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Economic Development of the Indian State of Punjab: Prospects and Policies§

ABSTRACT This paper assesses the state of Punjab's economy, reasons for its current situation, prospects for growth, and policies to enable that growth. Punjab's economy is characterized by slow growth, societal challenges, and environmental degradation. We identify four interrelated issues that act as constraints on the Punjab economy. First, driven largely by dependence on the Central Government's food procurement policy, and its specific nature, the state remains heavily agricultural in a narrow manner. Second, Punjab's fiscal situation is constrained in ways that make fiscal policy dysfunctional: related causal factors include the agricultural structure and the state's political economy. Both physical and soft infrastructure have been negatively affected by the problems in public finances. Third, a combination of regional and domestic politics during an era of liberalization has disadvantaged the state, with existing manufacturing industries declining, and new industries and services not emerging rapidly enough. Fourth, both individual human capital and institutional or organizational capital have either failed to develop, or have deteriorated in some dimensions over recent decades, making Punjab less innovative and less attractive for new investment. The paper argues that prospects for meaningful economic development in Punjab will depend on collaboration between

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the state and national governments, including fiscal support from the latter to deal with switching costs and accumulated fiscal issues. We also discuss several specific policy areas, including agricultural diversification, industrial development and innovation, cross-border services, and decentralization to the local level.

Keywords: *Punjab, India, Growth, Development, Agriculture, Industrialization, Public Finances*

JEL Classification: *H70, O13, O14, O15, O43*

1. Introduction

This paper assesses the state of Punjab's economy, reasons for its current situation, prospects for growth, and policies to enable that growth. Punjab's economy is characterized by slow growth, social unrest, and environmental degradation. Punjab's recent economic trajectory has been shaped by its geography, including its location on an international border, and its water availability. The availability of water for agriculture was politically constrained by the partition of the region in 1947, and then by dividing Indian Punjab in 1966. The latter event occurred soon after the national food security policy created a major shift in the state's pattern of agriculture, towards a greater reliance on a wheat-rice crop cycle, tied to intensive use of water and fertilizers. Furthermore, Punjab's position on the border with Pakistan, over a decade of conflict in the 1980s and 1990s, and proximity to Jammu and Kashmir constrained industrial investment and what might have been a typical progression of development in the state.

After the 1947 Partition, the most agriculturally developed areas of Punjab remained in Pakistan. However, the government of Indian Punjab, piggybacking on national efforts such as the Bhakra-Nangal Dam complex, introduced land reforms, provided an agricultural research and extension system, irrigation and drainage system, credit, and a paved road network connecting villages and towns (Singh and Kohli 2005). As a result, Punjab was well positioned to be at the forefront of the national effort to achieve food security, built on new high-yielding varieties of wheat and rice, and a food procurement system that created an assured market for these foodgrains – what popularly came to be known as the Green Revolution (GR).

The development of the Punjab economy, as driven by the evolution of the GR and its impact on the wider economy, has resulted in a mixed picture regarding growth of per capita income, reduction of poverty, provision of healthcare services and development of human capital.[1] After the GR, the Punjab economy

1. As emphasized to us by Montek Singh Ahluwalia, low physical capital investment has also been a feature of Punjab in recent decades. We quantify this issue later in the paper (Figure 1).

topped the rankings of per capita income among Indian states until 2000, but thereafter its ranking fell continuously, and was the tenth among the major Indian states as of 2021-22. Punjab continues to do well in more durable measures. Its rank in the Human Development Index and Multidimensional Poverty Index is still among the top five states of India. Similarly, its physical infrastructure, such as roads and telecommunications, is relatively better than the income rank would indicate. Of course, this situation can change in the future if the economy stagnates. More than that, a major concern is the possibility of environmental disaster. In particular, the highly specialized, monoculture agricultural structure contributes to environmental problems such as air and water pollution, soil contamination, and a rapidly falling groundwater table. Climate change will almost certainly exacerbate these problems.

Just as Punjab's geography and history have shaped its current economic situation, they have implications for its development prospects. While Punjab is small relative to many other Indian states, it is not negligible in terms of size, with a population as large as that of Australia, though with completely different resource endowments and geographic position. The state's agricultural sector, molded by the national food security policy, can be characterized by diminishing returns. Even these diminishing returns are coming at a cost that is not properly measured, because of large subsidies for water and electricity. These subsidies are obviously a consequence of the political economy structures induced by the food procurement system, and they have created an enormous drain on the state's public finances.

A natural avenue for economic development based on an agricultural base would be a combination of agricultural diversification and development of agro-processing industry. Policies for crop diversification have been formulated since the 1980s, but have made relatively little progress. The higher risks and uncertainty in production and income generation associated with other crops, relative to the safety of growing wheat and rice for the national food procurement system, have acted as a barrier to switching. Many potential crops that could be part of a diversification effort also require more sophisticated infrastructure for storage and transport than what has worked for wheat and rice.

In industry, Punjab had historically done well in small and medium industry, and in subsectors such as light manufacturing, and textiles and garments. Its manufacturing capabilities in these sectors were comparable to the rest of India. In fact, some of the state's industrial development was a response to the needs of more mechanized agriculture–a byproduct of the GR, because harvest timings and labor scarcity favored the use of tractors and harvesters. However, the collapse of the Soviet Union had a negative impact on Punjab's manufacturing sector exports, and this coincided with economic liberalization in India, for which the state was relatively less well-positioned than many other states, because of its particular economic structure.[2] The geographic position and skilled labor resources of Punjab may work against its competitiveness in large-scale manufacturing, relative to other states, including its neighbor, Haryana.[3] Areas of possible comparative advantage related to cultural distinctiveness, such as designer textiles or garments, also present challenges, not so much in terms of costs, but in identifying and accessing markets.[4]

In the services sector, Punjab has failed to establish a significant presence in higher-value-added services such as Information and Communication Technology-enabled services, especially with Gurugram in Haryana becoming a major regional hub for such services. Political corruption[5] and an inadequate human capital base were also factors. At the lower end of the skill range in services, hospitality and cultural tourism have potential, given the relatively large Punjabi diaspora. In particular, Sikhs living abroad view Punjab as their homeland in terms of religious heritage, and represent an important source of tourism, often combined with family visits.

The slow growth of Punjab's economy in recent years, especially in relative terms compared to neighboring states and to the recent past, has had serious negative consequences, including high unemployment rates (with youth unemployment being 20 percent and close to 30 percent for young women between 2017-22), high rates of emigration,[6] accelerated degradation of the

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2. The violent conflict in the state in this period also played a role, by disrupting many forms of activity, especially by discouraging investment. We discuss these issues later in the paper. Montek Singh Ahluwalia raised the issue that our paper does not analyze growth drivers across states. However, this was done in Sanyal and Singh (2021), at a previous IPF, in which the authors empirically analyzed connections between growth and structural change across states. Punjab's specific economic structure and lack of structural change was one of the foci of that analysis.

3. Montek Singh Ahluwalia disagreed with our assertion that Punjab's location is particularly disadvantageous. While some of this was addressed in Lakhwinder Singh's response (see session transcript), subsequently, Devesh Kapur (personal communication), suggested that the status of Ludhiana as a railway hub means that, with a concerted effort and some investment, Punjab can accomplish what Uttar Pradesh is doing with respect to Greater Noida. We would still argue that, while it is not the only source of competitive disadvantage, the extra transport cost for Punjab versus Haryana and UP does matter. Many other factors influence industrial location choices, including political alignment between the Central and state governments, and certain kinds of tax breaks (which have favored Himachal Pradesh and Uttarakhand in some industries).

4. "Cultural distinctiveness" in this context merely refers to design choices, and has parallels in other states or regions–it has nothing to do with the possible cultural factors discussed by Vini Mahajan.

5. Overall, Punjab has generally been below average on recent state rankings of 'ease of doing business' from 2015 to 2019 (RBI, 2022, Table 140, p. 357), though it ranks at the top in terms of 'ease of starting a business'.

6. According to a study by Punjab Agricultural University, Punjab has seen a rise in emigration with approximately 13.34 percent of rural households with at least one member having migrated. Amritsar, Gurdaspur, Shaheed Bhagat Singh Nagar, and Ferozepur districts have more than 30 percent of households reporting some migration. See https://www.hindustantimes.com/cities/chandigarh-news/rural-punjab-witnesses-steady-rise-in-emigration-pau-study-101705084071517.html

environment,[7] agrarian distress (including suicides),[8] and social problems such as drug abuse.[9] The environmental issues are particularly concerning. There may be significant environmental benefits from diversifying agriculture, if that reduces water use and soil contamination. However, new industrial investment, and even services like tourism, generate their own negative environmental impacts. Many of these issues have to be tackled at the national level, through carbon pricing and water pricing, but state and local policies, such as building standards or enforcement of vehicle emission restrictions, are needed as well.

Our historical overview and identification of a range of problems in the Punjab economy has not stated anything that is not already known, and recognized repeatedly by economic analysts and policymakers. What are the constraints on policy-making and implementation that have prevented a growth revival in Punjab? We identify four interrelated issues that act as constraints on the Punjab economy.

First, driven largely by dependence on the Central Government's food procurement policy, and its specific nature, the state remains heavily agricultural in a narrow manner. This structure has created a lock-in, and raised the economic and political costs of switching to a different economic structure. The diversification of the state's economy, in general, and the agriculture sector, in particular, has been severely limited by these costs. Even within the existing structure, economic growth is hindered by the weakness of interlinkages between sectors (I. Singh and L. Singh 2011).

Second, Punjab's fiscal situation is constrained in ways that make fiscal policy dysfunctional: related causal factors include the agricultural structure and the state's political economy. Both physical and soft infrastructure have been negatively affected by the problems in public finances. Some of the problems in the state's public finances arose from the costs imposed by the turmoil of the 1980s, and the associated deterioration of many of the state's organizations and institutions, including for revenue collection. Committed expenditure regularly exceeds the revenue collected by the state government. But over 90 percent of current borrowing goes to debt service. Agriculture based on unprocessed foodgrains provides little opportunity for tax revenue. Most prominently, the increasing cost of power and water subsidies, driven by the worsening economics of growing wheat and paddy with heavy irrigation and inadequate surface water, has dominated the state's budget.

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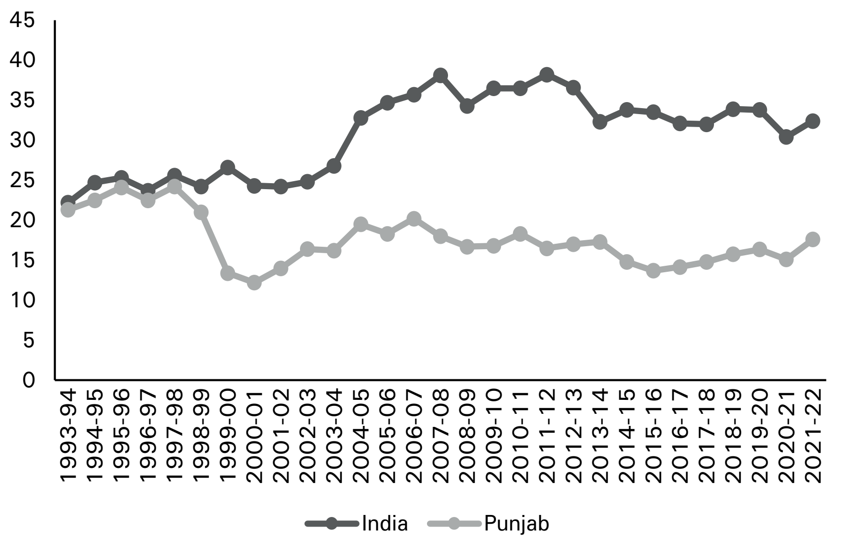
7. Among recent surveys of this phenomenon, see Pratiksha and Sharma (2020) and Liu et al. (2021).

8. "The frequency of farmer suicides in Punjab has jumped since 2015. From nearly 70 suicides a year between 2000 and 2014, the number increased by nearly four times to 263 a year after 2015 (peaking at 323 in 2018)." See: https://www.theindiaforum.in/article/spike-farmer-suicides-punjab. The relative decline in Punjabi farmers' incomes is substantial. For example, a Meghalaya farmer's income is now higher than a Punjab farmer's income.

9. According to Chavan et al. (2019), nearly 35 percent of the households in Punjab have at least one person with a substance use disorder.

Third, a combination of regional and domestic politics during an era of liberalization has disadvantaged the state, with existing industries declining, and new ones not emerging rapidly enough. India's economic reforms of 1991 included import liberalization at the same time as China's rise, and this had a negative impact on the state's existing industries, which were already in weaker positions. Simultaneously, the collapse of the Soviet Union affected some export markets for Punjab's manufacturers. Other contributing factors have included poorly designed and inefficient tax and duty structures, difficulties in acquiring land, expensive electric power (partly related to agricultural power subsidies), lack of access to finance, and more attractive incentives offered by governments of neighboring states. Punjab's long border, two wars, and constant tensions with Pakistan have deterred both domestic and foreign investment in the state.

FIGURE 1. Gross Fixed Capital Formation as a Percentage of GDP/GSDP of India and Punjab



Source: Government of India National Accounts.

Fourth, both individual high-skilled human capital and institutional or organizational capital have either failed to develop, or have deteriorated over recent decades, making Punjab less innovative and less attractive for new investment. The investment rate in Punjab has fallen significantly, both in absolute terms, and relative to the average for India as a whole (Figure 1). While the casual perception is that Punjabis have abundant entrepreneurial and leadership skills,[10] inadequate public investment in education and health, without sufficient high-quality private substitutes, has created a mismatch between the skills in demand by business and the low-skilled human capital produced in the state. Higher rates of emigration accentuate this imbalance.[11] Many public sector institutions have actually declined in their functioning, as a legacy of the long period of attenuated or absent electoral accountability that marked the era of conflict. Arguably, a nexus of police-bureaucracy-political elites led to reduced opportunities for private enterprise investment to flourish in Punjab and contributed to the exodus of human and financial capital from the state. The state government also exercises heavy control over local governments, reducing their capabilities as well.

Given these interrelated constraints, the paper argues that prospects for meaningful economic development in Punjab will depend on collaboration between the state and national governments, including fiscal support from the latter to deal with switching costs and accumulated fiscal issues. We also discuss several specific policy areas, including agricultural diversification; industrial development and innovation; cross-border services; and decentralization to the local level. The rest of the paper is organized as follows. In Section 2, we discuss Punjab's economic structure, as captured in the standard classification of agriculture, industry and services. We consider output, employment, productivity and the composition of each sector, as well as some recent policy perspectives that have emerged in government documents and expert reports. In Section 3, we examine some salient aspects of labor and employment in more detail, while Section 4 deals with education and health services. Section 5 examines the important issues of public finances and governance quality. While various policy concerns are raised in these sections, Section 6 offers some additional, integrated consideration of policy options for the Punjab government. Section 7 provides a summary and conclusion.

2. Economic Structure

We consider agriculture (including allied services), industry and services sequentially in this section. The agricultural sector is dominated by growing of

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10. We want to emphasize that we are not claiming any unique distinction for Punjab or Punjabis in this dimension. There is ample evidence for many other regions or groups in or from India having such qualities. In her remarks, Vini Mahajan discussed possible cultural factors for Punjab's current situation, but our assessment is that there is nothing particularly "cultural" in the factors that have shaped Punjab's economic trajectory. While economists have analyzed social norms as drivers of economic outcomes, we would argue that India's political economy has been far more important than cultural factors, including religion.

11. The impact of this emigration, and possibilities for return flows of capital or other resources from the large Punjabi diaspora, were raised in the discussion, and more details can be found there, as well as a brief consideration later in the paper.

wheat and paddy for the national food procurement system, and that is a major focus of our discussion. Within industry, our main focus is on the manufacturing sector, and its components. Services are more heterogeneous, and we discuss several aspects of the services sector, although health and education are treated in a separate section.

2.1. Agriculture

According to the latest Punjab Economic Survey (PES, GoP 2024) for 2023-24, published on 1 March 2024, the share of agriculture and allied activities in GSVA based on advance estimates was 26.68 percent while the sector accounted for 24.64 percent of employment in 2022-23. The state's share of agriculture had not declined much since the early 2000s, and was higher than that of other Indian states with similar levels of per capita income. Of course, this reflects the unique structure of the Punjab economy. As the PES points out, Punjab accounts for only 1.53 percent of India's area, but contributes 31.22 percent of the rice and 46.24 percent of the wheat procured by the Central Government. In fact, these statistics highlight the central problem of Punjab agriculture, and of the state economy as a whole. Even within agriculture, diversification into less water-intensive crops, or into higher-value-added activities such as animal husbandry, has been inhibited.

