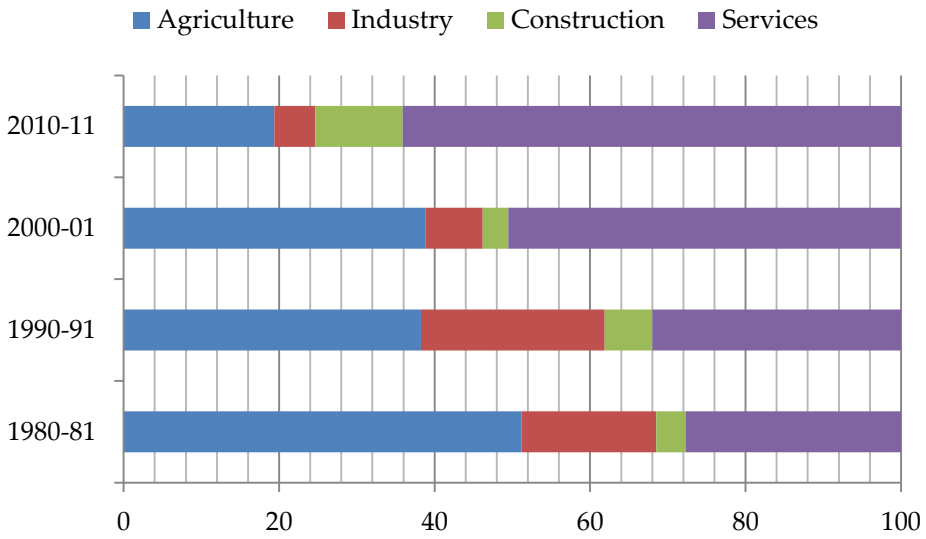
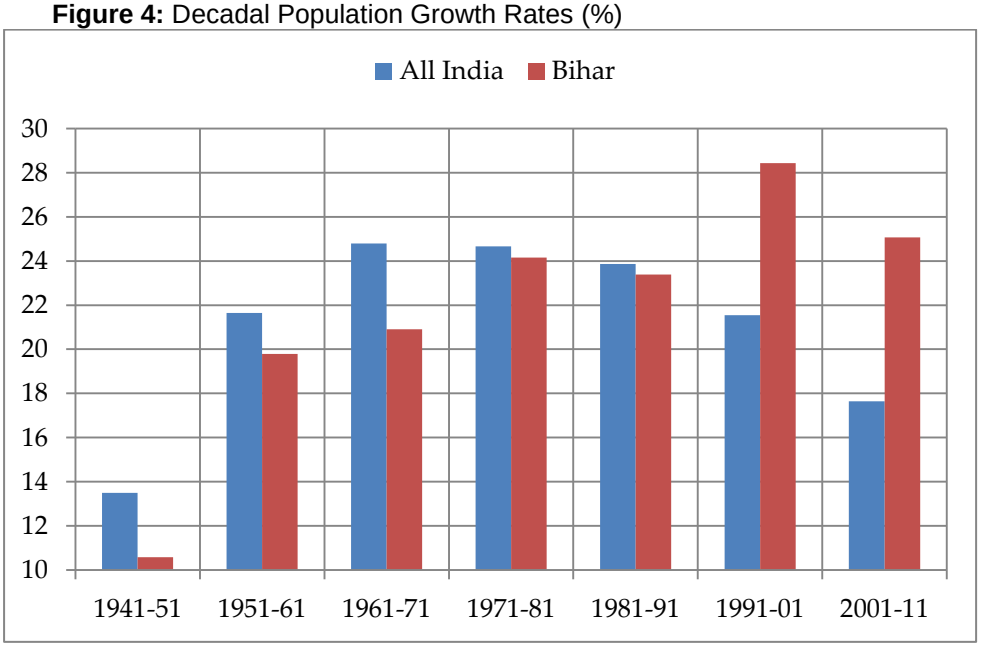


Figure 3: Evolution of the Structure of Bihar's Economy (1980-81 to 2010-11)



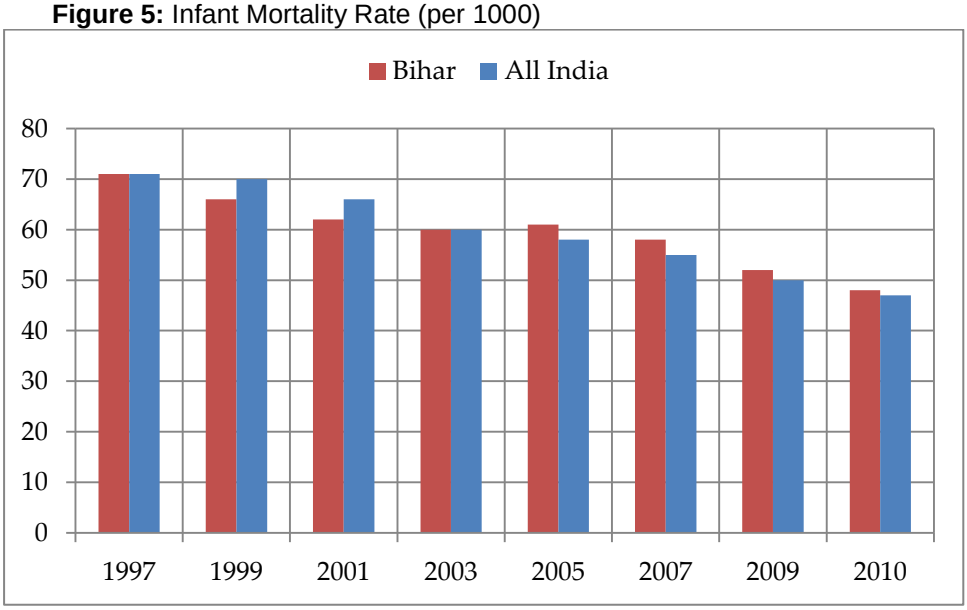
Source: CSO Data
Note: 1980-81 to 1998-99 is the period prior to the bifurcation of Bihar and refers to the economy of `undivided' Bihar. 2000-01 and 2010-11 are from contemporary Bihar, viz. after bifurcation.

Figure 4: Decadal Population Growth Rates (%)



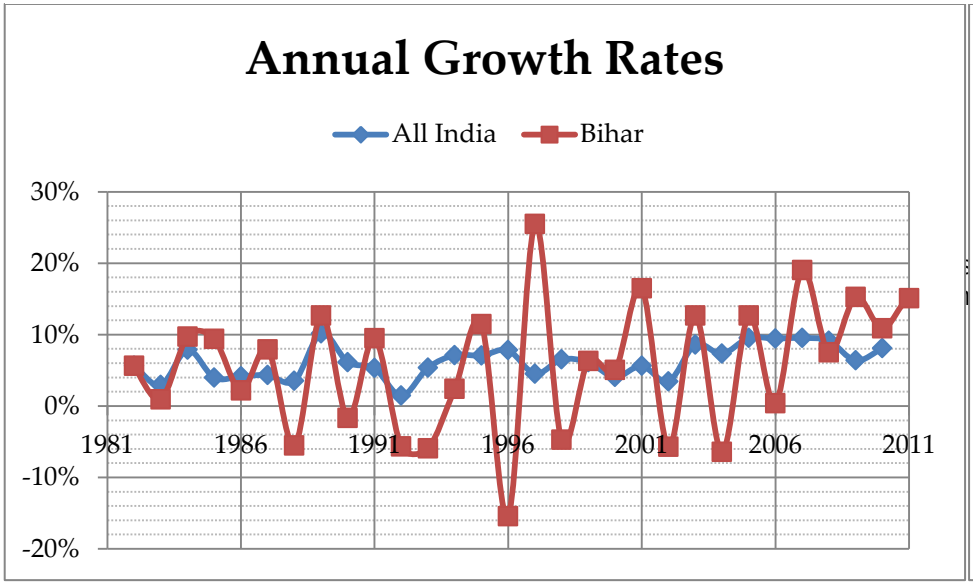
Source: http://gov.bih.nic.in/Profile/Annexure-02.htm

Figure 5: Infant Mortality Rate (per 1000)