Punjab has an area of about 5M hectares, out of which 4.1M hectares is the net area sown. Out of these 4.1M hectares, 3.7M hectares is area sown more than once, so cropping intensity is high at 190 percent (2019-20). The area deployed for rice increased slightly between 2018-19 and 2020-21, from 2.59M hectares to 2.74M hectares. Productivity also increased by 12.8 percent for non-*basmati* varieties, but declined nearly 20 percent for *basmati* (which constituted one-sixth of the rice area sown and typically has a lower yield than common paddy). Wheat has been consistently cultivated on over 3.5M hectares, with a stable yield around 5,000 kg/ha in the past few years. Cereals like rice and wheat made up 84-87 percent of the crop area between 2015-16 and 2019-20. Pulses only constituted 0.2-0.4 percent of the crop area and fruits made up less than 1 percent of the crop area. Cotton and sugarcane represented slightly larger shares but were still under 5 percent each. For cotton, the area decreased slightly over the years while yield decreased by about 20 percent.

There is a long history of failed attempts to make changes to Punjab's agriculture sector, but the PES highlights the state government's efforts to shift rice to less water-intensive varieties; monetary incentives for direct seeding which also saves water; and a new Minimum Support Price (MSP) for *dals* (pulses or lentils).[12] More significantly, soon after the PES was released, the

12. Failed state agricultural policies have been intertwined with the national food procurement system, and even the militancy and conflict of the 1980s and early 1990s, which had multiple roots, but included concerns about the viability of GR agriculture. The conflict directly seems

Government of India (GoI) announced a major shift in its food procurement policy, with greater purchases of pulses and maize at MSPs, to wean farmers away from rice. Since rice yields in Punjab are the highest in the country, and rice and wheat are grown in a tight alternating cycle, the exact nature of this shift will be important in determining its impact. The PES documents the precipitous decline in the area devoted to maize, and especially pulses, but notes that yields in Punjab are higher for these as well, compared to the rest of India. Fruits are also a potential crop for diversification, accounting for only 1 percent of cropped area, though it presents different challenges in terms of production and marketing than foodgrains, especially when those are procured by the government.

The PES is optimistic about the potential for animal husbandry, particularly dairy products, although this also requires additional infrastructure. Even fisheries are presented as an opportunity for further development. In neither case are the environmental impacts of livestock or fisheries discussed, so those issues may need to be considered more carefully. In the realm of environmental impacts, in addition to greenhouse gas emissions and a declining water table, the excess and imbalanced use of fertilizer in growing wheat and rice is well-recognized. Although the inefficiency of fertilizer use has moderated slightly, as has excess use, they remain major problems.

Another well-recognized problem that contributes to distortions in Punjab agriculture is the provision of free electricity to farmers, which encourages over pumping of groundwater. The use of credit by Punjab farmers is similar, on average, to the rest of the country, although much of this credit is for working capital during the crop cycle, and there is lower use of credit for investment.[13] This could be an obstacle to shifting Punjab agriculture away from its almost complete reliance on growing wheat and rice for Central Government procurement. This reliance can be gauged from the percentages of output that is procured: 89.1 percent of paddy and 62.17 percent of wheat in 2022-23 (PES, GoP 2024, p. 234). Factors that could favor the ability to change the nature of the agricultural sector are good road, rail, and telecom connectivity in rural areas, as well as relatively good quality rural housing and low poverty rates, all of which suggest a situation that is not dire.

The Punjab Vision Document 2047 (PVD) of the state government, which was published in April 2023, covers much of the same ground as the PES, but emphasizes the overall unsustainability of the current agricultural system, in terms of fertilizer, pesticide, and water use, all having a negative impact

to have contributed towards a decrease in farmer incomes and in long-term investments. For example, P. Singh (2013) estimated that a major terrorist incident in a district in a year reduced long-term fixed investment by about 17 percent after controlling for other factors. These negative impacts were greater for richer farmers and those living in bordering districts. These impacts translated into a farmer losing close to 4 percent of annual income, on average.

13. Marginal farmers in Punjab are relatively heavily indebted, but this is probably true across all of India.

on soil health and productivity. The PVD also places greater emphasis on the mechanization or capital intensity of the state's agriculture, which, along with the migration of agricultural labor into Punjab, has reduced employment opportunities for the native population. The PVD alludes to various uses of technology for precision agriculture to improve the efficiency of input use. At the same time, it highlights using new varieties of rice and wheat developed by researchers, plus timely supplies of power, fertilizer, and credit to increase the yields of these crops. A vision document cannot be expected to provide detailed plans, but it is not clear from the PVD what priority should be given to different policies, since some of the recommendations could prolong the current system, and delay the needed major restructuring of the agricultural sector.

In some cases, such as the livestock sector, both the PES and the PVD provide more detailed recommendations for improving efficiency and for innovation, which suggests that policymakers are giving this sector more attention. This is also true for fruits and vegetables, though these represent a much smaller proportion of the agricultural sector's GVA, as compared to animal husbandry. Even so, the overall or detailed plans are presented as quantitative or qualitative targets, typically without a clear indication of how policies will be designed and implemented to change agricultural production incentives, investment patterns, and market access, nor what the costs or impacts will be of such policies.[14]

The Punjab Budget Analysis 2024-25 from PRS reports net expenditure for the Government of Punjab (GoP) in 2023-24 (RE) at Rs 1.3 lakh crore, with about 10 percent of this amount being spent on agriculture and allied activities, and another 1.5 percent on irrigation and flood control.[15] Two-thirds of the agriculture sector budget was purely on electric power subsidies for farmers, which leaves relatively little for other government expenditure in this sector.[16] The PVD offers some ambitious targets for replacing chemical-

14. In some cases, such as recommendations for diversification to maize, there is some discussion of uses for increased maize output in the government documents. Gulati et al. (2021) also provide suggestions with significant qualitative and (sometimes) quantitative details, for all the typical diversification recommendations, including horticulture, livestock, and fisheries.

15. The decline of the groundwater table in Punjab is not uniform, and some areas suffer from waterlogging. While the reduction of Punjab's share of the river waters flowing through it has pushed farmers to exploit groundwater, the state has a good system of canals, and there may be possibilities of combining flood control with replenishment of aquifers. This is a possibility that deserves more analysis. Additional analysis of recent state budgetary allocations within agriculture can be found in Gulati et al. (2021).

16. To consider an example, the PES reports that an incentive of Rs 1,500 per acre is being offered to switch to direct seeding of paddy. This is about Rs 3,700 per hectare. Yields of paddy are about 7,500 kg of rice per hectare, and the MSP is about Rs 22 per kg. Thus, the gross revenue from a hectare under paddy is about Rs 165,000. Variable costs are about one-third of gross revenue, so after subtracting these costs, the direct seeding incentive payment is roughly 4 percent of those net returns, which is non-trivial. The other issues raised are whether there is an ongoing impact on production costs, such as labor use, beyond one-time switching costs. On the budgetary side, Rs 3,700 per hectare for 3M hectares of paddy amounts to about Rs 1,100 crore, which would

intensive agricultural production with "integrated methods", such as 20 percent of cropped area under integrated agriculture by 2030, only a few years away. But the economic calculations, in terms of net returns or switching costs, and who will bear such costs, are not always clear or obvious. No doubt, such calculations are performed, but not always in a manner that aligns with high level policy targets.

Note that the GoP's analysis suggests an important role for agriculture in the state's economic development. In the PES (p. 187):

> "Punjab continues to be an agrarian economy and exploratory analysis shows that agriculture sector plays an important role in driving growth in other sectors. With a lag of a year, a unit's rise in agricultural products results in 1.4 units rise in services products and 1.8 units rise in industrial products, which is two to three times the impact of other sectors. With majority of industries in Punjab being agro-based, the growth in agriculture adds to the raw material for the industries. Further, with Punjab producing a majority share of central pool of wheat and rice, transportation of these cereals adds to the growth of services sector. Additionally, it should be noted that with higher agricultural income, the demand for products from the industry and services sector grows, boosting the entire economy. It is evident that agriculture sector is the axis in the economy, strongly impacting growth in other sectors and driving the economy."

While the qualitative statements about transportation and demand would apply to any other part of the economy, the numerical comparison of the linkage effects across sectors is the key claim made, and deserves more investigation. Gulati et al. (2021) ask a different, though related question: what have been the drivers of agricultural growth in Punjab? A regression analysis covering the period 1970-71 to 2015-16 finds that irrigation and road density promoted agricultural growth, as did the agricultural terms of trade.[17] Furthermore, this was found to be a stable long-run relationship. At a general level, these results are unsurprising, and they hint at the idea (recognized in Gulati et al. 2021) that further growth in agriculture may need to come from other sources, since there are diminishing returns or limits to increases in the growth drivers identified in the regression.

With respect to policy changes that alter incentives, Gulati et al. (2021) are more explicit in recognizing the need for them – government survey or vision

be about 27 percent of the entire state budget for agriculture after power subsidies. However, if this were a one-time expenditure spread over several years, it could be fiscally feasible. On the other hand, incentives to switch away from paddy may be a more effective long-run policy, especially if the new crops are higher-value-added, or meet national nutritional needs better.

17. Specifically, the ratio of GDP deflators for agriculture and industry for Punjab was used to measure the terms of trade.

documents have to be more cautious in that respect. Examples of these market-oriented recommendations include:

- Metering and charging electric power supply to farmers beyond a fixed level of free supply, and providing cash transfers instead of the price subsidy.
- Switching from fertilizer subsidies to direct cash transfers to farmers, with the requirement that they get the soil tests and soil health cards to qualify for these.
- Simultaneously, removing import duties and price controls on urea.

It should be noted that these are major institutional changes, which potentially introduce new risks and uncertainties for farmers, and will face political feasibility challenges. However, adopting these recommendations would also help in reducing the state debt burden, which currently crowds out more productive public expenditure and hinders economic growth, as discussed in Section 5. Note also that the third recommendation above would involve a national policy change that has ramifications well beyond Punjab, so it would need separate analysis.

The political feasibility issue was demonstrated when similar recommendations were included in the first report of a "Group of Experts" created at the request of the then Chief Minister (CM) of the state (PEG 2020). Indeed, even more radical changes to agriculture were proposed for consideration in that report, with respect to land markets, including changing state laws to open up a leasing market for agricultural land; geo-tagging all farms and matching them with land records and Aadhaar cards to enable that market; and liberalizing laws relating to the conversion of agricultural land to non-agricultural uses. The merits of these recommendations require separate analysis, and also have to be part of a national effort, although states have constitutional responsibility for agriculture.

The Central Government's attempt in 2020 to change many aspects of the agricultural sector, especially in the direction of a greater role for markets, was particularly unpopular in Punjab and surrounding states. The Punjab CM rejected the entire agricultural reform section of the initial expert group report, and it was omitted in a final version (PEG 2021). One can conjecture that this would have happened even if the 2020 report had not coincided with the massive protests against the "farm bills". In the process, technical recommendations to improve the markets for farm machinery and seeds, or the technologies of irrigation, were also lost from the report.

2.2. Industry

The share of industry in Punjab's GSVA is 27.4 percent, quite close to the share of agriculture in the state (PES, GoP 2024, p. 186, Table 1), and to the average share of industry for India as a whole. However, industry accounts for a higher employment share in the state than agriculture, at 34.3 percent. Gross Capital Formation (GCF) in industry is 31 percent of GSVA, fairly similar to the national figure, although the disparity between the state and national rates at the aggregate level (Figure 1) needs to be kept in mind here. Industrial growth in Punjab has been higher than that of agriculture, and similar to the average for India as a whole. The industry category includes manufacturing, construction and electricity, gas and water supply. Manufacturing is about 61 percent of industry, with another 26 percent coming from construction (PES, GoP 2024, p. 242, Figure 40). Much of the focus in this section, naturally, will be on manufacturing, although construction is more labor-intensive, accounting for 45.6 percent of industrial sector employment, versus 51.8 percent for manufacturing. This focus is because of the greater potential of manufacturing in generating future growth.[18]

In India, there is a legal distinction between registered and unregistered manufacturing, based on the number of employees and the use of electric power. The terms "formal" and "informal" or "organized and "unorganized" are also used for these two categories. Registered manufacturing units are surveyed in the Annual Survey of Industries (ASI), and there are about 250,000 such units in India. One-third of these factories are registered as corporations of some form. The remaining two-thirds are registered as individual proprietorships, partnerships, cooperatives, and so on. The number of manufacturing units in the unregistered, unorganized or informal sector is over 9 million. Employment in the registered manufacturing sector is about 17 million, which breaks down to average employment of about 110 per corporate manufacturing unit and 20 per non-corporate firm unit. Total employment in unregistered manufacturing is about 45 million, implying 4-5 workers per unit in this sector.

According to the Statistical Abstract of Punjab (SAP, 2023), the state has about 21,000 registered factories, employing a little over 800,000 workers (p. 287). The definition here may be different than the ASI definition, and other calculations based on ASI data report a larger proportion of registered manufacturing units for Punjab, at around 5 percent of the national total (Singh and Cheema 2021; ASI 2021-22). On the other hand, there are almost 312,000 unregistered units in the state (Ministry for MSME, https://dcmsme.gov.in/ssiindia/census/ch5.htm). Compared to the all-India figures, therefore, Punjab has a higher proportion of registered units versus unregistered units, by these measures. The state's proportion of registered units is higher than its population share of 2.3 percent, but the same is the case for unregistered units, for which it is 3.4 percent.

In the following section, we will use data from the PES (2024). Table 1 is based on Table 18 from PES, 2023-24, and reports the distribution of manufacturing

18. On the other hand, GCF has been shifting in relative terms from manufacturing to construction over the last decade (PES, p. 247, Figure 46). This is similar to the rest of the country, and one of the factors behind this trend is likely the after- effects of the early 2000s' investment boom, followed by the global financial crisis and an increase in non-performing assets in the banking sector.

across the ten most important subsectors, based on registered units only. Differences in scale, capital investment, and profitability across subsectors are apparent. Food products and non-metallic mineral products account for the largest proportions of units, but they have relatively low proportions of total investment and low profits per factory. Textiles, motor vehicles, and chemicals appear to have the largest scale, and textiles and machinery and equipment (n.e.c.) sectors are the most profitable at the factory level.

TABLE 1. Select Indicators of Registered Manufacturing Subsector Performance, Punjab, 2021-22

	Share of Number of Operational Factories in the State (in %)	*Share of GVA in the Registered Manufacturing Sector (in %)*	*Share of GCF in the Registered Manufacturing Sector (in %)*	*Per Factory Profit (in lakhs of Rs)*
Food products	25	13	13	83.42
Textiles	5	13	9	564.57
Machinery & eqt. n.e.c.	8	12	6	470.67
Non-metallic mineral products	15	4	2	68.71
Wearing apparel	7	5	6	105.57
Basic metals	7	6	9	193.10
Other transport equipment	6	4	2	99.76
Fabricated metal products, except machinery and eqt.	6	4	4	115.36
Motor vehicles, trailers & semi-trailers	2	3	3	180.29
Chemicals & chemical products	2	5	4	547.09

Source: Based on Table 18 from PES, GoP 2024.

The subsectors reported in Table 1 account for 69 percent of GVA in registered manufacturing. Later in the PES, the food processing industry is further disaggregated (Figure 48), based on the same ASI data as the table, but a much higher percentage of manufacturing GVA is reported for the subsector.[19] The discussion reiterates that food processing is a natural industry given Punjab's agricultural base, but the economic incentives for such activities are not discussed.[20] Most wheat and rice is sold to the national procurement system,

19. Profitability statistics are also reported (PES, Figure 49), but are difficult to interpret.

20. Note that we do not have data on factory size and profit relative to capital investment, so we cannot draw firm conclusions from profit per factory figures. However, based on the percentages in Table 1, we can derive a rough estimate that investment per unit in food processing is about 30 percent of that in textiles, while profits per unit are closer to 15 percent. The case for food processing might still be made, based on considerations such as employment, market potential, and interlinkages.

but it is not clear as to what degree other agricultural products are processed, or what markets are served.

Some disaggregation of the textile sector is also provided in the PES (Figure 50), but the different components of the sector do not appear to have any great degree of differentiation beyond that between textiles and apparel. In this sector, a disaggregation for unorganized enterprises is also provided, based on the 2015-16 UES survey, and apparel accounts for a much higher proportion of the unorganized sector, which makes intuitive sense. However, there is no comparison of GVA or profitability across the different types of manufacturing enterprises, namely registered versus unregistered.[21]

A few other subsectors of unregistered manufacturing are also discussed briefly, with light engineering, accounting for just 6.3 percent of unregistered manufacturing GVA, receiving the most attention, i.e., metal fasteners and bicycle parts, in particular. There is some consideration of how clusters might be created, and this is discussed below. The PES, while advocating for policy attention to these kinds of metal and light engineering products, does not address the decline of such manufacturing in clusters that had been developed in the 1960s (Goyal 2020).

In general, studies of Punjab manufacturing find evidence of a decline from the 1980s onward, with some recovery in the early 2000s, but further stagnation thereafter. Empirical studies indicate that technical efficiency and productivity growth have been relatively low. Investment in industry has also been low–some of this was undoubtedly because of the shadow of the conflict of the 1980s and 1990s, followed by liberalization of industrial licensing and other reforms in 1991. But in the last decade, industrial policy incentives from neighboring states likely also played a role (Goyal 2020). While some aspects of infrastructure are good, access to reliable electricity and workers with appropriate skills have been relatively poor, given Punjab's otherwise strong economic profile. Underinvestment is both a cause and consequence of the size distribution of firms, and even registered manufacturing firms are mostly very small.[22] Small firms also have a more difficult time obtaining credit–these patterns are somewhat true across the country, but some states have been able to overcome such obstacles.

A few studies have supplemented official statistics with small surveys. Singh, Singh, and Cheema (2022) surveyed 191 small enterprises in Tarn Taran and Gurdaspur districts, and identified several obstacles. Note that these are both border districts, and this location can also be a disadvantage. Small size and lack of access to financial capital were major reasons for many respondents

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21. There is a separate summary of data from the Khadi and Village Industries Commission, which covers small rural enterprises. Khadi is handwoven cloth, but it is not clear how this data is related to unregistered textile units in general. In any case, the employment numbers are small, though the reported output figures per unit are surprisingly large.

22. Many of these issues were analyzed in Singh and Jain (2007). See also Jain (2016), Verma and Kaur (2018), Goyal (2020), and Singh and Cheema (2021).

not engaging in any technology upgrading. In these districts, the infrastructure was not rated as particularly good, and even acted as a deterrent to potential industrial customers. Despite efforts by the GoP to improve the 'ease of doing' business, many respondents found approval processes to be still fragmented or cumbersome. Furthermore, there was no evidence of an active state-level policy to connect small firms to larger industrial buyers of their products. Essentially the same issues were found in a survey of 120 small firms in Jalandhar district (Bedi et al. 2021). This is more surprising, since Jalandhar is a major industrial hub in Punjab, second only to Ludhiana. This suggests that the findings for Tarn Taran and Gurdaspur districts are not local phenomena due to their border status, but reflective of state-level policy design and implementation issues.

The PES does summarize some policy measures with respect to clusters (Box 6, p. 258) in Ludhiana (garments, sewing machines, and packaging and printing), Kapurthala (foundry and general engineering), and Patiala (cutting tools). Specific policies for these clusters are not presented, but the PES describes generic policies to increase the 'ease of doing' business. The description of the government funding being provided (in some cases from GoI schemes) suggests that the main expenditure is on creating common facilities for small firms to operate in.

Separately, the PES mentions the sports goods cluster in Jalandhar, and mentions plans for technology support, as well as testing and certification facilities for a sports goods park. In fact, Mehta (2023) has provided a detailed analysis of this particular cluster. Jalandhar district appears to be somewhat unique among the largest industrial centers of Punjab, in that it has no significant large firms in the area: thus, it is second in output value for MSMEs, after Ludhiana, but a distant 16th in the output of large and medium firms (PES, Figures 56 and 57). Mehta's study is based on a primary survey of 45 firms (including 4 medium-sized, 21 small, and 20 micro enterprises). The medium-sized firms are much better placed, but even many of the small firms export successfully. There are familiar challenges, of access to raw materials, availability of skilled workers and institutional support for imparting skills when needed. For the micro and small firms in the cluster, industry associations and policy-making did not provide enough support,[23] and high import duties on equipment and raw materials were a significant obstacle.

23. A completely different study (Mehta and Kaur 2021) found that even in a much larger and more well-established cluster, that of woolen textiles in Ludhiana, firms were often unaware of government support programs instituted during the COVID pandemic. This is another example of distance of policy-making from day-to-day manufacturing firms' operations. A comparison of agriculture and industry might be useful in this respect, to identify the factors that inhibit communications between government and smaller firms, in particular. Kaur et al. (2023) also use primary data, collected in 2018, to analyze two clusters in Punjab, a textile cluster in Ludhiana, and a hi-tech metal cluster in Mohali. Many of the workers in these clusters were migrants from other states, and they formed effective labor pools in each cluster. There was evidence of knowledge-sharing within the two clusters in this study, and less heterogeneity than in the Jalandhar sports goods cluster. However, there is no data on policies that might have shaped the development of these clusters, through positive action or through absence.

The distance between policy-makers and the operation of industry in practice also emerges from the Punjab Vision Document 2047 (PVD, GoP 2023). PVD recognizes that small size and outdated technology are major obstacles to the growth and efficiency of Punjab's industry. However, policy recommendations for existing industry (PVD, GoP 2023a, p. 50) focus on subsidies, tax breaks, and even a call to resurrect the Freight Equalization Scheme, which seriously distorted industrial location in India and was scrapped in 1993. For future industrial growth, the PVD focuses on a wide range of industries that are deemed to fit the label of Industry 4.0 (p. 48), as well as various kinds of services–this list has 38 different items, many of them extremely broad such as Artificial Intelligence and Electronics; areas where Punjab may be unlikely to be considered suitable like Aerospace and Defense; and specific–but mundane–items such as event management services. A list of nine potential industrial hubs/clusters/parks is also a heterogeneous collection of ideas without much foundation (p. 49). However, referring to an earlier 2030 Vision Document, there is a discussion of agro-food processing as an important priority.

The lesson from these lists is that there is a disconnect between the actual needs of Punjab's manufacturing industry that would promote efficiency and growth, and the vision for the future. In the Punjab government documents, there is no systematic conceptual or empirical analysis of different industrial clusters or subsectors, which could be the basis for policy design.[24] As an alternative conceptual approach for designing more dynamic clusters, one can instead apply the ideas of Chandra (2022), which describes examples from Italy, China, Japan, and other parts of India. In these examples, small firms become a part of a network that collectively acts as a large firm in some respects. These kinds of clusters allow firms to coordinate functions and collaborate in specific ways. In the Italian example, integrated textile mills in Prato (Italy) started losing their competitive advantage, and responded by becoming a cluster of small firms, specializing in certain product categories or specific process capabilities. They cooperated on common services such as logistics, banking, and maintenance, while still competing within the cluster to win orders. In this case, the former owners of the mills provided the expertise and organizational skills to build and maintain the network, whereas in other country cases, new private entities, such as agency firms or industry associations filled this role. Chandra (2022) also gives examples of successful clusters in Rajasthan and Gujarat, so there are models closer home for Punjab to adapt to its own needs.[25]

24. Montek Ahluwalia objected to our assessment as being disparaging. However, the concern expressed in our analysis is not the setting of ambitious goals, but a lack of conceptual cohesion and articulation of a pathway to achieving those objectives.

25. Punjab's geographic position and human capital profile work against its competitiveness in large-scale manufacturing, relative to some other states. The region around the National Capital Territory, including Punjab's neighbor, Haryana, has attracted industrial investment in a manner that Punjab has been unable to match. Even though Punjab has higher production and employment than Haryana in small and medium enterprises (RBI 2022, Tables 129 and 130, pp. 335-336), its overall industrial value added is lower.

With respect to the choice of industrial sectors, more technologically advanced versions of food processing, bicycle manufacturing, and chemicals are all cases where upgrading is a logical option to consider: these are all in the clusters list. Items such as surgical instruments, medical devices, and prosthetics are other examples of products where quality matters, but the production itself is not necessarily technologically sophisticated. But other suggestions might be a wish list that remains in that category, especially if import barriers, worker skills, access to finance, and access to markets do not improve.

2.3. Services

Mirroring a pattern found across India, Punjab's services sector is larger than agriculture or industry. It accounts for 45.9 percent of GSVA and 41.1 percent of employment (PES, GoP 2024, p. 186, Table 1). The sector has also grown faster than the others, over recent decades, again similar to the rest of India. One difference between Punjab and most other states at similar per capita income levels is that its agriculture sector is proportionately larger, and its services sector share is, therefore, considerably lower than the national average of 54 percent. However, Punjab's service sector employs proportionately more of its workforce than the all-India average of 29 percent (PES, GoP 2024, p. 188, Box 2). This reflects the lower labor intensity of Punjab agriculture, as compared to the rest of the country.

The services sector is well-known to be extremely heterogeneous, in terms of the nature of the services provided. These can range from tasks that can be done with minimal skills, to those that require an extremely high degree of education and training. The breakdown in Table 2 is still somewhat aggregated,

TABLE 2. Services Sector Components

	Share in Nominal GSVA, 2012-13 to 2020-21 (in %)	*Share in Nominal GSVA, 2023-24 (A) (in %)*	*Average Growth Rate, 2012-13 to 2020-21 (in %)*	*Growth Rate, 2023-24 (A) (in %)*
Trade, Repair, Hotels & Restaurants	10.8	9.6	5.1	6.2
Transport, Storage, Communication & Services Related to Broadcasting	5.4	5.9	4.9	6.2
Financial Services	5.2	4.5	4.3	8.6
Real Estate, Ownership of Dwellings & Professional Services	9.2	9.3	6.0	6.1
Public Administration	5.2	5.9	6.7	7.2
Other Services	10.1	10.7	7.2	8.7

Source: Based on PES, GoP 2024, Table 5, p. 192.

and the 'Other Services' residual category is clearly heterogeneous. But even the other categories combine fairly disparate types of services. Three of the categories each account for 20 percent or more of services GVA, and the other three each about 10 percent of services GVA. The growth rates have differed across the categories, and over time, though there are seemingly no outliers at this level of aggregation. Within the first category of services, Trade & Repair account for 95 percent of the GVA, so that Hotels & Restaurants are actually a minor contributor to the overall economy (PES, GoP 2024, Table 20, p. 263).

Further disaggregation of the above subsectors (Table 20 of PES) also indicates that road transport is the most important component of the second category, followed by communications services. However, other categories are not broken down further in this table. The "Other Services" category includes health, education, and entertainment, so it is an important subsector of the economy. Indeed, health and education services have distinctive characteristics and economic implications, and we treat them separately in this paper.

The role of the services sector in India's economic growth has been analyzed by many (Singh 2007; Eichengreen and Gupta 2011). In this context, the heterogeneity of the sector matters, since the growth of different subsectors will have very different implications for output growth and employment growth. In particular, the potential for productivity growth can vary greatly–indeed some kinds of services are the hallmark of a less-developed economy. It should also be borne in mind that the boundary between industry and services can be arbitrary. For example, Indian national accounts classify electricity, gas, and water services as part of the industrial sector. This reflects their capital intensity and economies of scale. Conceptually, they combine elements of production (manufacturing) and delivery of those products (service provision).

The PVD (p. 48) lists 38 subsectors or activities that are considered to have high growth potential. Many of these refer to the production of technologically advanced products such as semi-conductors or e-vehicles, or to categories such as aerospace and pharmaceuticals. Others in the list are so broad that they include elements of products and services, such as "tele-communication and information technology" or "IoT (Internet of Things)". The items on the list that clearly come under the category of services are:

1. AI (Artificial intelligence);
2. Cloud computing;
3. Data analytics;
4. Cyber security technology;
5. Software development;
6. R & D firms;
7. Consultancy services for insurance, share market, financial matters, real estate;
8. Career counseling, guidance and employment services;

9. International business, immigration and study abroad services
10. Tourism;
11. Hotel management and catering services;
12. Event management services;
13. Skill development centers;
14. Incubation centers;
15. Media entertainment; and
16. Logistics.

This is clearly an eclectic list, but it can be mapped onto the different components of the services summarized in Table 2. There are some overlaps, especially in the first five items in the list. What is not clear from the Vision Document is what their current role and importance is in Punjab's economy.

The PES offers an extended discussion of tourism, with a focus on cultural tourism as a motive, although reported numbers presumably include medical tourists as well. The "tourist footfall" was over 26 M in 2022 (PES, GoP 2024, Table 22), of which a little over 1 percent were foreign tourists (PES, GoP 2024, Table 21). Adjusting for the size and location of the state, Punjab does reasonably well, compared to other states, in attracting foreign tourists. Overall numbers indicate that Amritsar is by far the most popular single destination within Punjab, which is to be expected. However, the assertions about the positive contribution of tourism to growth are not quantified in any manner. Certainly, there are economies such as Italy's, which are very heavily dependent on tourism, but such countries also have other highly developed sectors. Tourism can also have negative environmental impacts and distort patterns of urban development and human capital acquisition. Punjab does not have the same cultural tourism potential as countries like Italy, or environmental or natural tourism potential as regions with coastlines, forests, or wildlife. Globally, travel and tourism contributed 9.1 percent to GDP in 2023 (https://wttc.org/research/economic-impact), but this is likely far greater than the potential in Punjab. It is unclear whether tourism can be an engine of growth, and how much policy attention it deserves.

In the case of other services subsectors, such as road transport, telecommunications, and financial services, the state-level statistics for Punjab are all relatively good as compared to other states, or to all-India averages (PES, GoP 2024, pp. 270-277). However, these averages do not provide any information on the level of infrastructure needed for cities or towns to serve as growth poles, by being the sites for dynamic industrial clusters. Some of the weaknesses of industrial clusters in Punjab were analyzed in the section on industry. Summaries of urban development in Punjab (e.g., PES, GoP 2024, Chapter 5), or of government initiatives (PES, GoP 2024, pp. 277-278) do not address the infrastructure needed for such clusters, although the problem of electricity supply is discussed in the context of urban development.

The precise nature of the financial, transport, and communication services will depend on the service or industry being supported: any of the first five categories in the list of 16 subsectors extracted from the PVD will need greatly increased communications bandwidth with high reliability. Even sports goods and textile firms need good communications if their suppliers and customers are spread around India or the world. Even in the PVD, there does not appear to be any analysis of the precise nature of improvements in infrastructure that come under the services sector, which would be needed for industrial development, both by specific industry and by local region.[26]

A different approach to the question of industrial development, also rooted in the services sector, can be found in the two reports of the Punjab Expert Group (2020, 2021), which included representatives of the private sector as well as academics and policymakers. These reports included recommendations such as:

- Streamlining and simplifying procedures for development of land for industrial purposes (PEG, 2020, p. 27);
- Modifying rent control laws and building height restrictions (PEG, 2020, p. 27);
- Making vacant urban land available for development (PEG, 2020, p. 28)
- Improving urban land records, including removing ambiguities in titles (PEG, 2021, p. 28);
- Extend land use for industrial estates to the outskirts of urban areas (PEG, 2021, p. 29);
- Improving institutional and financial mechanisms for joint cost sharing of industrial infrastructure development by industry and government bodies (PEG, 2020, p. 28);
- Incentivizing the use of online platforms to improve liquidity of small firms through more timely payment from industry and government customers (PEG, 2020, p. 32);
- Improve mechanisms for obtaining rights-of-way for digital infrastructure (PEG, 2020, p. 36);
- Focus on coordinating digital infrastructure build-out with the needs of industrial clusters (PEG, 2020, p. 36);
- Involve universities and technology companies in assessing the needs at the high end for digital infrastructure concentrations (PEG, 2021, p. 36);
- Create an institutional ecosystem for start-up formation and success, including funding, training and incubation (PEG, 2020, pp. 38-41); and
- Rethinking the design and functioning of public sector technology development institutions (PEG, 2021, p. 32).

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26. The PVD does allude to using information technology, including AI, to improve delivery of health services, traffic management, and so on, but these are also not discussed with any specificity in either dimension, location, or economic activity.

Note that most of these recommendations can be viewed as policy interventions to improve the functioning of three services subsectors–real estate, finance, and telecommunications–specifically for industrial development.