***Source*:** SRS Bulletin (various issues)

Figure 6: Per Capita NDP and NSDP Growth Rates for India and Bihar



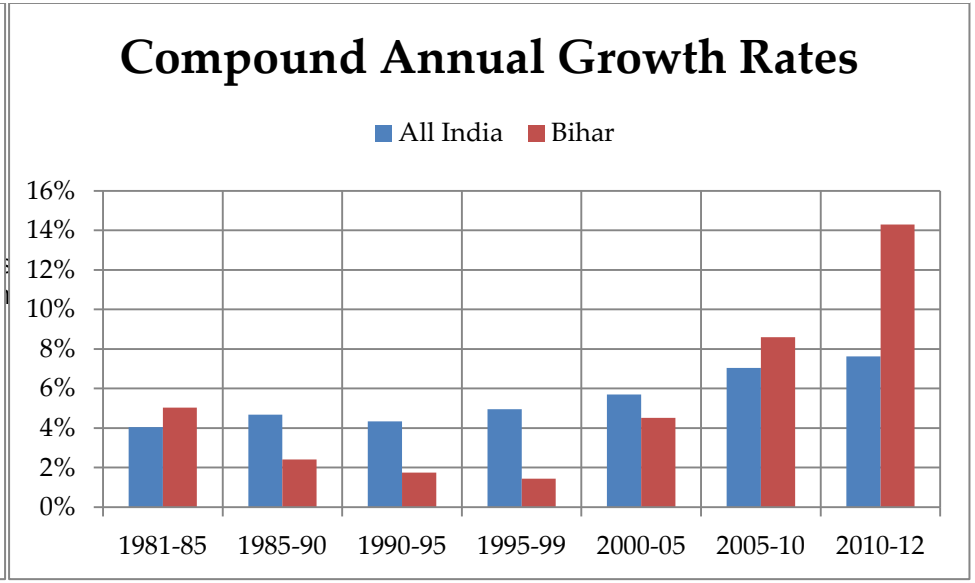
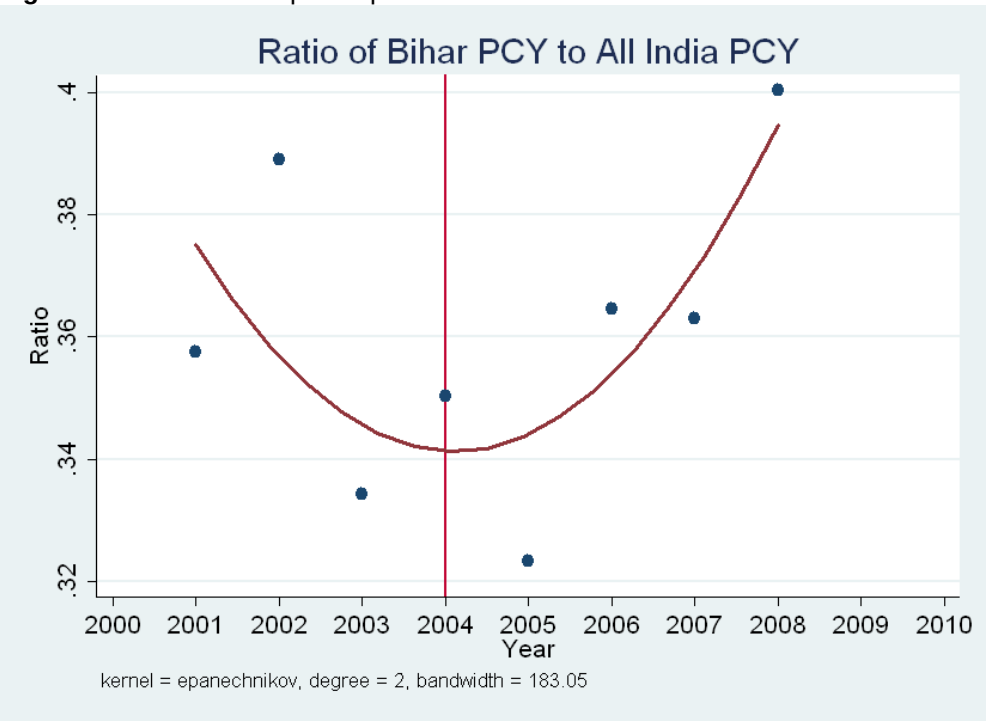
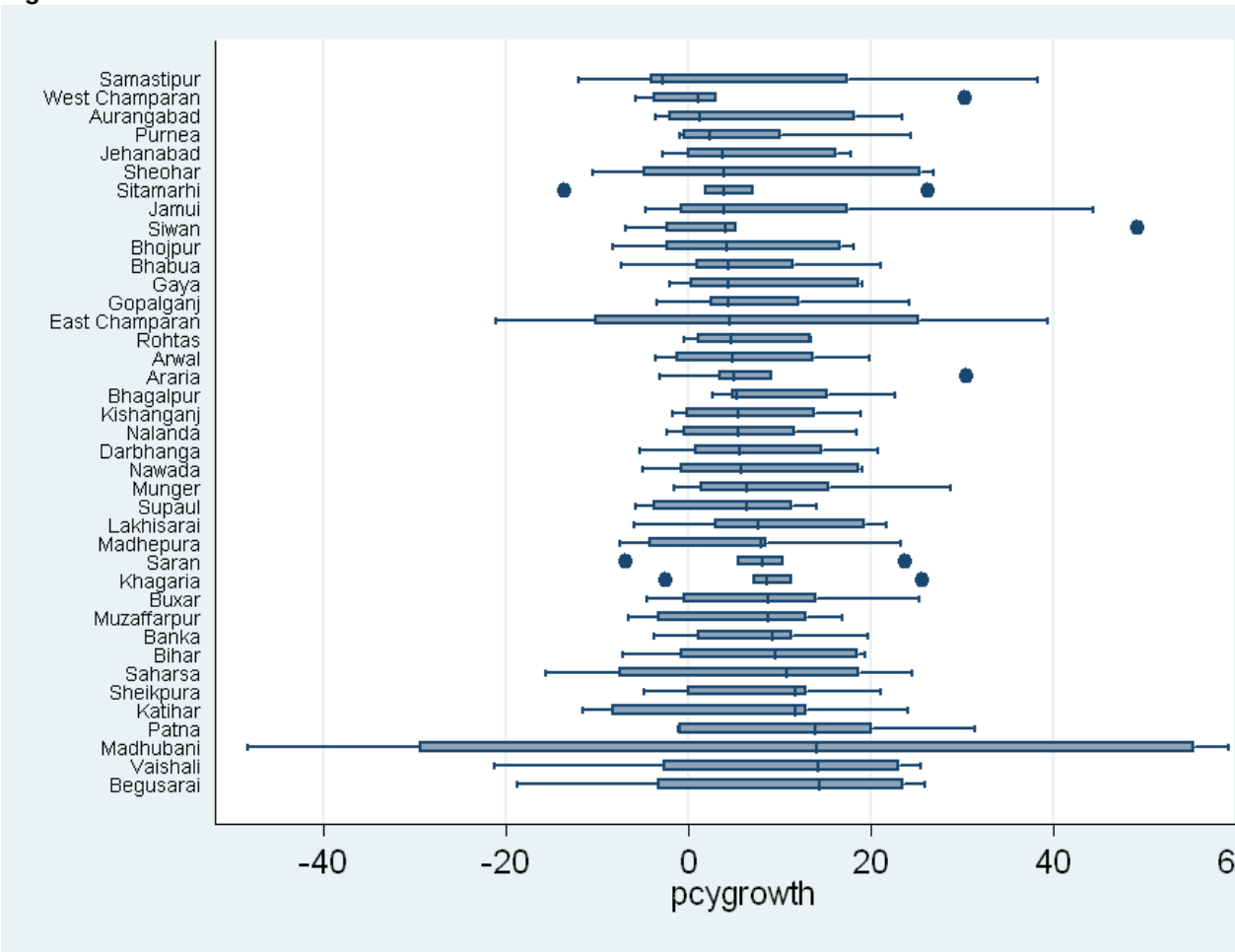


Figure 7: Bihar's GSDP per Capita Relative to India Post Bifurcation



Source: CSO Data. We superimpose a quadratic fit to the time-series on per capita relative output. All prices are 1999-2000 prices.

Figure 8: Box-Plots for District Level Growth Rates 2000-01 to 2007-08



Source: Department of Economics and Statistics, Government of Bihar
Note: The box plots are sorted by median district growth rates.