3. Labor and Employment

Punjab's agriculture is more highly mechanized than that of most of the rest of India. Furthermore, yields are higher. As a result, the ratio of agricultural output to employment is higher in Punjab. Correspondingly, the ratio of GVA to employment is lower for industry and services, as compared to the rest of India. The PES (Box 2, p. 188) interprets this as a more balanced economy, but it is not clear whether there is any virtue in that balance. For 2022-23, based on PLFS data (PES, GoP 2024, Table 8, p. 204), Punjab's labor force participation rate was considerably lower than the national average (53.5 percent versus 57.9 percent) and its unemployment rate was almost double the national average (6.1 percent versus 3.2 percent). Furthermore, the worker-population ratio in the state was much lower than the all-India figure (50.2 percent versus 56.0 percent).

These numbers also have to be interpreted in the context of substantial in-migration from poorer states such as Uttar Pradesh and Bihar (PES, pp. 201-202), as well as out-migration. According to the 2011 Census, there were 2.4 million migrants in Punjab, representing 5.3 percent of the nation's migrants, more than double of Punjab's share of the national population. Many of the migrants were seeking employment, typically as daily casual labor. At the same time, many of those registering with the unemployment bureau are classified as skilled, and there is a high demand for emigration to countries which already have substantial Punjabi diaspora populations. Even countries such as Italy, which did not historically fall in that category, have seen rapidly rising immigrant populations from Punjab, especially from among rural Sikhs. This highlights the mismatch between Punjab's economic structure and its employment opportunities, something that the balanced distribution hides. Note that the difference in unemployment rates between Punjab and the all-India figures is much greater for the rural sector. This may be because of greater labor intensity in much of rural India, or the nature of migration–surplus rural labor in Uttar Pradesh can more easily migrate to Punjab, whereas surplus rural labor in Punjab has to migrate abroad, or shift to skilled jobs in the urban sector, each of which presents greater obstacles than cross-state rural migration for unskilled workers.

Several other specific features of Punjab's employment patterns are worth noting. Punjab has a relatively high employment-output ratio for its service sector, compared to the national average. One can infer from this that Punjab lacks the kind of high productivity service sector employment that would be found in major cities. Arguably, some of this might be because Chandigarh, by far the most well-off city in the region, is not included in the statistics for Punjab. On the other hand, Ludhiana, Amritsar, Jalandhar, and Patiala are all substantial cities, with industries and universities. A significant amount of service sector employment in Punjab is in the trade and repair segment–the share of this sector in total employment is among the highest for all states in India, at 14.57 percent (PES, GoP 2024, p. 266).

Urbanization in Punjab is slightly higher than the national average, and has been trending upward in a similar fashion. When one examines employment patterns across men and women in rural areas, another striking difference emerges in Punjab. The female worker participation rate in urban Punjab is similar to the national figures (23.2 percent versus 23.5 percent, PES, GoP 2024, Table 62, p. 324). However, the differences in the rural sector are vast (26.3 percent versus 40.7 percent). This is consistent with the mechanized nature of Punjab agriculture, and associated social norms. Women and male youths are not doing agricultural jobs in ways that they would in a more subsistence agricultural situation. This can also be seen in the prevalence of a much higher unemployment rate for rural women in Punjab, versus the national average (8.7 percent versus 1.8 percent). This is suggestive of a situation where neither rural nor urban jobs are being created that fit the individual and social expectations of the population. For example, trade and repair services jobs, even when rural, are unlikely to be filled by women. In many parts of India, middle class women's entry in the labor force has been into white collar-type jobs, which may not be adequately available in Punjab.[27]

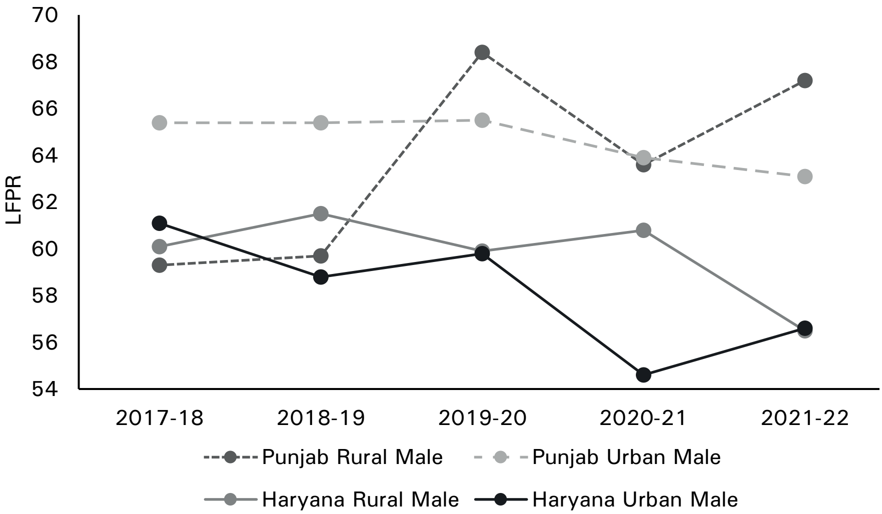
3.1. Youth Labor Force Participation and Unemployment Rate Patterns: Punjab versus Haryana

It is also instructive to compare youth employment in Punjab with that in the neighboring state of Haryana. Using Periodic Labour Force Surveys (PLFS) from 2017-18 to 2021-22 (Figure 2), we find that youth labor force participation rates for males (15-29 years) are slightly higher in Punjab as compared to Haryana (64 percent versus 59 percent overall). There was a declining trend in the labor force participation in urban Punjab in 2020-21 and in 2021-22. However, the labor force participation rate among urban males went up after a steeper fall in Haryana, whereas it recovered faster among rural males in Punjab. This is a puzzle–why did a LFPR recovery happen among urban males in Haryana but among rural males in Punjab?

Among female youth (15-29 years), Punjab has a higher LFPR than Haryana (18 percent versus 12 percent) and all cohorts (rural or urban, Punjab or Haryana) appear to be showing an uptick in LFPR (Figure 3). Patterns in unemployment among the youth are shown for the two states for males in Figure 4 and for

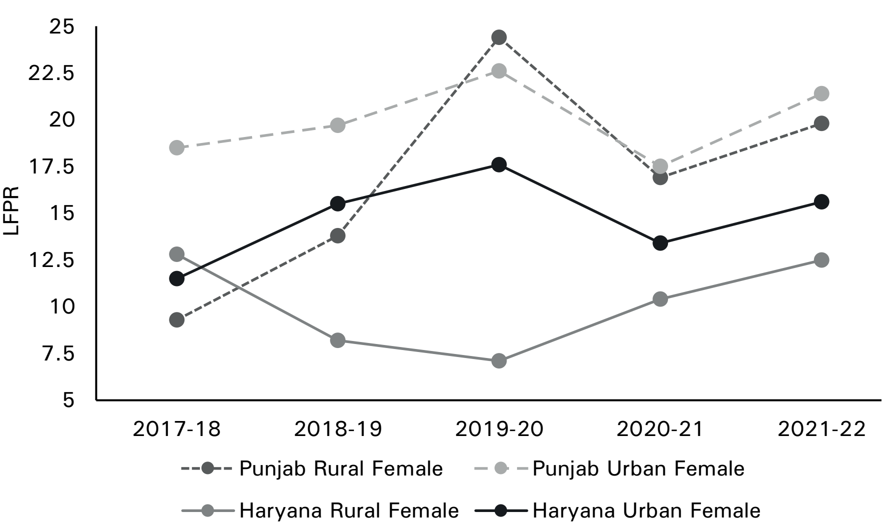
27. Emigration can be a way to avoid the constraints of social norms, as working in a factory or other manual occupations is acceptable in a foreign location, but not within one's own social milieu.

FIGURE 2. Labor Force Participation Rate (15-29 Years) for Males in Punjab and Haryana (Rural versus Urban)



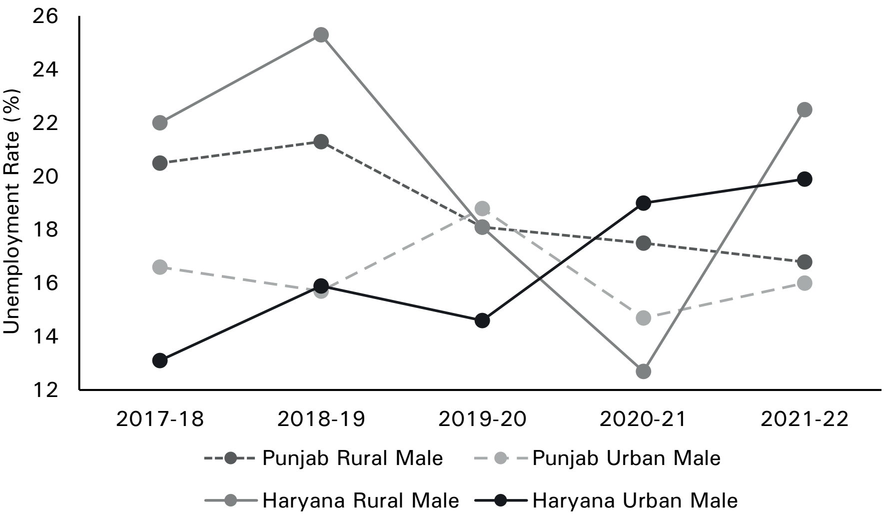
Source: PLFS data.

FIGURE 3. Labor Force Participation Rate (15-29 Years) for Females in Punjab and Haryana (Rural versus Urban)



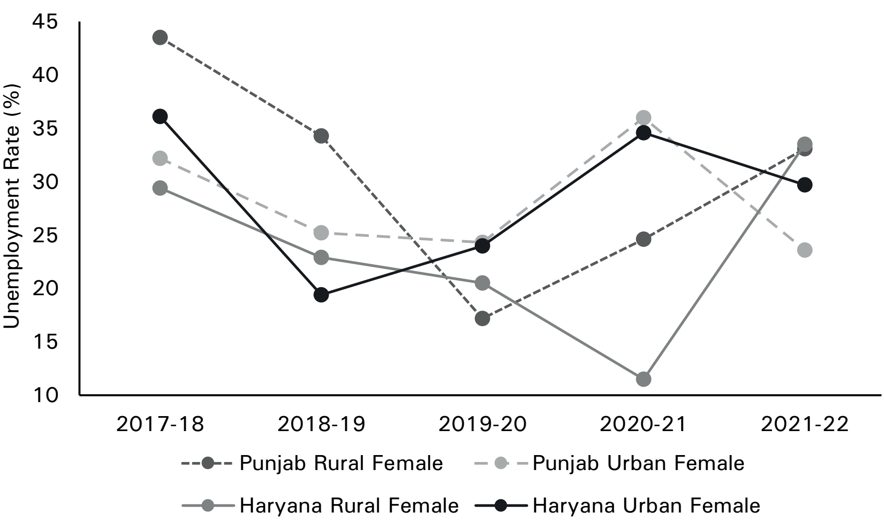
Source: PLFS data.

FIGURE 4. Unemployment Rate (15-29 Years) for Males in Punjab and Haryana (Rural versus Urban)



Source: PLFS data.

FIGURE 5. Unemployment Rate (15-29 Years) for Females in Punjab and Haryana (Rural versus Urban)



Source: PLFS data.

females in Figure 5. While rural unemployment is higher in both states for young males, Punjab's rural unemployment depicts a declining trend in the data (with 2021-22 levels at 19.2 percent) whereas Haryana's youth unemployment (>20 percent) has increased to return to its pre-COVID levels. The overall youth female unemployment rate is high at 30 percent for Punjab but the rural female unemployment rate has skyrocketed to 33 percent. This lack of opportunity (i.e., one out of three young women in Punjab cannot find a job despite looking for it) could depress investments in higher education among females in Punjab, and we do find suggestive evidence for the same in Section B.

4. Education and Health

Education and health services are part of the 'Other Services' category in the state income accounts, but they obviously have some characteristics that are very different. Both sectors involve building human capital, or capabilities more generally. At the level of basic provision of capabilities and well-being, such as child nutrition or literacy and numeracy, they are–to use a term coined by Richard Musgrave–merit goods. There is some societal agreement that they should be provided because of their benefits in terms of human flourishing, not on the basis of willingness or ability to pay. Therefore, there is a case for public or publicly-subsidized provision that goes beyond the usual economic case based on goods being non-rival and non-exclusive–the economists' classic definition of public goods. On the other hand, some aspects of education and health may be more in the category of goods that the market can provide relatively effectively and closer to optimal levels, though even here, there may be an equal access goal for the provision of advanced education and medical care which justifies some public intervention. Punjab suffers from some issues that are common across all of India, but here we focus on its special characteristics.

4.1. Education

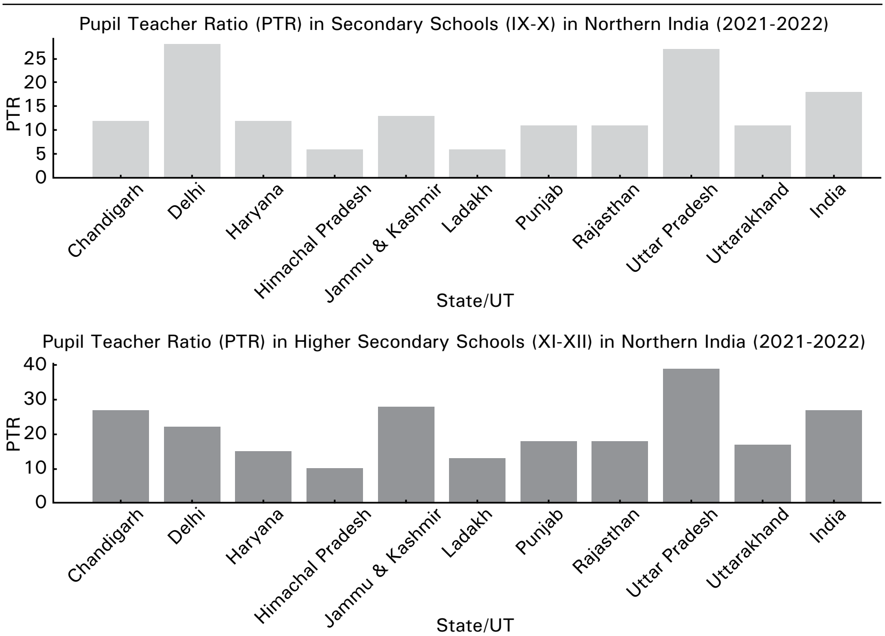
Punjab has a population of slightly over 30 million, with about one-fifth of this being of school-going age (5-18 years). Enrollment ratios are high, and dropout rates for primary education are low, but they rise more than for other better-off states in upper primary school. Approximately half of the school-going population attends government schools, which is similar to the national average. The ratio of students in government schools has increased slightly in recent years, arguably because of investments in school infrastructure.[28]

According to national education statistics, Punjab has 27,700 schools, 6.15 million enrollments, and 257,000 teachers (GoI 2021-22a, UDISE+, 2022).

28. See https://www.newindianexpress.com/good-news/2021/Jun/06/punjab-government-run-schools-see-growth-of609-lakh-in-enrollment-in-four-years-2312295.html

On some indicators, Punjab has been the best performing state in India of late with respect to educational outcomes. For example, the Performance Grading Index 2.0 report (2021-22) released by the Ministry of Education showed that Punjab received the best overall grade based on 73 indicators that were broken down by Learning Outcomes and Quality (LO), Access (A), Infrastructure and Facilities (IF), Equity (E), Governance Processes (GP) and Teacher Education and Training (TE&T). Across LO and IF, Punjab was the best performing state but ranked slightly lower on A, E, GP, and TE&T (though it was still among the good-performing states). Learning outcomes were evaluated on language, mathematics in Classes-3, 5, 8, and 10 as well as in science and social science in Classes 8 and 10.[29] On the overall Pupil-Teacher Ratio, Punjab appears to do better than average compared to the national average but has a higher Pupil-Teacher Ratio than Haryana for higher secondary schools (Figure 6). This relative lack of human capital inputs in Punjab could reduce the learning outcomes advantage over time that we observe today for Punjab relative to Haryana.