Figure 9: Poverty Trends in Pre-Bifurcation Bihar

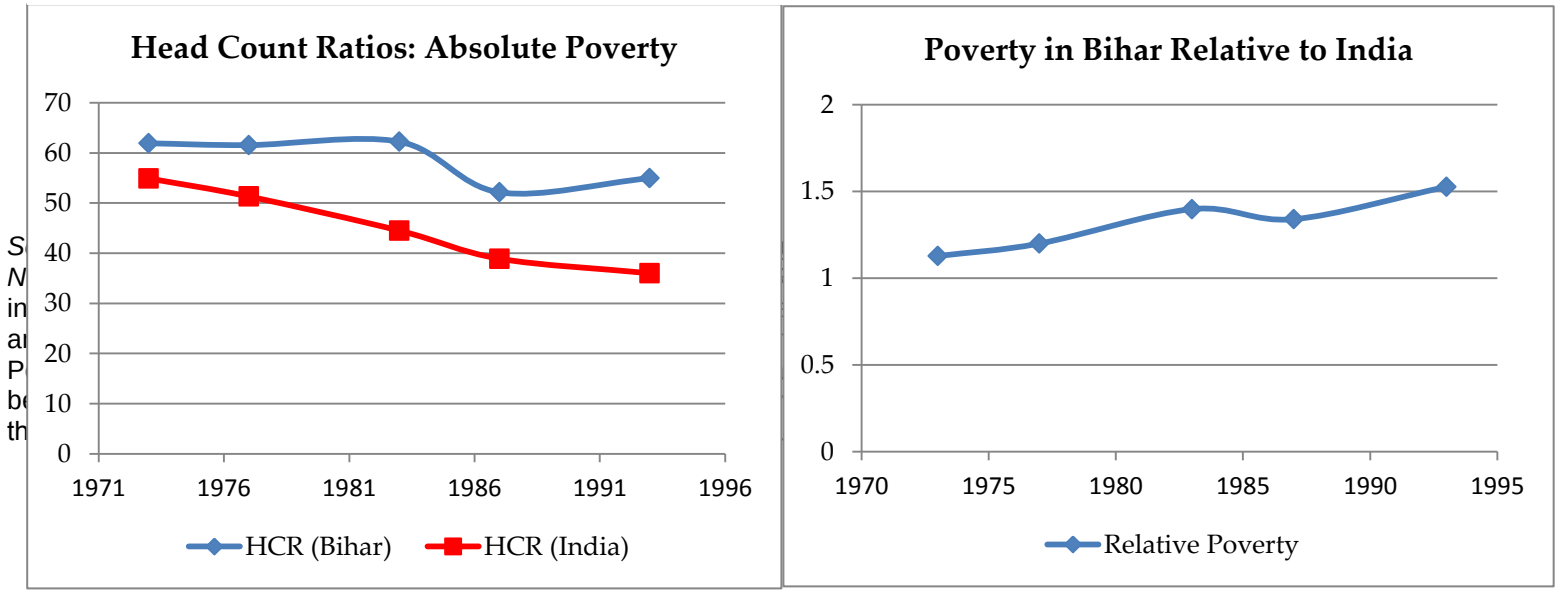
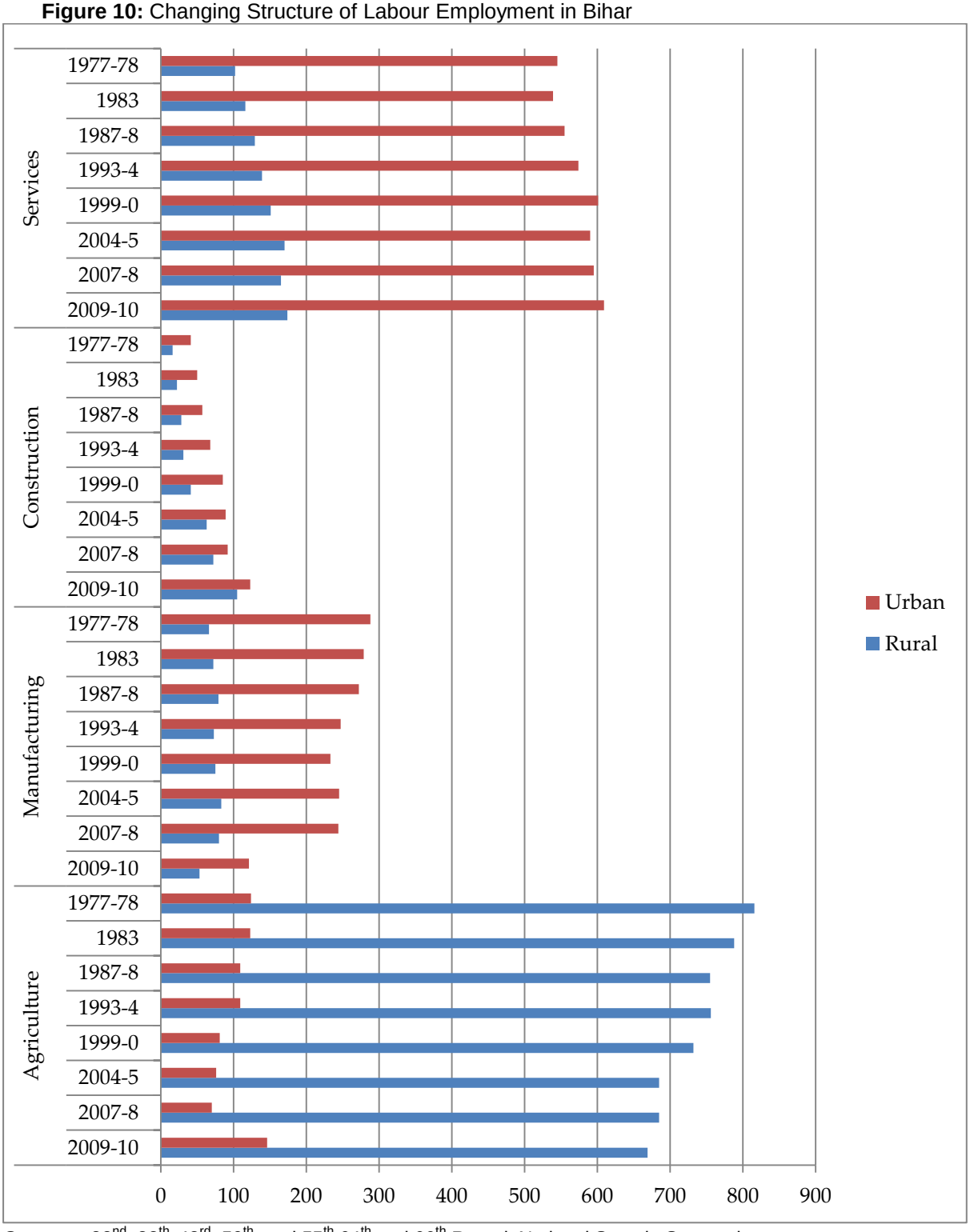


Figure 10: Changing Structure of Labour Employment in Bihar



***Sources*:** 32nd, 38th, 43rd, 50th, and 55th 64th and 66th Round, National Sample Survey data

Figure 11: Changes in District Level Literacy Rates (1981-2011)