FIGURE 6. PTR in Secondary and Higher Secondary Schools across Northern Indian States

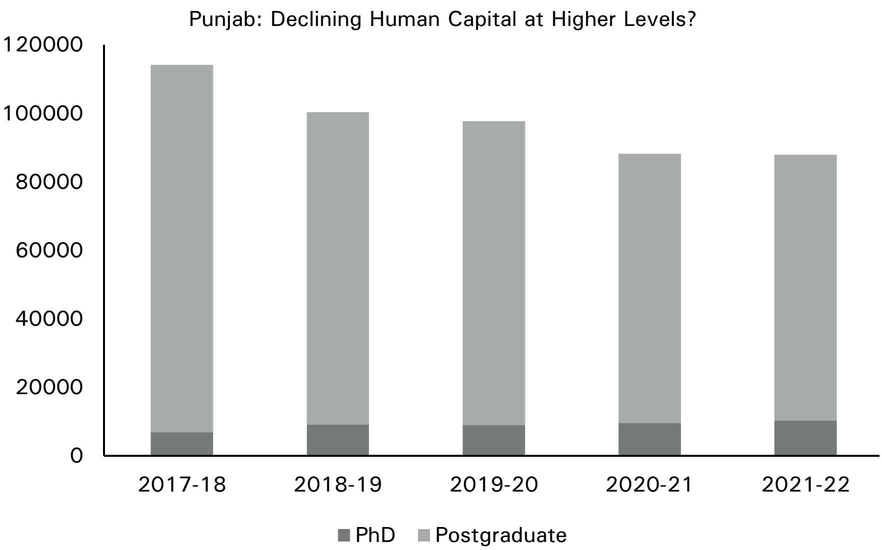


Source: Ministry of Education, GoI 2021-22c.

29. In contrast, an earlier study (Brar 2016) had suggested that, as compared to other better-off Indian states, Punjab's record in the education of its citizens has been weak for decades, as measured by actual skills attained, and by inclusiveness.

While primary education outcomes are quite good in Punjab, evidence from Muralidharan and Sundararaman (2011) suggests that school teachers should be provided with performance-based incentives for even better outcomes in language, mathematics, and science. This does not appear to be happening in Punjab currently. Similarly, school management systems (hiring, performance assessment, promotions, exit) could be re-evaluated for truly understanding the performance of teachers, and then acting on these. There is room for experimentation in a pilot set of representative schools from where wider implications can be drawn. Finally, there is some suggestive evidence from Figure 7, that for education at higher levels (postgraduate), Punjab is showing a decline. This decline is almost entirely driven by female postgraduates. There could be several reasons for this, but we identify three key reasons why this could be happening with an increase in unemployment among females as observed in Section 3.1: (1) The expected return after a postgraduate degree is not realized, as high-skilled jobs in Punjab are not being created at the rate to offer employability to postgraduates (youth unemployment rates are high, as discussed above); (2) There is a decline in the quality of higher educational institutions in Punjab (to add significant value/signal to the student's profile); and (3) There is a decline in the number of higher educational institutions available per capita.

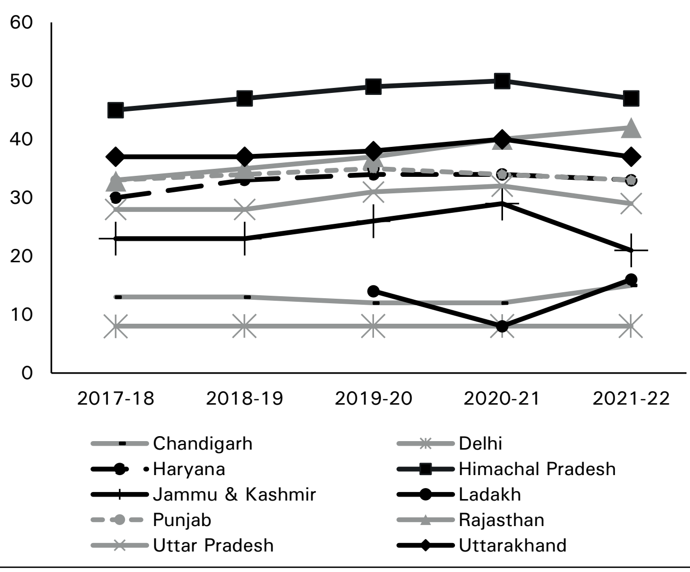
FIGURE 7. Number of Postgraduates and PhDs in Punjab from 2017-18 to 2021-22



Source: All India Survey on Higher Education 2021-22.

Next, we rule out (3). The number of Higher Education institutions increased by 14 percent in Punjab from 973 to 1,111 between 2010-11 and 2019-20. From the data in the All India Survey on Higher Education (2021-22), we observe that Punjab is not an outlier among northern states when it comes to colleges per lakh population. In Figure 8, we see that Punjab has 34 colleges per lakh population in 2021 or 3.4 for every 10,000. This does not vary much over time, suggesting that a decline in the number of colleges per capita is not the right explanation for the decline in the number of postgraduates. As of March 2020, there were 32 universities and 1079 colleges in Punjab and the national ranking of Punjab in terms of Gross Enrollment Ratio is 18th (Report of the CAG of India on Performance Audit on Outcomes of Higher Education in Punjab, 2022). However, availability of faculty in colleges was insufficient–which made the student-faculty ratio 49:1-more than twice of the recommended 20:1. This contributes to the lack of incremental value-added that postgraduates may also feel. Additionally, the qualifications of the existing faculty were below par. During the CAG audit, it was found that the salaries paid to 241 teachers, who were appointed as Assistant Professors on a contractual basis, ranged between ₹ 5,000 and ₹ 21,500 during 2019-20, which was less than the prescribed minimum pay while 81 percent of guest faculty and 36 percent of teachers in the colleges did not have basic qualification as per UGC norms, thereby compromising the quality of teaching being imparted in these Higher Educational

FIGURE 8. Trends in Number of Colleges per Lakh Population across Northern Indian States/UTs (2017-21)



Source: All India Survey on Higher Education 2021-22.

Institutions (HEIs). Further only 1.7 percent HEIs were accredited with A++/A+ grade. This indicates that the quality of higher education imparted in the state was not satisfactory and needs to be improved through a sustained push towards more qualified faculty members and higher pay for them (especially with a component based on performance). Out of 44 government colleges eligible for accreditation, only 18 percent received an 'A' grade, 14 percent of the colleges were given a 'B++/B+' grade, 20 percent of the colleges a 'B' grade, and 2 percent received a 'C' grade. Fortyfive percent of the colleges did not get an accreditation from NAAC (NAAC website). The proliferation of low-quality educational institutions has the potential to create expectations for high-skilled employment, but this does not appear to be happening after graduation as these high-skilled jobs (e.g., software engineers) are not available to cater to the supply-side made of graduates.

Reason (2) is unlikely to be the case if the decline in postgraduate education is only happening for females in Punjab. Furthermore, reason (1) appears most likely–no data appears to have been maintained with regard to students' employment, students' progression to higher studies, and students' performance in competitive examinations across colleges. In the CAG audit, less than 30 percent of the colleges were found to have a placement cell. Focusing on creation of job-facilitating mechanisms for students would help in reducing costs of search and matching for potential graduates and postgraduates, apart from improving their NAAC grades.

4.2. Health

In many aspects of healthcare and health outcomes, Punjab does considerably better than the national average, though not necessarily better than other better-off states.[30] Life expectancy is just a few years more than the national figures, but Punjab's statistics for prenatal and postnatal care, immunization, malnutrition, and infant and child mortality are much better than those for India as a whole.[31] This situation is a consequence of Punjab's previous decades of prosperity, and reflects the durability of certain kinds of institutional development that occur in parallel with income and output growth. At the same time, statistics indicate that Punjab's rate of improvement is slowing down, and other states in India are catching up. Additionally, changes in lifestyles and nutrition associated with prosperity are having new, adverse impacts on health. Finally, Punjab's demographic transition is occurring more rapidly than in many other parts of India, so it will have an aging population earlier than some other Indian states. Therefore, there is no basis for complacency in healthcare policy. We consider

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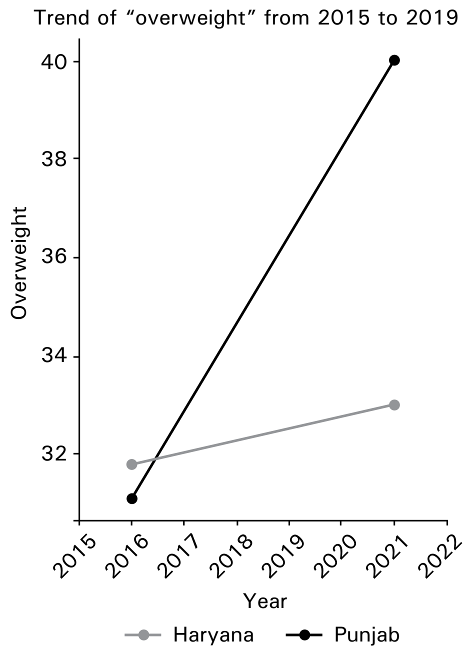
30. It should be kept in mind that states with relatively high per capita incomes such as Maharashtra and Karnataka may also have much higher intra-state inequality than Punjab, because they contain very wealthy metros as well as poor rural regions.

31. See, for example, Arora, Singh and Visaria (2023) and PES (GoP 2024, Chapter 6.2).

some of the detailed indicators of possible health issues for Punjab, currently and in the future.

Looking at the evidence from the fourth and fifth rounds of the National Family Health Survey (NFHS), a significant shift in female health outcomes was observed in Punjab between 2015-16 and 2019-21. The proportion of women aged 15-49 years with a normal Body Mass Index (BMI) (18.5 to 24.9 kg/m^2) decreased from 56 percent to 47 percent. In contrast, Haryana remained relatively stable at a rate of about 52 percent. This reduction in Punjab was largely due to an increase in the percentage of overweight or obese women (BMI ≥25.0 kg/m^2), which rose from 31 percent to 40 percent (Figure 9).

FIGURE 9. Percentage of Women 15-49 Years Who Are Overweight or Obese (BMI ≥ 25.0 kg/m^2).

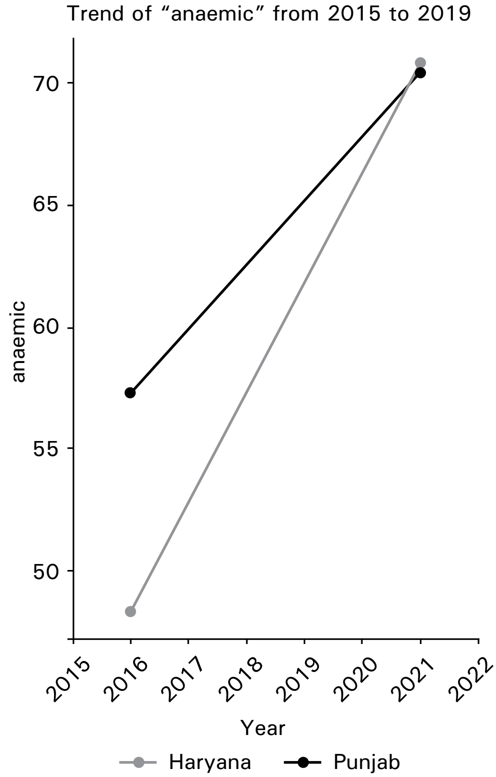


Source: NFHS 4 and 5.

A closer look at specific districts within Punjab reveals substantial increases in overweight female populations: Bathinda saw an increase of 80 percent, Faridkot 76 percent, and Jalandhar, 52 percent. Moreover, there was a notable 67.5 percent surge in the proportion of overweight women within the 15-19 years age group in Punjab, hinting at the concerning trend of teenage obesity in Punjab, especially among females.

The increase in anemia rates among women and children over the past five years across both Punjab and Haryana is also concerning. In Punjab, the proportion of women with anemia (haemoglobin levels below 10.9 g/dl) rose by 6 percentage points, from 53 percent in 2015-16 to 59 percent in 2019-21. The rate of severe anemia in women—characterized by haemoglobin levels below 7.0 g/dl—more than tripled, escalating from 0.5 percent to 3 percent during the same period. Among children below 5 years of age as well, the population having anemia went up from 57 percent to 70 percent in these five years while severe anemia went up from 1.3 percent to 5 percent (see Figure 10). This suggests a need to create initiatives to combat obesity and anemia at an early part of the life cycle, since these are likely to create explicit costs (healthcare), implicit costs (say, due to lower work productivity and wages as a result of anemia for which there is sufficient evidence) and intergenerational costs (since children of anemic women may be more likely to be anemic) for households and workers. Iron fortification of rice, easier access to healthier food, nutritional information, with heavier regulation or Pigouvian taxes on obesity-causing foods (such as packaged chips, aerated drinks) should be evaluated.

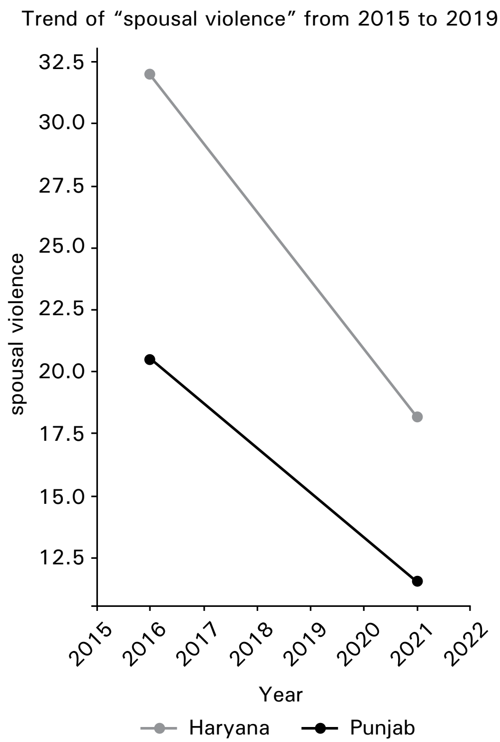
FIGURE 10. Children (6-59 months) Who Are Anemic (< 11.0 g/dl)



Source: NFHS 4 and 5.

On a positive note, both Punjab and Haryana showed a decline in self-reported ‘spousal violence’ where Punjab went down from 20.5 percent to 11.6 percent of ever-married women (18-49 years) who have ever experienced spousal violence and continued to do better than Haryana (Figure 11).

FIGURE 11. Percentage of Ever-Married Women Aged 18-49 Years Who Have Ever Experienced Spousal Violence. Spousal Violence Is Defined as Physical and/or Sexual Violence



Source: NFHS 4 and 5.

5. Public Finances and Governance

Even in an era of markets and liberalization, the role of government remains well-recognized. Governance involves a range of institutions–political, judicial and administrative. Aside from institutional quality, the heart of government functioning is the collection of revenues and allocation of expenditures. Fiscal policy is a vital contributor to economic stability and growth. In a federal system like India, state governments play significant roles, although their functioning is greatly affected by that of the national government, as well as the constraints embodied in the federal structure.

Any state government in India, including that of Punjab, can use fiscal policy to effect economic growth and development in the short, medium, and long runs. Indeed, a wide range of economically important activities and sectors are the sole or concurrent responsibility of state governments, including health and education. Especially after the reforms of 1991, state governments can devise incentive (or disincentive) systems for influencing private investment in their jurisdictions, although they may be competing with other states in this effort. Even though macroeconomic stability is the purview of the nation's central bank and the Central Government, state governments do have the ability to borrow within certain limits, and this can play a role in promoting the stability of their own economies.

In general, however, the structures and actual operation of Indian federalism have tended to give the Central Government considerable influence over what state governments can do in practice. Recently, several states of India have reported difficulties in the operation of their fiscal policies. Five chief ministers of different states of India (three from southern states and two from northern states) staged a protest in New Delhi to highlight how the Union government was putting hurdles in their way for fiscal policy. In a historic first, the government of Kerala filed a case in the Supreme Court of India to challenge sudden new borrowing restrictions imposed by the Union Government. While the Supreme Court denied interim relief to the state government in this case, the underlying issue is that the Constitution assigns wide discretionary powers to the Union Government, within a framework where revenue assignments also favor the Centre. Centre-state fiscal transfers, in principle meant to give states adequate fiscal resources, are also subject to this discretionary power.[32] With these kinds of structures, the concept of cooperative federalism does not have a firm footing in practice.