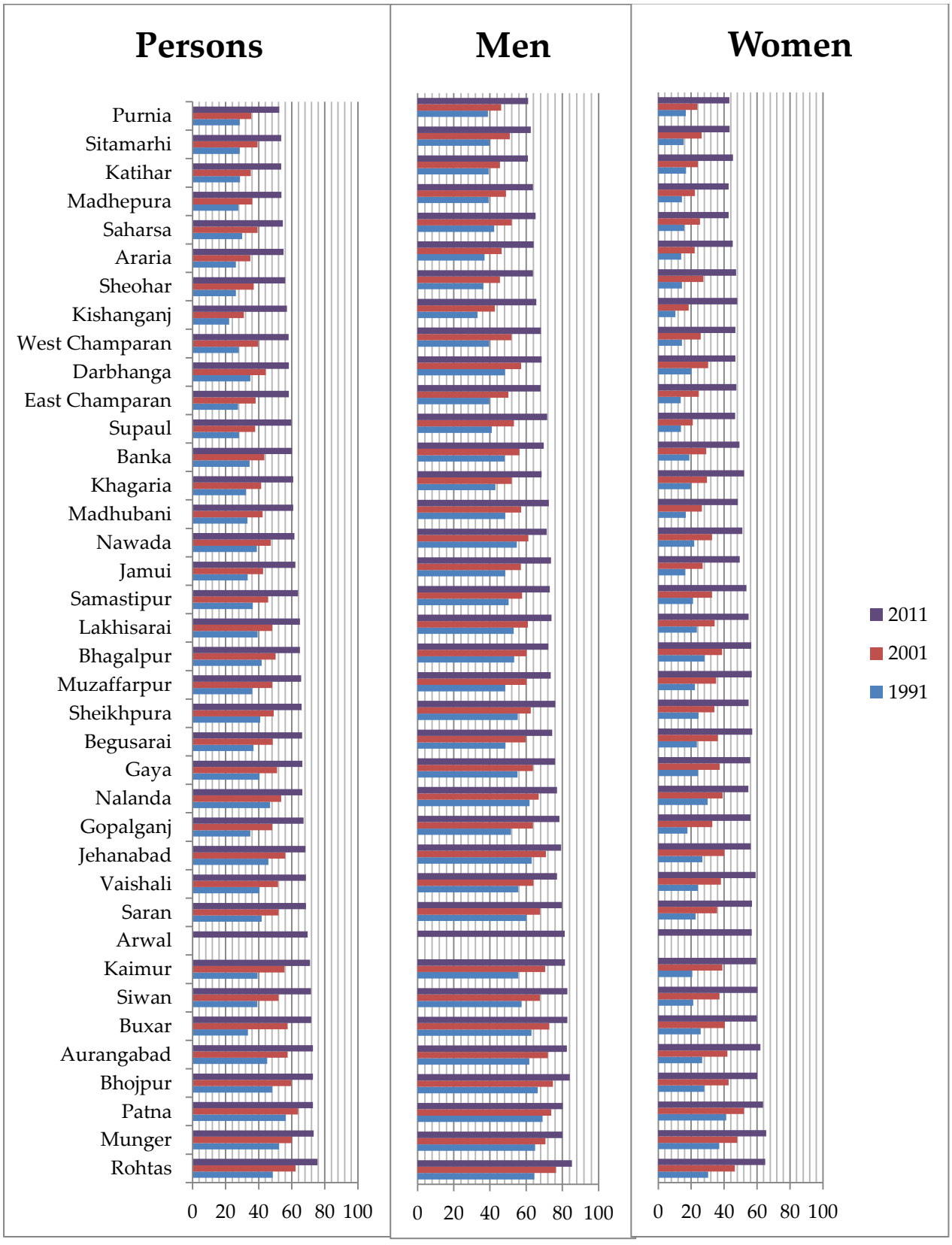


Figure 12: District PCY Rankings in 2001-02 and 2007-08

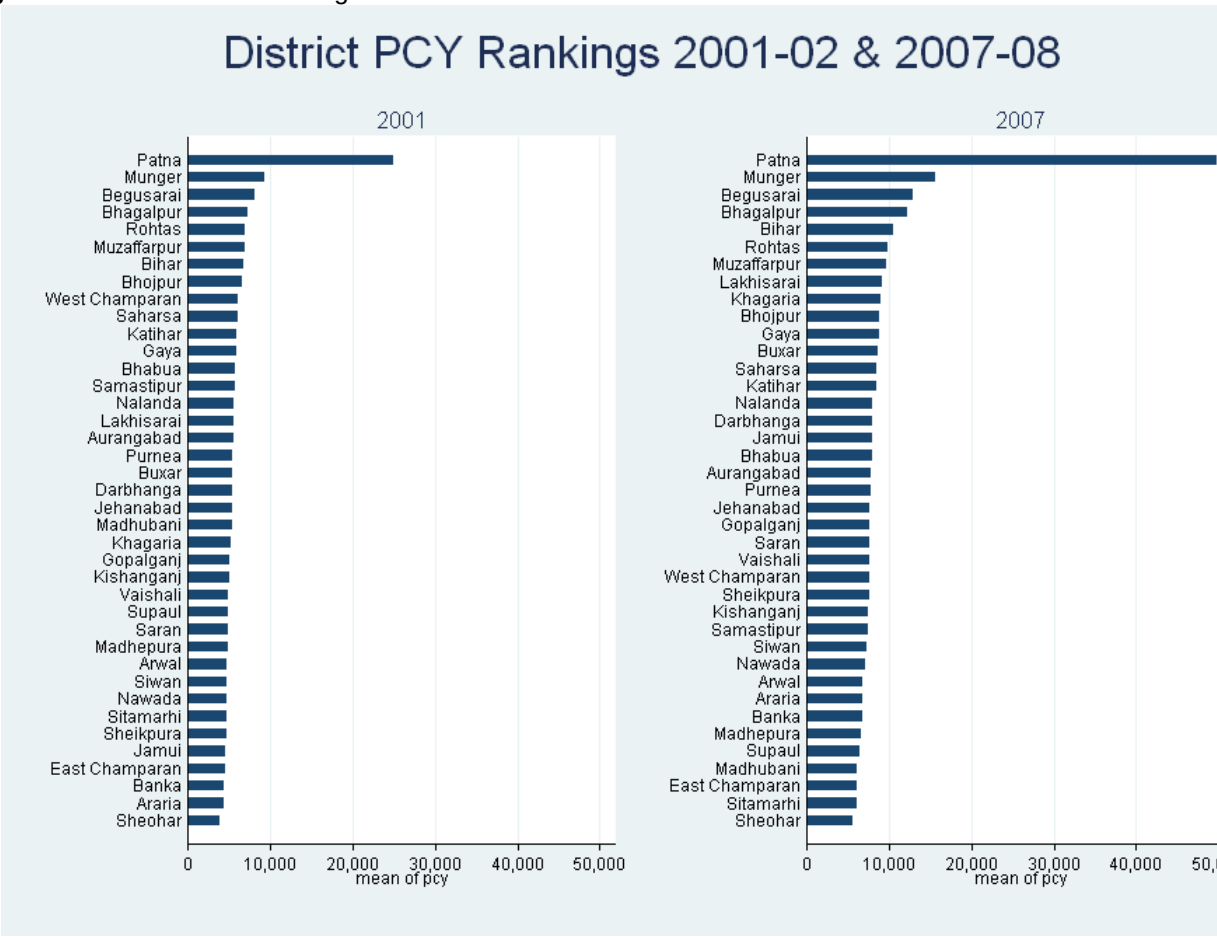
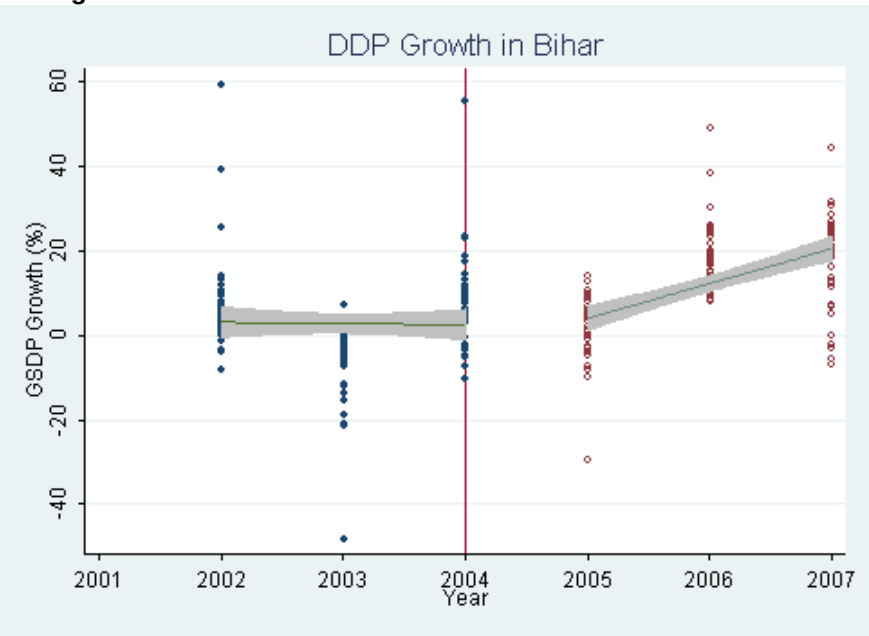
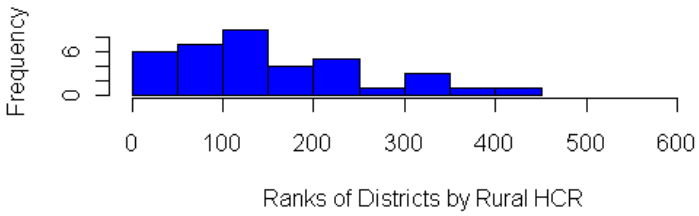


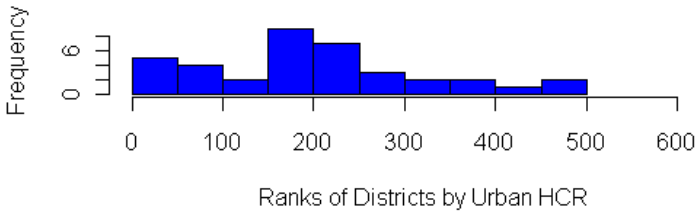
Figure 13: District Growth Rates -Pre and Post 2005 Elections



***Source*:** CSO Data
***Note*:** We fit a piece-wise linear regression line for the growth rates prior to and after the 2005 elections, looking at district growth rates.

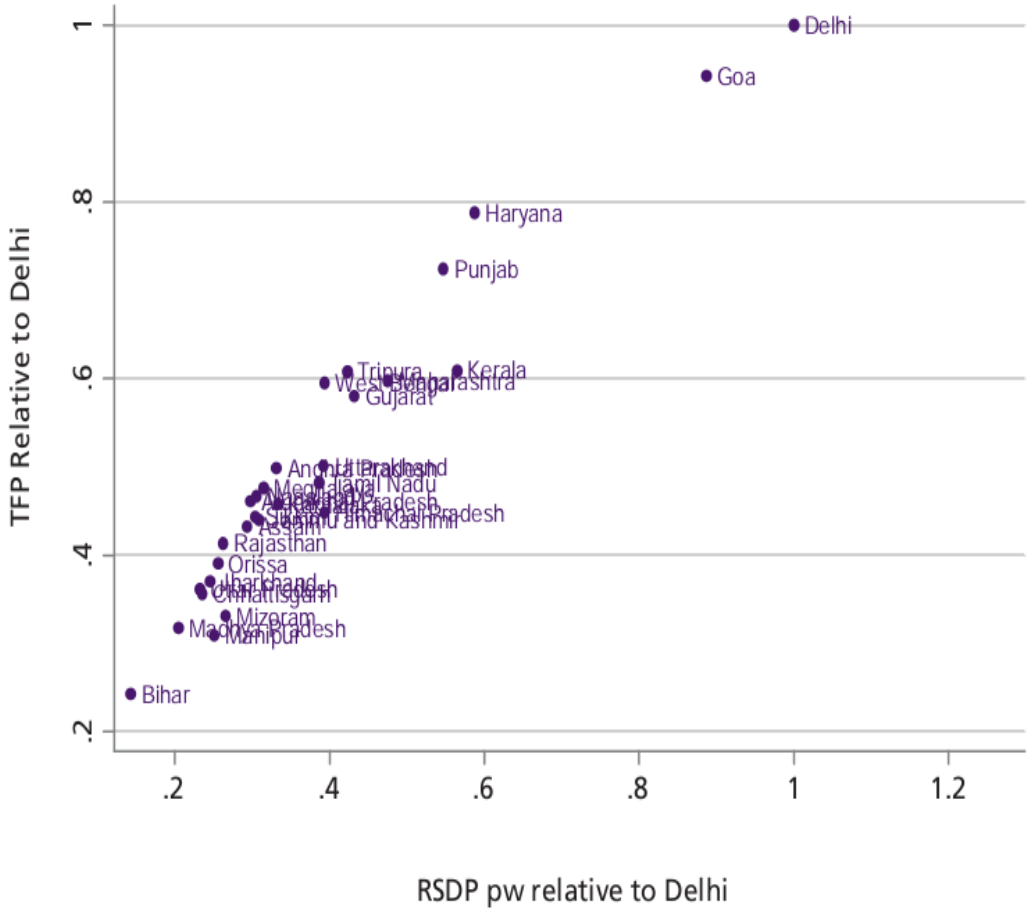
Figure 14: All India Rankings of Bihar Districts by Poverty Ratios





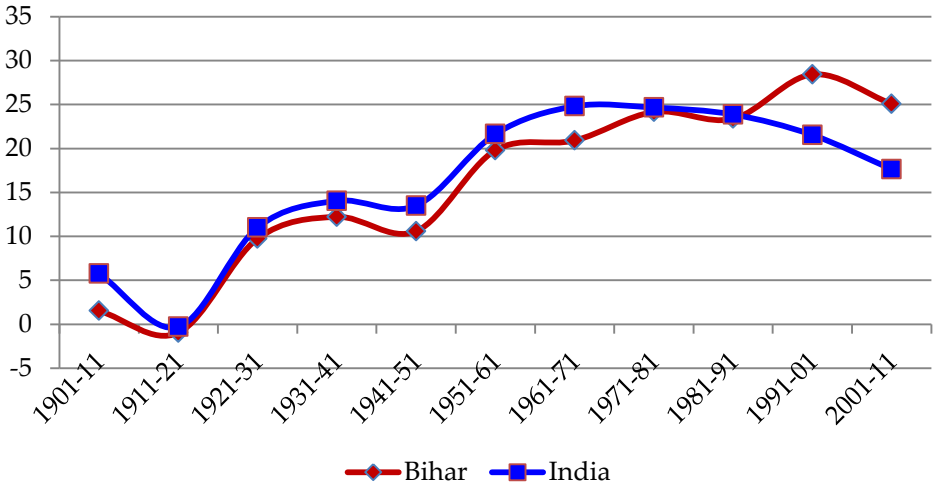
***Source*:** Chaudhuri and Gupta (2009)

Figure 15: Relative TFP and Relative SDP across states in India



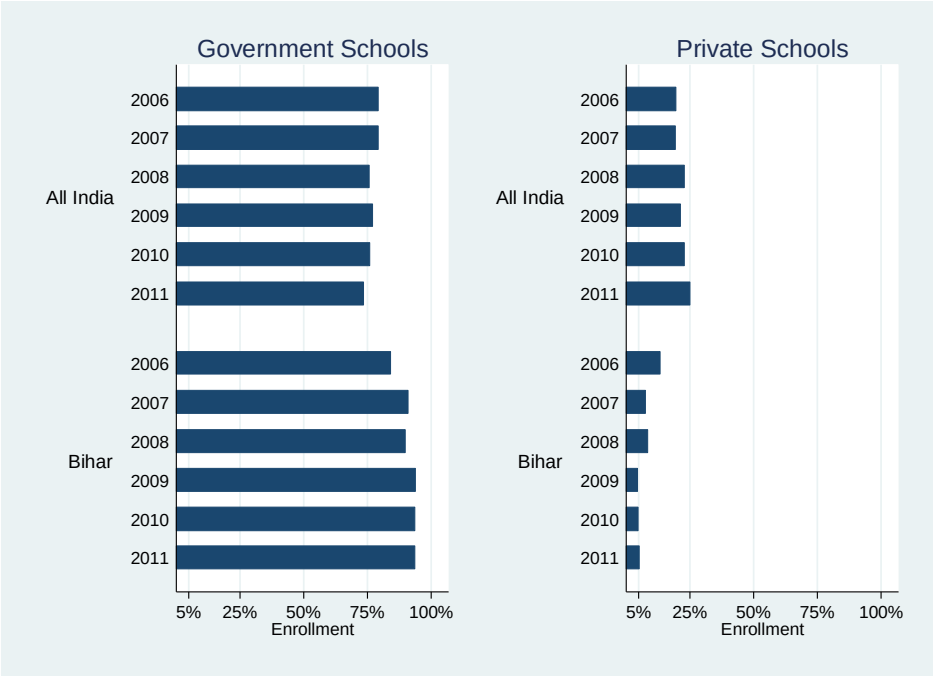
Source: Chanda (2011)
Note: Units of TFP or total factor productivity are difficult to interpret so the author has scaled all TFP estimates with respect to the highest TFP in the sample -- Delhi's. To make the comparison meaningful, the x-axis measured relative state domestic product (RSDP).

Figure 16: Population Growth Rates for 1901-11 to 2001-11



Source: Census of India 2011 and http://gov.bih.nic.in/Profile/Annexure-02.htm
Note: We plot decade specific growth rates from the 1901-11 decade to the 2001-11 decade.

Figure 17: Enrolment Ratios across Government and Private Schools

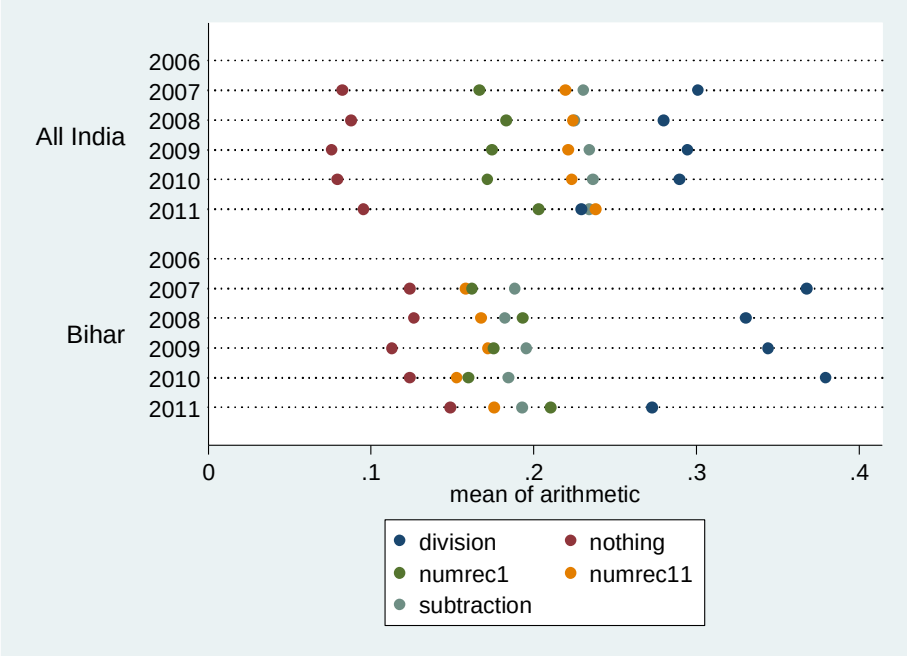


Source: ASER Data (various rounds)

Figure 18: Average Reading Abilities in Classes I to VIII in Bihar and India

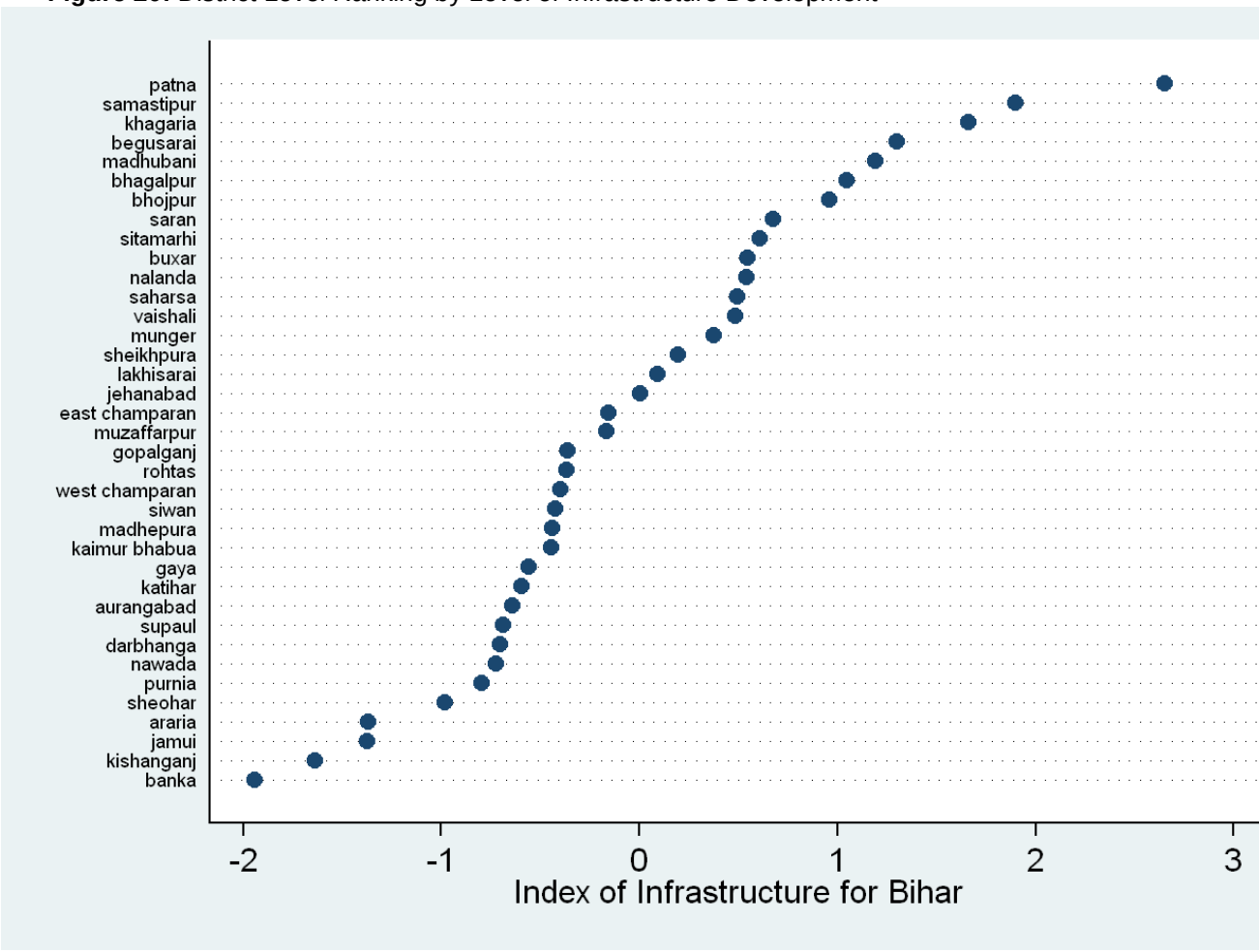
Source: ASER Data (various rounds)