The structural centralization of revenue assignments has combined with particular historical circumstances to impact Punjab's public finances particularly negatively. As a result, the state's fiscal policy has been dysfunctional for decades. Punjab suffered from severe political and social turmoil from the early 1980s through the mid-1990s. During that decade-and-a-half, Punjab remained under President's rule for much of the time. There was a significant shift of public expenditure from developmental purposes to the law and order machinery, which itself operated without checks and balances. A revenue surplus turned into a revenue deficit, which has persisted. The revenue collection machinery also collapsed, and the state government's borrowing rose

32. The Finance Commission, appointed every five years to determine Centre-state revenue-sharing, is independent, but only makes recommendations. Precedent and political bargaining both affect the nature of recommendations and the extent to which they are implemented. Each state also appoints its own finance commission to determine transfers to local governments–the report of the Punjab Finance Commission is discussed in Section 5.2.

dramatically. The gap between revenue receipts and revenue expenditure was Rs 544 crore in 1990-91 and has risen consistently, so that the revenue deficit was Rs 24,588 crore in 2022-23 (RBI 2023). After adjusting for inflation, this represents a five-fold increase in revenue deficit. This section mainly focuses on examining the nature and drivers of Punjab's public finances, and the sources and extent of the challenges to fiscal policy, as well as possible corrective measures. We also briefly examine some ways of assessing the quality of governance in the state, since a decline in governance quality has arguably accompanied the state's fiscal problems.

5.1. Fiscal Situation of Punjab

The story of fiscal dysfunction is apparent when we look at the rising outstanding liabilities. At the beginning of the century, the Punjab government had an outstanding debt of Rs 34,063 crore, which was 38.97 percent of the GSDP. The debt of the state quickly increased, reaching Rs 47,548 crore in 2004-05. The debt-GSDP ratio peaked at 49.10 percent. Subsequently, the debt-GSDP ratio fell, reaching a low of 30.78 percent in 2013-14. The debt-GSDP ratio then resumed its increase, reaching 49.46 percent in 2021-22.[33] According to Reserve Bank of India (RBI) statistics, the Punjab government has a debt burden of 47.6 percent of GSDP, which is more than Rs 3.51 lakh crore, as of March 2024. If we include pending liabilities, non-guarantee loans and expected government borrowings in the current fiscal year (2024-25), the total accumulated debt by end-March 2025 will exceed Rs 4 lakh crore. Compared with other major states of India, Punjab has the highest debt-GSDP ratio. Each government in the state, during its time in office, has borrowed in a profligate manner. The state debt rose 22.85 percent and 40.80 percent in 2015-16 and 2016-17, respectively, though this was partly due to exceptional circumstances (Footnote 33). Subsequently, the state debt has been rising at an annual average rate of more than 9 percent. However, most of the new borrowing has to be used for servicing the existing debt. In 2021-22, the government of Punjab paid Rs 32,468 crore (interest payments Rs 18,210 crore + repayment of principal Rs 14,258 crore) for servicing the debt (see Table 3 as well). The net availability of borrowed funds was only Rs 2,734 crore (7.8 percent of total borrowings). In other words, 92.2 percent of new borrowing went to debt service. In effect, the Punjab government is in a debt trap, which is a huge drag on the revival of economic growth in the state.

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33. One reason was that in 2006-07, a special term loan of Rs 3,772 crore was waived by the Government of India. Another reason was implementation of the Punjab Fiscal Responsibility and Financial Management Act 2003. There was also a slight decline in interest rates. A jump in the debt-GDP ratio again occurred in 2016-17 when a Rs 30,000 crore discrepancy in receiving advance payments to procure foodgrains for the PDS was added to the debt.

TABLE 3. Rising Share of Committed Expenditure (Rs Crore)[34]

Year	*Main Components of Revenue Expenditure*					
	Salaries/ Wages	*Pensions/ Retirement Benefits*	*Interest Payments*	*Power Subsidy*	*Other*	*Total*
2001-02	4133	1035	3178	448	3916	12710
%	32.5	8.1	25.0	3.5	30.8	100.0
2011-12	12064	5657	6280	3200	5844	33045
%	36.5	17.1	19,0	9.7	17.7	100.0
2016-17	21729	8773	11642	5601	7551	52296
%	39.3	15.9	21.1	10.1	13.7	100.0
2020-21 PA	24187	14730	18909	14516	24141	96462
%	25.1	15.3	19.6	15.0	25.0	100.0
2022-23 BE	31172	15146	20122	15846	25647	107932
%	28.9	14.0	18.6	14.7	23.8	100.0

Source: (RBI 2023) State Finances-A Study of Budgets, Accessed from Reserve Bank of India - State Finances: A Study of Budgets (rbi.org.in).

In terms of ratios, the revenue deficit-GSDP ratio in 2018-19 was 2.56 percent and rose to 3.23 percent in 2020-21. In 2022-23, the revenue realization was 63 percent of the target, which suggests that Punjab's revenue deficit-GSDP will increase further. If we include past liabilities, the promised employment generation through government hiring and promised transfer payments and subsidies will increase expenditure without raising the desired level of revenue.

What are the factors that have contributed to Punjab's precarious public finances? An important reason has been the low tax capacity of the state. The own tax revenue-GSDP ratio has remained low, fluctuating from 6.56 percent in 2001-02 to 8.27 percent in 2004-05 and down to 5.59 percent in 2019-20. It has improved thereafter, reaching 7.24 percent in 2022-23. One reason for the low tax capacity is that Punjab is heavily agricultural, and that sector is exempted from direct taxes. Another reason is tax evasion, where the institutional quality and capacity of the government matters. Surprisingly, the implementation of GST has not improved the own tax revenue situation of the state (Table 4). The revenue problems go beyond tax collection. Indeed, there has been a sharp decline in the non-tax revenue-GSDP ratio, from 5 percent in 2001-02 to less than one percent in 2022-23.

34. See also Table 3.2 in the Punjab Finance Commission report (GoP 2022), which documents the declining share of developmental expenditure in the state budget. Figure 4.13 in the same document displays the increasing share of committed expenditure over just the last decade.

TABLE 4. Structure of Own Tax Receipts of Punjab

Type of Tax	*2001-02*	*2011-12*	*2016-17*	*2020-21*	*2021-22 PA*	*2022-23BE*
Land Revenue	8.58	25.65	67.82	67.63	83.54	150.30
%	0.18	0.13	0.24	0.23	0.22	0.33
Stamp Duty and Registration	444.31	3079.13	2043.61	2470.33	3308.35	3600.00
%	9.21	16.34	7.37	8.22	8.36	7.90
GST				11818.93	15541.59	20550.00
%				39.33	41.64	45.08
Sales Tax/VAT	2063.86	10754.70	16930.98	5372.02	6869.31	6250.00
%	42.80	57.08	61.02	17.88	18.40	13.71
Central Sales Tax	620.47	416.97	655.73			
%	12.87	2.21	2.36			
Excise Duty	1350.06	2754.60	4406.01	6164.32	6157.28	9647.87
%	27.99	14.62	15.88	20.51	16.60	21.16
Vehicle Tax	318.44	850.06	1548.74	1472.13		2575.00
%	6.60	4.51	5.58	4.90		5.65
Electricity Duty	9.19	928.28	1993.01	2541.84	5366.78	2550.00
%	0.19	4.93	7.18	8.46	14.38	5.59
Others*	7.62	32.61	100.78	145.63		265.00
%	0.16	0.17	0.36	0.48		0.58
Total	4822.53	18841.00	27746.68	30052.83	37226.85	45588.17
%	100.00	100.00	100.00	100.00	100.00	100.00
GST/VAT/CVAT	2684	11172	17587	17191	22411	26800
%	55.66	59.29	63.38	57.20	60.04	58.79

Source: (RBI 2023) State Finances-A Study of Budgets, Accessed from Reserve Bank of India - State Finances: A Study of Budgets (rbi.org.in).

As noted earlier, the origins of the ballooning state government debt lie in the 1980s' turmoil in Punjab. A revenue deficit first emerged in 1984-85, and became chronic in 1987-88. Not only was economic activity disrupted, but many government institutions, including those for revenue collection, became dysfunctional. Arguably, the creation of a security apparatus led to vested interests that has made reconfiguring expenditure back toward developmental purposes difficult. For example, attempts to withdraw or reduce security cover were appealed to the Punjab and Haryana High Court. The Punjab government continues to recruit more police personnel every year to strengthen the security apparatus, and its spending on police is among the highest among all major states (Table 5, and N. Singh 2023).

TABLE 5. Trends in Budgetary Expenditure in Punjab (Figures Are in %)

Year	*Social Services*		*Economic Services*					*General Services*		
	Education	*Health*	*Agri and AAs*	*Irrigation and FC*	*Energy and Power*	*Industry and Minerals*	*Transport and Comm.*	*Pensions*	*Interest Payment*	*Police*
1981-82	23.26	9.11	9.80	6.81		0.91	12.02	11.93	2.61	6.09
1985-86	20.32	7.19	5.98	6.88		0.93	7.92	na	na	na
1991-92	13.55	4.32	4.05	3.16	32.84	0.31	4.11	8.59	3.40	6.06
2001-02	14.42	4.86	3.31	2.56	3.55	0.18	3.19	25.00	8.14	6.60
2011-12	16.01	4.69	2.61	3.0	9.69	0.16	2.10	19.00	17.12	8.64
2016-17	15.94	5.19	10.34	2.35	2.92	0.11	0.91	21.05	15.87	8.58
2020-21	13.85	4.36	9.64	1.17	2.54	2.46	1.02	21.05	15.86	7.12
2021-22 RE	13.45	4.61	1.46	1.08	4.28	2.48	0.82	18.70	13.86	9.05

Source: (RBI 2023) State Finances-A Study of Budgets, Accessed from Reserve Bank of India - State Finances: A Study of Budgets (rbi.org.in).

How can Punjab come out of the double trap of slow growth and increasing debt? The state government has to take concerted steps. First, it can modify institutional arrangements to strengthen the internal policy-making process to identify sources of tax evasion. Proper auditing of goods and services entering the state, and of the wholesalers, and retailers involved, will help to collect the legitimate revenue owed from the GST. The same logic applies to non-tax revenue, the share of which has declined from 30 percent in 2001-02 to 6 percent in 2021-22. These revenues include user charges for services such as police and use of government facilities, and institutional precedents and mechanisms exist for collecting these, and so there is scope for restoring such revenues. New service charges are also possible, and unnecessary subsidies can be eliminated, such as free electricity for income tax- paying households if they consume below some level. Second, as the economy is transitioning from capital asset-based income to knowledge-based income, the state government should devise new taxes to raise revenue. Third, there is a general need to rationalize subsidies and reorient expenditure to support a faster transition to a knowledge-based economy.[35]

Whatever the Punjab government does, its accumulated debt will continue to remain the biggest constraint. Is there some way to reduce the debt? Clearly,

35. Various granular reforms in expenditure control and revenue administration were suggested in PEG (2020). All such reforms are useful, but will be insufficient by themselves, because of the high debt service cost. The same applies to any realistic increase in devolution through the Finance Commission, as proposed in PEG (2021).

state government revenue has to be increased, and expenditure reoriented away from the security apparatus toward investment in future growth.[36] Among other options, the government could set up a Debt Relief Fund (DRF) and issue an appeal to all citizens concerned, as well as Punjabi emigrés, to voluntarily deposit money in the DRF, possibly with some tax advantages. Another option could be rescheduling the debt by issuing new bonds. The national government has used such devices in the past, and the state would need approval from the Centre and RBI, but all options need to be considered.

Much more directly, Punjab can argue that the services it provides to the rest of the country, in the form of national security–including food security–deserve to be explicitly valued and compensated. A moratorium on state debt, or targeted investment grants, could be ways of implementing compensation. The national government can also pay for Punjabi farmers to switch out of the increasingly unremunerative and destructive wheat-paddy rotation. On its own, Punjab will have difficulty in fixing its public finances in any meaningful way, because of the double trap it is in.

5.2. Local Governments

State finance commissions are charged with making recommendations for transfers from the state government to local governments within that state. In addition, because of the limitations on such state-local devolution, the Central Finance Commission also makes recommendations for transfers from the Union government to local governments in each state. In the case of Punjab, per capita grants to rural local governments by the 15th Finance Commission were Rs 3124 (slightly more than the average for India), and for urban local governments they were Rs 2661, lower than the average for the country). In aggregate, the grants to local governments in Punjab were Rs 8174 crore.[37] However, these figures are all five-year aggregates, so the annual average grants are only one-fifth of these amounts. The annual per capita grants are about Rs 600, while the annual total is less than 1 percent of the total annual budget of the state.

The Fifth Punjab Finance Commission, which made recommendations for 2016-2021, proposed devolution by the state government to local governments of Rs 7274 crore over that entire period, based on a formula of 4 percent of net own-tax revenue (NOTR), but the actual devolution was almost zero (GoP 2022, Table 6.2). This complete disregard of devolution by the state government

36. The PEG (2021) report highlighted the analysis of the Fifteenth Finance Commission (FFC), which submitted its full report in February 2021, regarding lack of public investment in the state. To quote PEG (2021), "The Fifteenth Finance Commission, … has also drawn pointed attention to the fiscal situation in Punjab which it has described as "extremely precarious" with an unsustainable debt pattern in recent years. The FFC drew attention to the fact that Punjab's capital expenditure in the budget is only 0.7 percent of GSDP compared with 2.6 percent for all states. In fact, it is the lowest of any state."

37. All these numbers are taken from GoP (2022), Table 5.3, p. 94.

was a pattern that began with the Third Finance Commission, which made recommendations for the period beginning 2006-07. The state government has been making compensatory payments outside the state finance commission framework, but the latest report (GoP 2022) argues that these payments are not well-structured. Overall, the quality of urban local governments' expenditures is poor, and their incentives on the revenue side are also badly structured in the current system.

Averaging over 2013-18, per capita expenditure by rural local governments in Punjab was only Rs 341 (GoP 2022, Table 7.3), which was comparable to some of India's poorest states, and much lower than an average of Rs 2083 for 13 major states. Most of Punjab's rural local government expenditure was from own revenues, whereas other states achieved higher expenditure through devolved funds (GoP 2022, Table 7.4). Similarly, for urban local governments, Punjab's per capita revenue is lower than the average for India, and those governments rely much more on their own funds, with very little devolution from the state government (GoP 2022, Figures 8.4 to 8.7). However, own tax revenue is not particularly strong, and there is a case for strengthening the urban property tax regime (PEG 2020), but that will require improving institutional capacity at the local level.[38]

To some extent, the problems of underfunding of local governments are a nationwide issue, but Punjab seems to do particularly poorly on this front. Its rank is not necessarily the lowest, but in particular, other states with stronger recent economic growth records do better. The per capita expenditure of the state's two largest municipal corporations (Ludhiana and Amritsar) is also relatively low (GoP 2022, Table 8.13), suggesting that these cities are doing less to prepare for future possible growth. Of course, comparisons across states, or any kind of counterfactual, are fraught with difficulties because of the heterogeneity of India, and the limited information on the functioning of urban local governments.

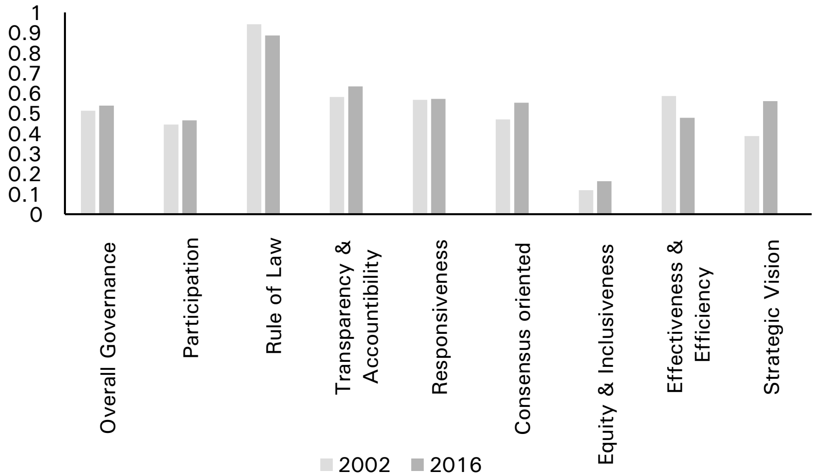
5.3. Governance–Focus on Efficiency

The United Nations Development Program (UNDP) has suggested eight major characteristics of good governance. These are: (a) participation; (b) rule of law; (c) transparency; (d) responsiveness; (e) equity and inclusiveness; (f) accountability; (g) effectiveness and efficiency; and (h) consensus. Sodhi (2024) explored different aspects of governance for Punjab and attempted an index of its governance performance (based on the eight principles mentioned above). Sodhi finds that apart from (g) effectiveness and efficiency, Punjab's

38. Despite a decade having passed since the introduction of a modern property tax system (replacing an old "house tax"), the state has done little to make it effective, even forcing reductions in rates in the tax's early days in 2013-14.

performance in 2016 has generally improved relative to 2002, or even if there has been a slight decrease, the overall levels are significantly higher than other states (e.g., on rule of law) (Figure 12). This suggests that where Punjab may need to improve are on the components of effectiveness and efficiency–these include metrics, such as power, urban development, transport and communication, irrigation, and fiscal performance.