Figure 19: Arithmetic Skills in Classes I to VIII



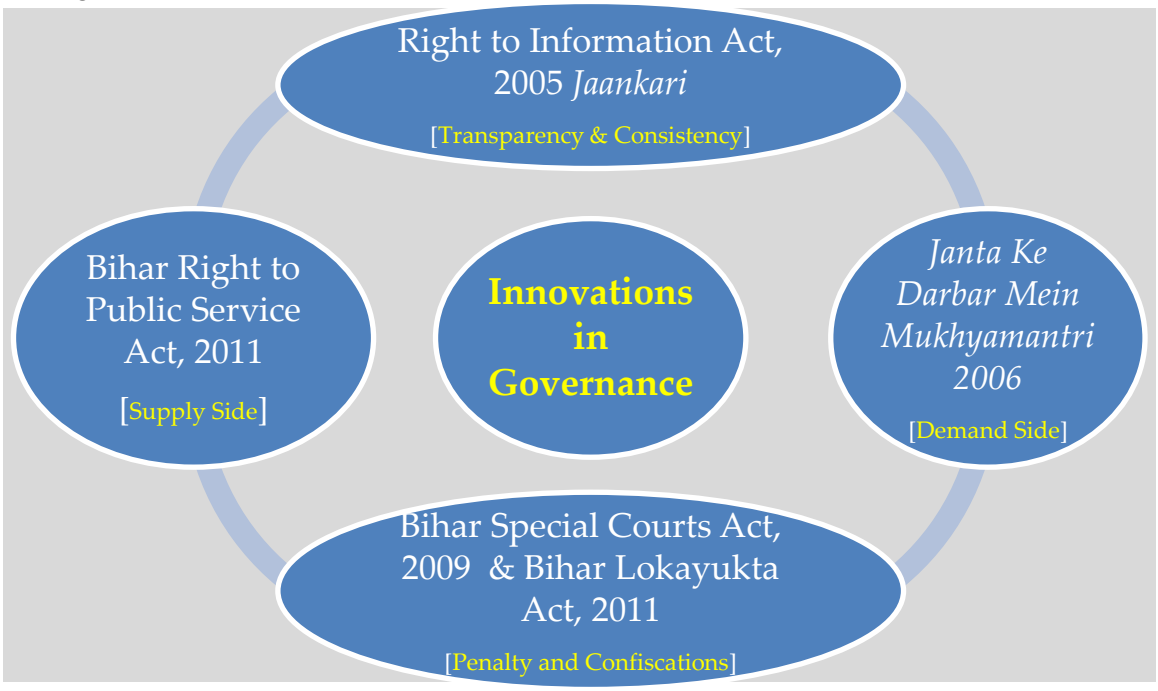
Source: ASER Data (various rounds)

Figure 20: District Level Ranking by Level of Infrastructure Development



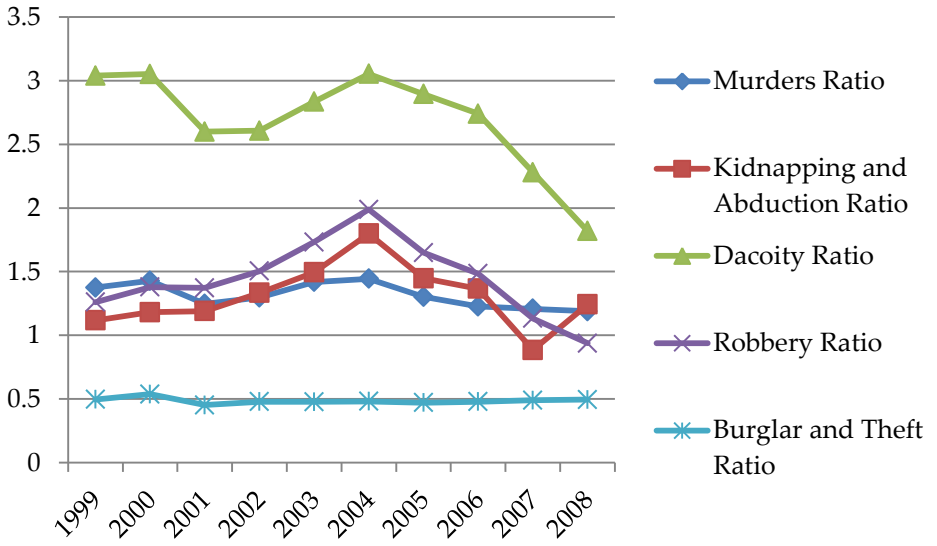
Note: We use a set of 34 variables to capture district level development in Bihar. Above, we plot the ranking of districts for the first principle factor consistent with the largest eigenvalue (7.42).

Figure 21: Framework for Governance in Bihar



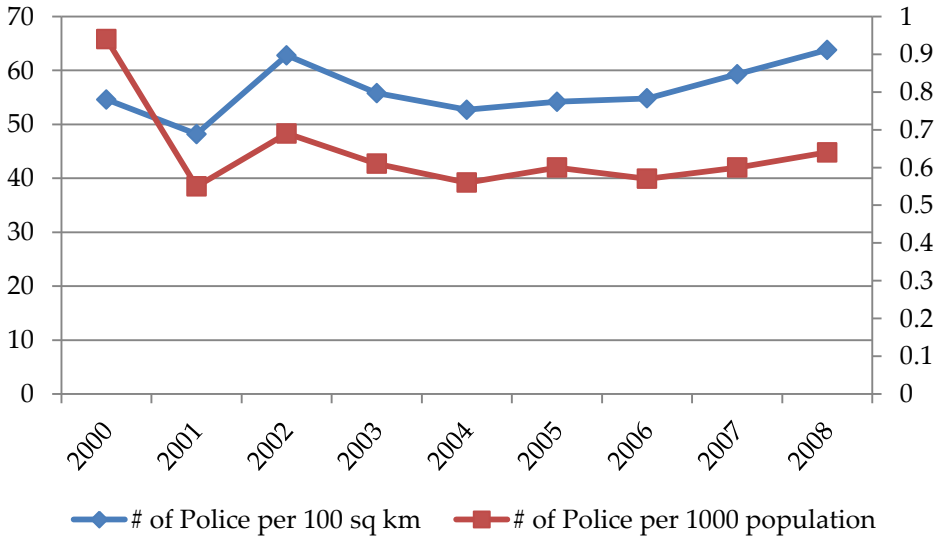
Source: Kumar (2011)

Figure 22: Bihar to All India Crime Incidence Ratios for Key Crime Categories



Source: http://ncrb.nic.in/ciiprevious/main.htm
Note: For each crime category we plot the ratio of crime rate in Bihar to crime rate in India; the crime rate is the ratio of the counts of a category of crime to the population. Data for 1999 and 2000 are for both Bihar and Jharkhand.

Figure 23: Police Presence in Bihar 2000-2008



Source: http://ncrb.nic.in/ciiprevious/main.htm
Note: 2000 figures contain data for both Bihar and Jharkhand.

Figure 24: Ratio of Per Capita Development Expenditure in Bihar to India

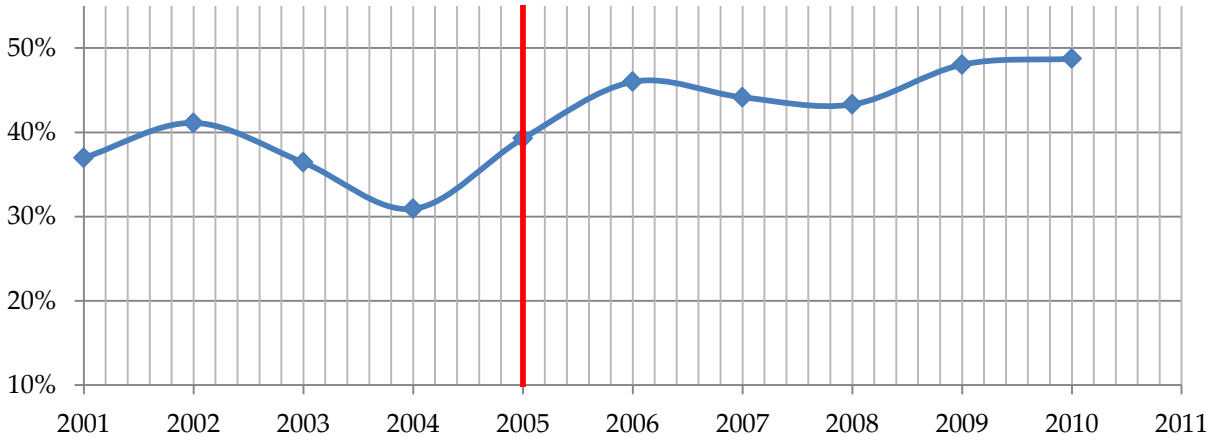
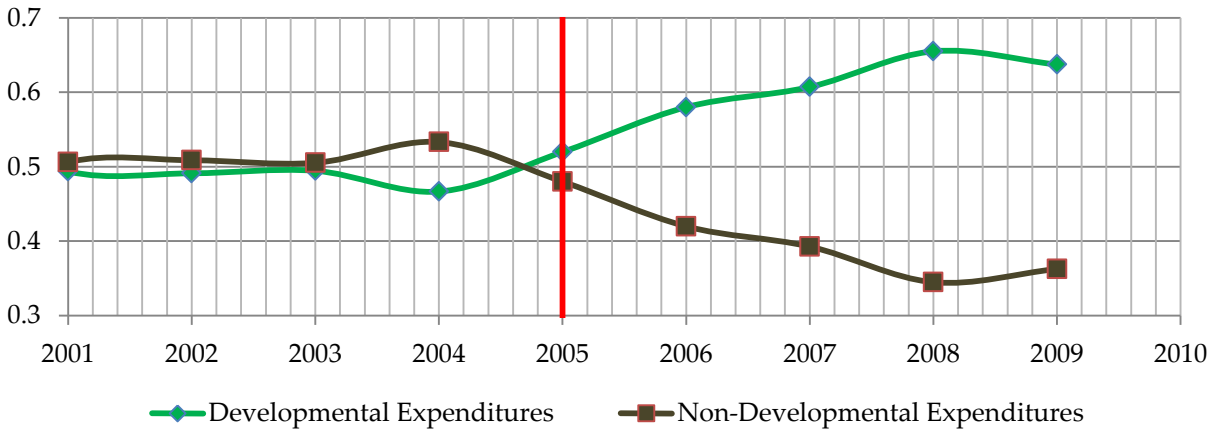


Figure 25: Expenditure on Developmental and Non-Developmental Heads



TABLES

Table 1: Human Development Index in Bihar across the years

Year	Bihar	India	Ratio
1981	0.237	0.302	0.784768
1991	0.308	0.381	0.808399
2001	0.367	0.472	0.777542
2005	0.449	0.575	0.78087

Source: National Human Development Report 2001 & Meghalaya 2008 Human Development Report

Table 2: Poverty Ratios for Bihar

Year	Lakdawala Methodology		Tendulkar Methodology	
	Bihar	India	Bihar	India
1983	62.2	44.5		
1993-94	55.0	36.0	60.5	45.3
2004-05	41.4	27.5	54.4	37.2
2009-10			53.5	29.8

***Source*:** http://planningcommission.nic.in/data/datatable/0904/tab_46.pdf
http://planningcommission.nic.in/news/press_pov1903.pdf

Note: Interestingly, Mukim and Pangariya, forthcoming, calculate the Poverty Headcount ratio at the Lakdawala line for 2009-10 and estimate it to be 35.7 for Bihar indicating a decline by 5.7 points indicating different poverty distributions below the two different poverty lines.