FIGURE 12. Punjab Governance Index over Time (2002-2016)



Variables of Governance Index

Sub-dimensions	*Indicators*
• Participation (SDI 1)	Women Participation
• Rule of Law (SDI 2)	Incidence and rate of crime, Victims of rape and murder
• Transparency and Accountability (SDI 3)	Corruption cases, Crimes by police
• Responsiveness (SDI 4)	Pendency of cases in courts and with police, Vacancies in courts and police
• Consensus (SDI 5)	Inclusion in state assembly elections, SC/ST representation
• Equity and Inclusiveness (SDI 6)	Inclusion in education/welfare, PDS, regional development
• Effectiveness and Efficiency (SDI 7)	State of power, urban development, transport/communication, fiscal performance, irrigation
• Strategic Vision (SDI 8)	Human resource development, social/family welfare, environment & sustainability

Source: Sodhi (2024).

6. Policy Discussion

As noted earlier, Punjab's governance institutions eroded during a long period of political and social unrest, and many of them have been slow to recover. Recent efforts to improve governance have included digital access to citizen services and improving 'ease of doing' business. Punjab's high ranking in the specific dimension of starting a business–one of eight used to construct the overall ease-of-doing business index–is based on its single-window clearance process for new businesses. In 2019, existing efforts at improved governance were embedded in a consultative process, the Punjab State Advisory Council (PSAC), but it made slow progress, until being overtaken by the pandemic in early 2020. The PSAC attempted a broader scope of policy action, simultaneously examining several aspects of the state economy and economic reform. In particular, it recognized the link between the condition of Punjab's public finances and the quality of the state's governance institutions, at a granular level. Previously, such integrated approaches had been embodied in traditional planning exercises. Academics working outside government had also been an important source of such integrated analyses (e.g., CDEIS 2012). More often, government policy-making that brings in experts for consultation proceeds through specialized committees, as in the case of crop diversification. As we have argued, narrow efforts at reform face obstacles because of the interlocking constraints that are very specific to Punjab.

The PSAC was replaced by a "Group of Experts," which produced two reports (PEG 2020; 2021), with numerous granular level recommendations, some of which were discussed in the sections on agriculture and industry. The reports covered eight areas: health, agriculture, industry, skill development, social sectors, public finances, digitization, and start-ups. There were some tie-ins across these areas. For example, digitization included governance–with implications for public finances–as well as goals of improving access to finance for smaller firms, and making agricultural value chains more efficient. For the health sector, recommendations such as filling vacancies in the public health system were inevitably tied to strained public finances, but also to shortages of personnel due to inadequate higher education institutions and to emigration. On the health front, Punjab faces challenges of an aging population, lifestyle diseases, and possible novel infections in the future. Public expenditures on healthcare in Punjab are low, and the state's weak record in health as well as in higher education can be traced to a combination of lack of fiscal resources and weak institutions.

As discussed earlier in the paper, the first PEG report (2020) included technical reforms for agriculture in matters such as seeds and irrigation, but these were lost in the political alarm raised by recommendations for reducing subsidies or replacing them with cash transfers, reforming land markets, and marketing reforms. In this situation, the resources needed for making systemic changes arguably have to come from the national government. While a major reform of the national food procurement policy has been announced–offering farmers unlimited purchases of maize and pulses at MSPs if they switch from wheat or paddy, this may not be enough to incentivize large-scale changes in crop choices. Additional payments may be required, which could be justified politically as compensation for past contributions to national food security, in a manner that distinguishes the Punjab case from those of other states.[39] Those payments could be earmarked for upgraded infrastructure for marketing or processing the crops to which farmers switch, in addition to directly incentivizing switching. On a less ambitious scale, the first PEG report (2020) argued that the Food Corporation of India (FCI) should bear some of the costs of procurement, which were straining the state government budget.[40] Measures like these can be fiscally helpful in the short run, as part of a transition away from the current agricultural system. The larger scale CDEIS proposal, for what it termed a Special Investment Deficiency Package (SIDP), would have supplemented the state government budget by about 20 percent a year for five years. Coincidentally, the current gap between the state government's receipts and expenditures is a little less than 20 percent of expenditures, with borrowing covering the gap.[41]

The state's side of this "grand bargain" would have to include more than accepting earmarking of such additional support.[42] Structural adjustment assistance often comes with conditions, but in this case, the state government is well-placed to develop a list of actions to which it could commit. Without going into detail, there are a range of possibilities with respect to improving tax collections (such as clamping down on evasion and strengthening local government tax capacities), reducing agricultural subsidies in a phased manner,

39. The CDEIS (2012) report explicitly recommended this conceptual approach and framing, namely that the national government pay the state for its contributions to national food security. In her comments, Vini Mahajan noted that Punjab's early investments in infrastructure, often from the state's own funds, have subsequently left it in a disadvantaged position for availing of many central or centrally sponsored schemes, which are designed to promote "catch-up". She also pointed out some specific impacts on Punjab of the shift to GST, because of its economic structure and resulting pattern of indirect taxes.

40. The final report, PEG (2021) modified this suggestion to a withdrawal of the state government from procurement, which would shift the cost to the FCI.

41. The increases in Punjab's share of devolution recommended by the FFC were far short of the scale calculated by the CDEIS report, and that scale requires careful attention to how it is framed, to achieve political acceptability. The history of Punjab as a contributor to national food security, and the accumulated costs associated with that, suggest a possible narrative. Such a program would likely need to fall outside the purview of the Finance Commission.

42. We are grateful to Karthik Muralidharan for emphasizing this aspect of the solution, and suggesting the term "grand bargain". Though that term has been used earlier in other contexts, it seems particularly appropriate for the case of Punjab, which involves a range of political-economy complexities. In his discussion, Montek Ahluwalia also emphasized the need for incentive compatibility with respect to the state's use of Central assistance.

and even new taxes that can be justified as targeted against environmental harms. Farmers are very conscious of the environmental degradation they are encountering, and a transparent and progressive tax (with higher incidence on large farmers) could be politically acceptable, particularly when there is visible Central support. As noted earlier, a grand bargain of this nature does not have to be restricted to shifts within agriculture, but could include positive incentives for local industry.

At a basic level, Punjab's long-run economic growth will require a number of policy reforms to support industrial transformation. Business owners require 'ease of doing business' at a very granular level, and numerous barriers remain beyond the initial step of government clearance: inspectors, enforcing contracts, access to finance, finding skilled workers, and access to markets. In these areas, Punjab does worse than many other states, especially in the cost of electric power and the structure of taxes.

In addition to attending to current interlinked obstacles to economic growth, as discussed earlier in the paper, future sources of growth have to be envisioned. The Punjab Vision Document 2047 provides some general perspectives. But as indicated earlier, it lacks specific analysis. As economic growth becomes increasingly knowledge-intensive, Punjab's economic structure appears more and more out of date. Much of the Punjab economy, in agriculture, manufacturing, and services, involves activities and firms that have low productivity, low wages, and are input-intensive. In particular, the agriculture sector has been relatively high in productivity compared to other Indian states, but because most of its output goes to national food procurement, there is very low value added beyond the farm gate. Many of Punjab's subsectors in manufacturing and services are also low in value addition.

According to a relatively new composite innovation index, developed by NITI Aayog, Punjab is not doing too badly. It ranks sixth among 17 major states, with an index value of 15.35 in 2021–in a range which goes from 10.97 to 18.01. Delhi and Chandigarh have much higher index values, each at about 27, and Haryana, while its own index is only slightly higher than that of Punjab, borders both cities. With Delhi being a much larger city than Chandigarh, one might argue that Punjab's relative position is worse than the index values suggest. It must also be recognized that the innovation index is based on very broad and diverse criteria. Punjab does relatively better on input measures than on output measures. Perhaps the most striking relative deficiency is in investment in science, technology, and the environment. Punjab spends as little as 0.39 percent of its GSDP in this category, much less than many other states. Other areas in which Punjab is weak are knowledge-intensive employment, involvement of NGOs in knowledge-intensive activities and skill development training.

The state's lack of financial resources is a pervasive problem. For example, the PEG report (2020) recommended a "skills university", and this was reported to be under construction a year later, namely, the Sri Guru Gobind

Singh Skill Institute. But in 2022, construction had been halted because of a lack of funds. The parent institution, the IK Gujral Punjab Technical University, is itself an umbrella for hundreds of colleges of varying quality. Another barrier to the delivery of quality education at all levels in the state could be a lack of organizational incentives for performance, both at the level of individual employees, and at the institutional level, through regulatory mechanisms such as accreditation. Skill development efforts also run into problems because there is little effective participation from industry, which, because of its structure, itself lacks adequate competitive pressure and financial resources to drive skilling or training programs. In contrast, an example of what can be accomplished is the success of Indian software firms that served foreign markets, and developed internal training programs for university graduates using international certification standards.[43]

If, as seems to emerge from the PVD 2047, the goal is to transform the Punjab economy into some form of knowledge economy, the state government and private economic actors will have to consider how to effectively increase expenditure on in-house R&D, and increase the level of involvement of science and technology workers. While science and technology workers can potentially be hired from elsewhere, there is probably a case for ramping up local production–universities and colleges in Punjab would have to improve their educational capabilities in key areas as emphasized in the PVD 2047. This will also require significant investments in building organizational infrastructure and capabilities in these higher education institutions.

Within the government, annual budget formulation could include a new budgetary head, namely, investment in R&D. An immediate, short-run target for R&D could be 1 percent of GSDP, to be raised to 2 percent in the medium term, with a final target of the level of the East Asian tigers, at around 3 percent.[44] The state government would also need to find ways of enabling the improvement of business-university linkages. Additionally, the R&D budget could focus more on risky, but short-gestation projects for specific technologies. Both the state government and business enterprises can seek stronger linkage with

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43. In a different context, the Innovation Mission Punjab, created as a recommendation of the PEG, seems to have developed effective institutional mechanisms for imparting the eclectic range of skills required for successful entrepreneurship. But here one is not providing industrial-scale skills to workers, nor technical skills, but rather a combination of other higher-level skills to owners of firms.

44. One has to be careful in terms of implementing such a recommendation–the definition and quality of expenditures in this category can vary greatly, and some states in India have figures much higher than 3 percent of GSDP for the broader science, technology, and environment category. In the floor discussion, Devesh Kapur pointed out some of the challenges of engaging productively with the Punjabi diaspora, and Lakhwinder Singh, in his response, noted some of the limitations as a source of significant new investment. To some extent, the role of the diaspora is highly contingent on a process of structural adjustment that can come from a Centre-state "grand bargain."

the diaspora, as has happened in the case of software hubs in southern India. Spillover effects from the knowledge gained from work experience in developed countries can be substantial.[45] Local spillover effects from creating industrial clusters, but built around universities in the case of knowledge industries, can also be substantial, as the experience of other innovation regions, from Silicon Valley to Bengaluru, illustrates.

7. Conclusion

Punjab is locked-in to an economic structure that is subject to diminishing returns, technological stagnation, and environmental degradation. The core of this structure is a national food procurement policy that encourages farmers to grow wheat and rice in a tight rotation, using water, electricity, and fertilizer that are subsidized or even given away. The cost of the subsidies distorts public finances, and the state government has been accumulating debt at unsustainable rates. Modifying the agricultural system with support from the Central Government has to be the prime component of any reform, and one of the keys to unraveling the current inefficient equilibrium. Giving farmers alternative, less-water-intensive options for crops that can be grown for procurement at MSPs is an important step forward, but likely not enough on its own. Farmers may need larger incentives for switching to occur at a large enough scale. If the Central Government provides a compensation fund that can be used for investments to promote switching, such as for infrastructure and marketing for alternative crops, that could begin to solve the problem, especially since the state budget cannot support such investments in its current situation.

Transforming the industrial and service sectors also has to be part of the solution to Punjab's stagnation. The state has too many subsectors that are not very productive, partly because of lack of scale, but also because they are not geared toward quality and high value-added products or market segments. There is ample scope for upgrading various subsectors, but investments in higher education and in urban infrastructure will be required, especially for more knowledge-intensive industries and services. Strengthening local governments financially and institutionally seems to be a necessary condition for creating high-value-added clusters. In many areas, specific, granular reforms are also needed, but those cannot succeed without fundamental changes in Punjab's economic structure: they will be "putting a band-aid on a corpse".[46]

Lack of desirable employment, social problems such as drug and alcohol use, and the over-politicization of religion all seem to stem from Punjab's lock-in to the agricultural system created by the Green Revolution and an outdated

45. Green energy is an obviously important area for innovation in various technologies.
46. This phrase is memorably used by Banerjee et al. (2008).

national food procurement policy. The destruction of the groundwater table in Punjab, and potential desertification, will destabilize the state further, and have enormous national consequences. The original Green Revolution came from a national need for food security, and cooperation between the Central and state governments. At the time, there was greater political alignment between the Centre and most state governments. The current political system may not be as well-equipped to achieve a new political bargain which replaces the one that originally made the Green Revolution system effective. However, realizing that the economic, social, and environmental situation in Punjab is a matter of national concern is the first step in working towards a new bargain.

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Comments and Discussion*

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A lot is talked about in terms of the decline of Punjab, but it is relative and the state still ranks among the top 12-13 in terms of per capita GDP. If you look at growth rates, they are not that much below national averages. But when it is compared as to what Punjab was, what Punjab is, or what Punjab is becoming, I think that's where the challenge actually sits.

A lot of people talk about the decline of Punjab from the 1980s. But there's also a story to be told in terms of the ascent of Punjab from the 1960s to the 1980s. In 1960, Punjab was like any other middling state in the country in terms of per capita GDP. But as regards the growth that it saw over the next 15 years, I don't think any state has ever boasted of that kind of acceleration. And I think there's a story there. That story is one of Centre-state partnership, and the reason why I mentioned this is because I think that is probably what is required in addressing the Punjab situation going forward.

In the 1960s, it was the Central Government which funded a lot of infrastructure creation like dams, canals. It was the state which actually invested in building the procurement systems. It was Punjab Agriculture University (PAU) which did stand out in research as compared to any other part of the country as to how can rice, which was never grown in Punjab and never eaten in the state, be indigenized. It was the farmer who knew how to work hard and that acceleration took 10 years to show results. So, there are no silver bullets that we are actually going to find today to solve the Punjab problem which does not require a 10-15-year effort.

The relative decline that Punjab is seeing today, being 12th or 13th among states in terms of per capita GDP, starts from agriculture. Agriculture is only growing at 1 or 2 percent in the country and that's because we are growing the same set of crops. Yield and productivity have maximized. And then the prices go at MSP. You have other states like UP and Maharashtra, where agriculture is

* To preserve the sense of the discussions at the India Policy Forum, these discussants' comments reflect the views expressed at the IPF and do not necessarily take into account revisions to the conference version of the paper in response to these and other comments in preparing the final, revised version published in this volume. The original conference version of the paper is available on NCAER's website at the links provided at the end of this section.

growing at 6-8 percent. That is not happening in Punjab. Industries and services are also not growing. There are many historic reasons for it—militancy in the 1980s, 1991, and Punjab not being ready for liberalization, but more recently, Punjab being the border state. One of the biggest challenges for growing industry and services in Punjab is availability of capital. There has been absolutely no capital available, and I think the paper actually shows it. There has been no capital available to invest in infrastructure and create shared infrastructure or to give incentives. Many other challenges exist. For example, land in Punjab is the most expensive. More than 75-80 percent of land in Punjab is arable. It does not have a lot of fallow land or waste land which can be given to industries. So, if you compare land prices with any of the states, especially neighboring states, land is more expensive.

There are a number of reasons why Punjab's finances are so distressed. I think one of the things is that Punjab historically has had a much larger public workforce in some of the sectors and spaces than any other state. So, if you look at the police force in Punjab, it's twice that of the average across the country, the main reason being that it is an active border state, a border in conflict. Because Punjab invested in agriculture, it has a much larger agricultural workforce than any other state. That actually leads to cost. While wages were set to the Government of India rates in 2019, there is a very large workforce continuing from before which continues to get paid much larger wages than the rest of the country.

And these are some of the things which are leading to the financial distress, besides some of the subsidies. One more thing that is not talked about much is that GST has been actually very hard for Punjab in view of its financial situation. Punjab actually had a number of taxes which got subsumed under GST but it doesn't get compensated for them. Right or wrong, there was an agricultural purchase tax in Punjab, which actually does not come through in GST. Second, Punjab has historically been a production state and not a consumption state. All consumption states have been struggling to come up to the same level of tax value as compared to what they were before. That should be accounted for when we look at Punjab's fiscal health.

The paper is about policies and prospects. So, the question is: Where do we go from here? The first growth of Punjab started from agriculture. This one probably will also have to start from agriculture. When we talk about what needs to happen in agriculture, the answer is a no-brainer. Everyone has talked about it for the last 30 years. It's diversification (of crops). There have been enough reports on diversification and so the question is: Why does diversification not happen? And there I would like to go back to my initial point that diversification will actually have to be funded and supported by the Centre. The state itself cannot do diversification. We have looked at every single crop and not one comes even close to the profitability of rice. But that does not mean that it cannot happen. It will take the same number of years that Punjab took to perfect rice growing and its yield and profitability. And during that time, investments are needed. Money is needed to actually compensate the Punjabi farmer for diversifying into something else, until the profitability of rice and that new crop actually matches. Money is needed for research that PAU will have to do; money is needed for setting up supply chains and setting up infrastructure. The state actually does not have that money.

At the same time if one thinks about the money that the Central Government might save if they were to procure less rice from Punjab, there is fertilizer subsidy and cost of procurement. This is not about questioning the food security of the country. This is about reducing rice in Punjab to a level where some amount of money, power, and water starts getting freed up. This is the responsibility that the Centre also needs to take as it talks about Punjab diversifying away from rice. Of course, the state needs to put in the money that it will save from power. There are certain parts of Punjab where our analysis indicated that the cost of power per acre is as high as Rs 20,000 to actually grow rice. The value the farmer gets out of rice is Rs 30,000-32,000. And the cost of power is already reaching that level. So, when the state starts saving money, how much of that does it actually start putting in? I think there are some no-brainers. Maize is now a very big Government of India priority as a source for ethanol. Today, productivity and yield do not match up to rice but I think we can get there in five years if we invest in maize.

That can easily take care of 15-20 percent of rice-growing area and then one can start looking at fruits and vegetables, and the related supply chains. When you start focusing on agriculture, jobs start getting created in the supply chains and farmer unrest and dissatisfaction, which often becomes a hindrance to big change in Punjab, will start getting addressed. That's when money will start getting freed up, power and water will get freed up for industry. And that's when one can think simultaneously about industry and services. It is a border state, small state, and landlocked state, and I do not think Punjab can be very competitive in industry. But I think there are industries, as our analysis says, like textiles, farm equipment, for which historically skill-sets and supply chains exist in Punjab, that can bring in investments and help SMEs get bigger.

Food processing, linked to agricultural diversification, could be another one. I think there are some other interesting possibilities. When you land at Mohali airport, you can see 1500 acres of land, largely owned by the government, which is available. I fail to understand why Pune should continue to be an IT, ITS, and Global Capability Centre (GCC) center for the country. Punjab has an amazing technical education ecosystem at this point of time. We have IIT Ropar, Thapar Institute, Punjab Engineering College, and universities like Plaksha. I think that place is ripe for a 10-year of evolution into IT, ITS, and GCC if we were to think about it from that perspective.

Finally, I would like to talk about tourism. There is no reason why Punjab cannot be the next Rajasthan. There is border tourism; Sikh history, as the

Maharajas of Punjab were very rich and had large visions of architecture, which you can see in Patiala; Anglo-Sikh history; and farm tourism. It is one of those sectors where a lot of disaggregated jobs can be created across the state. Ease of doing business is a very big challenge in the state. The state also needs to look at some of the labour laws.

Summing up, I want to say that there is no silver bullet but I do think that there are bankable, aspirational solutions for Punjab. I do not think this problem can be solved by Punjab alone anymore. Punjab has obviously served the country in terms of protecting the border, and providing rice and water. I think some amount of Centre-state partnership has to happen for Punjab to come through this. People of Punjab are up for that second resurgence.

Montek Singh Ahluwalia

CSEP

I am grateful to the IPF organisers for allowing me to depart from the extempore comments I made during the discussion and offer a more considered set of comments instead. These comments are influenced by the fact that in 2020, Captain Amarinder Singh, who was then the Chief Minister of Punjab, asked me to head an Expert Group to advise him on how to restore Punjab to its earlier "pre-eminent" position.

I was struck by the ambition of the objective because Punjab was at the top of the list of major states ranked by per capita GDP in 2000, but it had slipped to the 12th position over the next twenty years. This happened because the state had grown much more slowly than many other states. I explained to the CM that to get back to the top, Punjab would have to grow at least 2 percentage points faster than the national average, and maintain this differential for twenty years!

An acceleration of this magnitude requires a very concerted push in terms of policy to achieve higher levels of investment, and also productivity, and the latter often calls for a review of traditional policies that have been in place for many years. I should add that Nirvikar Singh, who is one of the authors of the Punjab paper prepared for this conference, was one of the members of the Expert Group. The paper by Lakhwinder Singh, Nirvikar Singh, and Prakarsh Singh provides an excellent review of the current problems facing the state and also identifies the broad directions in which policy must move. It also brings out that actual movement in these directions has been disappointing. One of the points made in the paper is that although problems are clearly identified in Punjab government documents, there is typically no clear indication of what might be the pace at which corrective steps can be taken.

Let me illustrate this with the agricultural sector. Agriculture has a larger share in the GSDP in Punjab than in other states and Punjab rightly views itself as a leader. It was indeed a leader in agriculture in the 1970s, when it played the dominant role in making the Green Revolution a success, but it did not retain this lead in subsequent years. In fact, its very success in grains production led to a prolonged dependence on wheat and paddy cultivation, making it lag behind in agricultural diversification to fruits and vegetables, which can yield much higher income levels.

The failure to diversify agriculture in Punjab is primarily due to the combined effect of existing policies at the state and Central levels. These include: (a) gross underpricing of urea leading to its excessive use compared with P and K, which has led to serious depletion of soil quality; (b) free power for farmers leading to excessive withdrawal of ground water, seriously jeopardizing future productivity of land; (c) reliance on MSP as the main form of price support and an associated reliance on the FCI as the principal source of procurement; and (d) frequent resort to export bans to deal with rising prices and sale of FCI wheat at prices much below costs to keep grain prices in check, which operates against the interest of farmers. A resuscitation of agricultural dynamism in Punjab calls for a thorough review of these policies but there is no agreement on this issue. Of these, the only policy that is directly under the control of the state government is the policy of free power to farmers. The others are under the control of the Central Government.

It is no secret that the government is politically locked into these policies because of the belief that they are pro-farmer. However, as Ashok Gulati has pointed out, OECD studies conclude that the net effect of these interventions on farmer income is actually negative. In other words, eliminating all these interventions would lead to farmers being better off! The think tanks that feed into public perception and policy-making must work harder to evolve a national consensus on these issues if we are to move to a new equilibrium.

If these distortions cannot be comprehensively reviewed, the only way towards diversification is to give subsidy to Punjab farmers to get out of rice. The paper mentions this as an option but Ashok Gulati has estimated that farmers will need a subsidy of Rs 40,000 per acre, to shift out of rice to other crops. However, this will require the Central Government to finance a large part of the subsidy. It is argued that it will save this amount in lower fertilizer usage but this assumes that the fertilizer thus saved in Punjab will not be absorbed elsewhere.

More generally, the case for agricultural diversification also requires modernization of agricultural marketing and allowing a greater role for the private sector. Unfortunately, there is deep suspicion on the part of the Punjab farmer of any dilution of the role of the FCI in procuring wheat and rice. Evidence suggests that the MSP may not be as important as farmers believe because the rate of growth of fruits, vegetables, and milk is much faster than the growth in cereals and these products do not have assured MSPs. But this has not led to greater acceptability of a private sector role in the farming community.

Since marketing issues are largely under the control of state governments, perhaps the solution lies in encouraging state governments to experiment. If Haryana could be persuaded to allow a larger role for the private sector, it might make Punjab farmers more willing to change their mind.

Although agriculture is important in Punjab, it cannot be the only basis for faster growth. Faster growth in industry is equally necessary and experience in this area has been disappointing. The paper brings out that the industry lagged behind in the 1980s, possibly because disturbed conditions in Punjab in those years may have discouraged investment. There is also the view that Punjab's small-scale industry, which was its real strength, suffered because of economic liberalization. It may be the case that liberalization may have caused some disruption initially, but all states experienced this to some degree. Liberalization, which began in 1991, has been good for the industry. But it has not had quite as much a positive effect in Punjab.

A common complaint explaining Punjab's weak performance in industry is that the state is at one corner of the country. This is true, but Punjab is well connected with the rest of the country and is only about six hours away from Indira Gandhi International Airport, which is a major international hub for air transport. The development of the North-South and East-West rail freight corridors provides further infrastructural support for industrial development in Punjab. The paper rightly draws attention to the 'ease of doing business' as an area entirely under the control of the state government, where a great deal could be done.

Studies done in recent years show that there is a profusion of industrial controls and regulations at the state level, which involve numerous provisions which can translate into criminal prosecutions. These need to be urgently reviewed and drastically pruned. The Expert Group I headed in 2020 had made detailed recommendations on what could be done in these areas. They need to be exhumed and acted upon.

I could go on, but in essence what I want to say is that the paper brings together much of the work that had been done on Punjab in different fora. One area where Punjab should be doing better is in promoting start-ups. Fortunately, a start has been made in this area. Interestingly, Ajay Banga, now President of the World Bank, was one of the members of the Expert Group I headed. Perhaps the state government should ask the World Bank to make a critical assessment of what has happened in promoting start-ups and what could be done to reshape policy to achieve better results in this area.

Finally, I would like to disagree with the speaker who said one of the reasons Punjab's industry has not done well is that the state is not a "consumption state", implying that the level of consumption could be boosted. Most people who know Punjabis view them as a boisterous fun-loving people who love to consume. In fact, the love of consumption is deeply rooted in Punjab's history. This goes back to the saying "Khada Peeta Lahe Da, Baki Ahmed Shahe Da".

This translates roughly into "what you eat and drink brings you benefit, the rest goes to Ahmed Shah". It refers to Ahmed Shah Abdali who invaded Punjab many times in the 18th century, looting whatever he could find. This is said to have encouraged Punjabis to consume rather than save because consumption would benefit you while savings would only go into gold and jewellery, which would be robbed periodically!

Finally, let me say that I am really glad that we are seeing more and more state-level analysis of the constraints on growth. In my memoirs, *Backstage: The Story of India's High Growth Years,* I have mentioned that we did not have enough state-specific analysis of what would be relevant drivers of growth for each state. Our states are very different, not only in terms of the per capita GSDP but also in terms of the economic structure and we need to tailor growth strategies to reflect these differences.

General Discussion

Karthik Muralidharan initiated the discussion by hoping that more such state-specific papers would be commissioned for the India Policy Forum in future. He said the sense he gathered from the paper was that things are difficult for Punjab and it needed Central assistance. He wanted to know from the authors what that 'grand bargain' might look like and that the state itself should be proactive in spelling out the issues. There is a certain transition glide path for which the state needs assistance. Muralidharan wanted the state to come very concretely on the fiscal support it needs and its own commitments. On the broader issue of agricultural reforms, he said something like a GST Council for agriculture factor market reforms may be needed, where the Centre and the state could come together and the Centre could compensate a certain amount, subject to some conditions. He said if Punjab sets the agenda by spelling out the reform pathway, it would be a more proactive way than saying that the state is in trouble. He said Punjab has to solve three problems—an economic problem, a political problem, and a trust problem. The economics is getting the incentive, aligning the prices, and getting all of that right; the politics is thinking through the distributional effects and making sure the structure of the reform is win-win for most; and the trust is the hardest part, and that's where a GST-type mechanism is needed, where there are legislative guarantees and potential amendments.

Addressing Montek Singh Ahluwalia, Martin Wolf said nearly 30 years ago he had written that nothing fails like success. He told Montek that Punjab was a spectacular success, but he has seen many times that economy and society get trapped by the structural, economic, and political implications of a colossal success. He said it is part of the problem and it is unbelievably difficult to change things that have been associated with extraordinary success.

Devesh Kapur said actually the state to which Punjab should be compared is West Bengal. Half a century ago, these two states were India's leading states. Both have seen a steep decline in the last three-four decades as compared to the rest of India. He said both states have seen a very rapid capital flight and more importantly, flight of people. From Punjab, it is outside the country while from Bengal, it is within the country. He said the most fundamental problem is when people lose confidence in the future of the country or a state. He said Punjab is witnessing a strong sign of loss of confidence. He cited the Indian Army, saying that the Punjab regiment was not getting enough soldiers from the state to enlist, which was completely unprecedented. He also wanted to know from the authors whether the role of the Punjabi diaspora is an asset or a liability. It has pushed the price of land because of remittances, which means that the industry finds it much harder to set up because the price of a factor is too high. The remittances drive the consumption in the state's economy. He asked the authors how Punjab can leverage its diaspora so that it becomes an asset.

In response to the contention of high land prices in Punjab, as expressed by some, Lakhwinder Singh, one of the authors, said he did not agree with it. He said when the Union Government decides to open three gates on the border with Pakistan for trade, there is a beeline of investors to purchase land at whatever cost. If there is no opportunity, one will not take away land even if it is available at throwaway prices. He said it is the opportunities which are not available and excuses were being made that land in Punjab is very costly. He said the industry had largely built an idea that they are going to get land without any cost. He said free land pool has been developed by the Punjab government and industrialists sometimes try to get it, but they are not setting up industries. He said Punjab is facing a different set of problems because transportation cost is relatively very high compared to pre-1991 when a freight equalization policy was in place. Punjab's industry was doing better because of this particular policy. And after the dismantling of this policy, industry has started moving out to locations where the cost of transportation of goods and services is relatively low. On Devesh's question regarding diaspora, Lakhwinder said the Punjabi diaspora is very heterogeneous. A large section of the diaspora does not have large funds to be invested in setting up enterprises. Their small savings are part of the remittances, which are meant to serve them as insurance for the future. The third important thing which has not been talked about in the paper as well as by discussants is that the long period of turmoil has changed the political leadership in a manner that it has grown very rich as also the bureaucracy in Punjab, but not the citizens. Addressing Montek Singh Ahluwalia, Lakhwinder said every five years, the government has been changing in the state, but there was no change in public policy as well as effectiveness in terms of delivering goods and services. The problem is that both the political leadership and bureaucracy are very risk-averse. The political leadership gives subsidies before elections and considers it to be welfare. Then, it is observed that those subsidies do not work in the next election.

On Karthik Muralidharan's larger question of what should be the state's proposal to the Centre, Lakhwinder said they are working on the nitty-gritties. He said the main issue is that no investment has been taking place in Punjab and the investors already there are searching for options outside the state. A large part of the investment has moved out to Haryana and Himachal Pradesh during the period of turmoil. In the post-liberalization period, a large number of industries expanded outside Punjab. Punjab was battling for peace when the liberalization process was on. This was the investment Punjab was making for the country as a whole. So, it failed to get the benefits of the liberalization process. The state is unable to generate the amount of investable resources which are required to break the venomous situation. He said their paper talks about a balance between the efforts by the state government and the Centre because the major constraining factor which is holding back Punjab is the international border for which all the decisions had been taken by the Union Government without consulting the state.

V K Singh, who chaired the session, said the 1991 moment seems to be here again and Punjab will not fail this time and would do whatever is required to rise, in partnership with the Government of India. On Devesh Kapur's question whether diaspora is an asset or liability, Singh said he agreed that sometimes they are assets, but at other times, they behave like liabilities. Similarly, he said the Green Revolution turned out to be Red for the state if one sees the level of environmental degradation and water pollution, which are very serious issues now. He said the state government had taken some steps and hoped that the Finance Commission team would be able to give more ideas. He said the recent turmoil in the farm sector due to the Centre's now repealed farm laws and the COVID-19 pandemic set back the efforts of the state. He exuded confidence that Punjab will once again rise as the land of prosperity.

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