Table 3: Literacy Rates in Bihar and India

	Bihar			India		
Year	Persons	Males	Females	Persons	Males	Females
1951	13.5	22.7	4.2	18.3	27.2	8.9
1961	22.0	35.9	8.1	28.3	40.4	15.4
1971	23.2	35.9	9.9	34.5	46.0	22.0
1981	32.3	47.1	16.6	43.6	56.4	29.8
1991	37.5	51.4	22.0	52.2	64.1	32.2
2001	47.5	60.3	33.6	64.8	75.3	53.7
2011	63.8	73.4	53.3	74.0	82.1	65.5

Source: http://gov.bih.nic.in/Profile/CensusStats-03.htm and
http://pib.nic.in/prs/2011/latest31mar.pdf

Table 4: Life Expectancy at Birth

Period	Male		Female	
	Bihar	India	Bihar	India
1981-85	54.2	55.4	51.5	55.7
1992-95	60.2	60.1	58.2	61.4
1999-2003	61.6	61.8	59.7	63.8
2002-2006	62.2	62.6	60.4	64.2
2011-2016	69.9	70.0	69.1	71.1

Source: SRS Data. 2011-16 is a projection.

Table 5: Structural Change between undivided and divided Bihar in 1995-96

Sectors	Values (Rs. Lakhs)		Composition	
	1980-81 Prices	1993-94 Prices	1980-81 Prices	1993-94 Prices
Agriculture & Allied	357682	1010961	31%	46%
Construction	88591	74602	8%	3%
Industry	276028	95443	24%	4%
Services	425506	997062	37%	46%
GSDP	1147807	2178068	100%	100%

Source: http://mospi.nic.in/Mospi_New/upload/ftest9%282%29.htm and http://mospi.nic.in/Mospi_New/upload/ftest9%281%29.htm

***Note*:** Constant price data for 1995-96 is available for national income series that uses 1980-81 as base year and the one that uses 1993-94 for as the base year. While the 1980-81 price series captures undivided Bihar, the 1993-94 data for the set of districts that became modern Bihar in 2000 i.e. for the divided Bihar.

Table 6: Markov Transition Matrices for District Level Growth Processes

	Growth < 0.05 %	0.05% =< Growth < 11%	Growth >= 11%
Panel A: 2001-2007			
Growth < 0.05 %	0.1970	0.4091	0.3939
0.05% =< Growth < 11%	0.4211	0.2763	0.3026
Growth >= 11%	0.3962	0.0755	0.5283
Panel B: 2001-2004			
Growth < 0.05 %	0.3158	0.4474	0.2368
0.05% =< Growth < 11%	0.7576	0.2121	0.0303
Growth >= 11%	1.0000	0	0
Panel C: 2005-2007			
Growth < 0.05 %	0	0.1176	0.8824
0.05% =< Growth < 11%	0	0.1200	0.8800
Growth >= 11%	0.1389	0.0833	0.7778

***Note*:** Let the Markov matrices for each of the panels be named A, B and C respectively. Observing matrix A, it is clear that is a regular matrix, i.e. has non-negative transition probabilities for each cell. Matrices B and C are also regular as B^2 and C^2 have all strictly non-negative transition probabilities. All regular matrices have a limiting distribution (Stokey and Zeckhauser 1978). The limiting distributions for each of these matrices are as follows: A's limiting distribution is given by {0.3353, 0.234386, 0.430286}; B's limiting distribution is given by {0.548852, 0.311708, 0.139439}; and C's limiting distribution is given by {0.110932, 0.0904235, 0.798645}. The probabilities are estimated using per capita income data for each district provided by the Department of Economics and Statistics, Government of Bihar.

Table 7: Changes in Relative Performance of Districts in Post-Bifurcation Bihar

District	PCY (2001)	PCY (2007)	2001-Ranks	2007-Ranks	Diff in Ranks
Jamui	4600	7975	35	17	18
Khagaria	5226.563	9013.423	23	9	14
Lakhisarai	5587.5	9108.696	16	8	8
Sheikpura	4660.377	7559.322	34	26	8
Buxar	5442.857	8696.202	19	12	7
Araria	4310.185	6778.656	38	32	6
Saran	4824.615	7575.342	28	23	5
Darbhanga	5421.212	7983.607	20	16	4
Banka	4366.459	6767.567	37	33	4
Bihar	6680	10435.42	7	5	2
Gopalganj	5060.465	7619.247	24	22	2
Vaishali	4926.47	7566.456	26	24	2
Siwan	4752.768	7330.065	31	29	2
Nawada	4751.381	7078.432	32	30	2
Gaya	5858.79	8854.637	12	11	1
Patna	24919.49	49831.14	1	1	0
Munger	9263.158	15543.31	2	2	0
Begusarai	8102.127	12974.07	3	3	0
Bhagalpur	7260.331	12252.71	4	4	0
Nalanda	5641.35	8052.631	15	15	0
Jehanabad	5391.305	7701.923	21	21	0
Sheohar	3884.615	5666.667	39	39	0
Rohtas	6902.041	9789.091	5	6	-1
Muzaffarpur	6850.667	9642.856	6	7	-1
Arwal	4779.661	6800	30	31	-1
East Champaran	4500	6089.324	36	37	-1
Bhojpur	6629.464	8869.047	8	10	-2
Aurangabad	5542.289	7843.478	17	19	-2
Purnea	5468.504	7722.973	18	20	-2
Kishanganj	5030.769	7414.474	25	27	-2
Saharsa	5993.377	8473.989	10	13	-3
Katihar	5933.055	8431.655	11	14	-3
Kaimur	5736.434	7885.135	13	18	-5
Madhepura	4823.529	6675.978	29	34	-5
Sitamarhi	4723.881	6077.419	33	38	-5
Supaul	4919.075	6417.91	27	35	-8
Samastipur	5716.814	7401.028	14	28	-14
Madhubani	5321.229	6132.029	22	36	-14
West Champaran	6065.79	7562.146	9	25	-16

Table 8: Growth across Sectors (1999-2000 Prices)

Sector	CAGR 10	CAGR 5
	[2000-01, 2009-10]	[2005-06,2009-10]
Agriculture	-0.20%	3.60%
Industry	2.00%	6.00%
Construction	23.70%	23.20%
Services	8.40%	11.90%

Source: Central Statistical Organization
Note: CAGR stands for Compound Annual Growth Rate; CAGR 10 is calculated over a 10 year period while CAGR 5 is calculated over a 5 year period.

Table 9: Structure of the Services Sector (As a Share of NSDP)

Services Sub-Sector	2000-01	2005-06	2009-10
Trade, Hotels and Restaurants	14.94%	20.18%	27.30%
Other Services	14.25%	14.17%	10.20%
Public Administration	7.09%	6.59%	5.34%
Real Estate, Ownership of Dwellings and Business Services	3.80%	4.14%	3.19%
Banking & Insurance	3.46%	3.87%	4.69%
Communication	1.37%	2.84%	4.76%
Railways	3.01%	2.35%	2.14%

Source: CSO

Table 10: Estimates of Sectoral Distribution of Work Force

Year	Agriculture	Manufacturing	Construction	Services
2007-8	637	105	53	203
2004-5	638	111	46	202
1999-0	672	101	35	191
1993-4	692	101	28	178
1987-8	686	108	33	167
1983	718	102	20	156
1977-78	733	100	15	150

***Source*:** Constructed from NSSO (2011)
***Note*:** We weight NSSO data reported in NSSO (2011) with appropriate sex ratio and urbanization ratios to construct these estimates.

Table 11: District Level Poverty Indicators 2005

District Name	MPCE (Rs.)		Lorenz Ratio		Head Count Ratio	
	Rural	Urban	Rural	Urban	Rural	Urban
West Champaran	319.57	449.9	0.1621	0.2758	76.90	71.72
Muzaffarpur	382.75	545.9	0.2327	0.3346	65.25	56.33
Kishanganj	362.97	768.9	0.1729	0.3042	62.32	30.60
Banka	361.65	354.6	0.1650	0.1144	59.83	88.39
Madhubani	355.73	629.2	0.1632	0.3305	59.23	41.23
Begusarai	369.76	495.9	0.1488	0.2468	56.67	47.62
Saran	381.80	701.4	0.1990	0.3409	55.85	34.70
Aurangabad	371.84	647.8	0.2424	0.3744	55.41	53.60
Araria	362.32	649.4	0.1421	0.2510	54.60	35.58
Jehanabad	373.16	464.5	0.2048	0.2114	54.19	57.06
Buxar	354.34	552.1	0.1508	0.2365	54.18	33.31
Samastipur	388.00	480.0	0.2009	0.2397	52.28	62.08
Jamui	389.85	401.6	0.1638	0.1788	46.30	68.09
Bhagalpur	381.68	687.2	0.1731	0.1997	45.15	14.88
Nalanda	397.92	525.7	0.1673	0.2029	44.77	39.58
Patna	420.24	907.6	0.2364	0.3444	44.67	25.77
Darbhanga	427.71	627.8	0.2411	0.2922	42.16	40.74
Kaimur	387.51	662.4	0.1793	0.1849	41.99	21.74
Vaishali	411.27	525.9	0.2135	0.2865	41.64	54.34
Bhojpur	398.69	553.1	0.1877	0.2492	41.55	43.60
Nawada	431.29	563.2	0.1942	0.2319	38.83	48.66
Lakhisarai	457.25	591.1	0.1887	0.2621	38.59	41.72
Gaya	433.50	889.8	0.2236	0.4231	37.48	33.53
Katihar	426.16	884.0	0.1940	0.3052	36.54	13.25
Munger	436.93	600.7	0.1574	0.2547	35.63	44.20
Rohtas	407.11	440.4	0.1679	0.2053	34.62	62.11
Siwan	455.36	634.2	0.1798	0.2615	30.18	41.41
Purnea	495.49	815.3	0.2167	0.2431	29.04	8.55
Sheikpura	433.06	506.2	0.1908	0.1599	28.64	39.27
Sitamari	450.56	586.6	0.1699	0.2377	28.08	39.27
Gopalganj	444.96	645.7	0.1962	0.2829	27.36	28.56
Saharsa	586.10	938.9	0.2534	0.2299	21.05	1.39
East Champaran	473.61	592.1	0.1629	0.2128	20.05	35.18
Supaul	543.28	502.6	0.1933	0.2159	20.00	35.30
Khagaria	495.17	617.0	0.1568	0.1496	16.72	3.98
Sheohar	483.77	603.8	0.1139	0.2300	14.79	32.51
Madhepura	563.01	509.3	0.1582	0.2703	7.68	37.08

***Source*:** Choudhuri and Gupta (2009); Note: MPCE is the monthly per capita consumption expenditure. The Head Count Ratio is calculated using Planning Commission determined poverty lines. The Lorenz ratio is computed for each state or district using state-specific MPCE percentile classes and not for all-India MPCE classes.

Table 12: Per Capita Expenditure on Key Services in Provinces of British India

Province	General Administration		Education		Health	
	1876-77	1927-28	1876-77	1927-28	1876-77	1927-28
Bombay	374	411	325	345	285	141
Central	185	169	197	131	142	53
Madras	159	193	112	166	139	98
Punjab	244	103	145	199	135	126
United	140	103	110	123	78	51
Bengal	100	100	100	100	100	100
Assam	159	136	117	120	82	121
Burma	470	292	295	276	260	201
Bihar and Orissa	-	75	-	83	-	51

Source: Gyan Chand. The Essentials of Federal Finance (Madras 1930); cited by Kumar (1982)

Notes: (1) Expenditure on Bengal is taken as the base for all years (Bengal = 100 by construction)

(2) Bihar and Orissa were a part of the Bengal Presidency in 1876-77.

Table 13: Centrally Planned Inequality - Punjab and Bihar

	I. Actual Plan Allocation		II. Projected Plan Allocation		Gap between I and II	
Five year plan	Punjab	Bihar	Punjab	Bihar	Punjab	Bihar
First FYP 1951-56	124.00	104.00	52.71	423.22	71.29	(-)318.82
Second FYP 1956-61	1263.00	194.20	110.37	465.40	1152.63	(-)271.2
Third FYP 1961-66	231.40	337.04	189.53	793.08	41.86	(-)456.04
Fourth FYP 1969-74	293.60	531.28	371.60	1703.61	(-)78.04	(-)1172.33
Fifth FYP 1974-79	220.80	368.67	655.84	2732.92	(-)434.97	(-)2364.25
Sixth FYP 1980-85	1957.00	3225.00	2492.91	10374.40	(-)535.91	(-)7149.40
Seventh FYP 1985-90	3285.00	5100.00	4108.92	18777.12	(-)823.92	(-)13677.10
Eighth FYP 1992-97	6570.00	13000.00	4373.63	18609.38	2196.37	(-)5609.38
Ninth FYP 1997-02	11500.00	16680.00	8288.61	36850.72	3211.39	(-)20170-70
Tenth FYP 2002-07	18657.00	21000.00	13715.51	46972.25	4941.49	(-)25972.30
TOTAL	44101.80	60540.59	34359.63	137702.10	9742.19	(-)77161.50

Source: Guruswamy (2007)

Table 14: Money Disbursement & Lobbying for Central Assistance

States	Ranks for Money Disbursement Index	Average Lobbying Index
Punjab	1	3
Haryana	2	1
Orissa	3	7
Rajasthan	4	5
Gujarat	5	9
Kerala	6	12
Karnataka	7	2
Uttar Pradesh	8	4
Andhra Pradesh	9	8
Madhya Pradesh	10	11
Tamil Nadu	11	13
West Bengal	12	14
Maharashtra	13	10
Bihar	14	6

Source: Working paper version of Biswas et al. (2010), available online at: http://www.csh-delhi.com/team/downloads/publiperso/state_lobbying_at_the_centre_and_discretionary_finance_in_india.pdf (accessed 15th October 2011).

Note: Money Disbursement Index for state *j* in year *t* was calculated as $(m_{jt}/\sum_j m_{jt})/population_{jt}$ where mjt is the amount of money disbursed to a state under the discretionary head in state *s* and year *t*. The Political Lobbying Index is calculated as $(h_{jt}/\sum_j h_{jt})/population_{jt}$, where h_{jt} is the total representation of the j^{th} state in the council of ministers in time period *t*.

Table 15: Changing Crime Rates by Different Types of Crime in Bihar 2001-2010

Year	Murder	Dacoity	Robbery	Burglary	Theft	Riots	Kidnapping for Ransom	Rape	Road Dacoity	Road Robbery	Bank Dacoity	Bank Robbery
2001	4.37	1.56	2.62	3.66	11.45	10.28	0.46	0.90	0.31	1.56	0.03	0.02
2002	4.27	1.48	2.63	3.72	11.50	10.30	0.46	1.03	0.30	1.55	0.03	0.02
2003	4.21	1.39	2.79	3.37	11.88	9.44	0.39	0.93	0.28	1.65	0.02	0.02
2004	4.37	1.47	3.29	3.61	13.04	10.42	0.47	1.20	0.32	2.12	0.03	0.03
2005	3.81	1.33	2.65	3.52	13.15	8.58	0.28	1.08	0.25	1.46	0.03	0.01
2006	3.53	1.06	2.34	3.86	14.33	9.35	0.21	1.19	0.23	1.37	0.02	0.01
2007	3.19	0.70	1.86	3.51	13.26	8.61	0.10	1.21	0.16	1.19	0.02	0.01
2008	3.21	0.68	1.63	3.54	15.00	8.70	0.07	1.10	0.15	0.95	0.02	0.01
2009	3.28	0.68	1.69	3.71	15.84	8.90	0.08	0.97	0.21	1.00	0.01	0.00
2010	3.44	0.66	1.57	3.52	15.92	9.02	0.07	0.81	0.21	1.08	0.01	0.00

Source: http://biharpolice.bih.nic.in/asp/cr12.asp and NCRB for mid-year population estimates to calculate rates
Note: The rate is to be interpreted as the number of crimes per 1,00,000 people.

Table 16: Conviction of Criminals

Year	# of New Cases		# Convicted		Category of Punishment					Total Convictions
	IPC	Arms Act	IPC	Arms Act	Hanging	Life	>= 10 Years	< 10 Years	Major Punishment	
2006	2178	1156	5230	1609	17	366	1389	5067	1772	6839
2007	3695	800	8774	1154	39	680	2168	6966	2887	9853
2008	4461	706	10994	1018	27	610	2307	9063	2944	12007
2009	5556	391	12406	535	12	375	1824	5831	2211	13163

***Source*:** Economic Survey 2010-11 and http://biharpolice.bih.nic.in/recent/strial.pdf

Table 17: Flood Statistics in Bihar

	Number of Affected					Value Damaged (in Rs. Lakh)		Deaths	
Year	District	Blocks	Panchayats			Home	Public Property		
			Fully	Partly	Total			Human	Animal
2009	16	91	150	452	602	528	530	97	2
2008	18	116	341	583	924	8,451	9,772	258	878
2007	22	269	2235	1581	3816	83,145	64,242	1287	2423
2006	14	63	10	365	375	1,225	8,456	36	31
2005	12	81	130	432	562	383	305	58	4
2004	20	211	2,015	773	2,788	75,810	103,050	885	3272
2003	24	172	646	850	1,496	2,032	1,035	251	108
2002	25	6	1,587	917	2,504	52,622	40,892	489	1450
2001	22	194	838	1,154	1,992	17,358	18,354	231	565
2000	33	213	653	1,674	2,327	20,934	3,781	336	2568
1999	24	150	820	784	1,604	5,385	5,410	243	136
1998	28	260	1,264	1,475	2,739	5,504	9,284	381	187
1997	26	169	635	1,267	1,902	3,057	2,038	163	151
1996	29	195	1,102	947	2,049	1,495	1,036	222	171
1995	26	177	460	1,441	1,901	7,510	2,184	291	3742
1994	21	112	490	555	1,045	495	152	91	35
1993	18	124	596	667	1,263	8,814	3,041	105	420
1992	8	19	23	147	170	16	1	4	
1991	24	137	578	758	1,336	614	140	56	84
1990	24	162	475	784	1,259	160	182	36	76
1989	16	74	173	479	652	161	84	26	
1988	23	181	410	1,206	1,616	211	151	52	29
1987	30	382	3,492	2,620	6,112	25,789	681	1,399	5302
1986	23	189			1,828	647	3,202	134	511
1985	20	162	495	750	1,245	756	205	83	20
1984	23	239	1,325	1,884	3,209	2,292	2,718	143	90
1983	22	138	477	747	1,224	172	258	35	21
1982	15	110		1,112	1,112	687	955	25	14
1981	21	201			2,138	407		18	11
1980	21	193			1,869	561		67	42
1979	13	110				103		14	4

Source: http://disastermgmt.bih.nic.in/Statitics/Statistics.htm