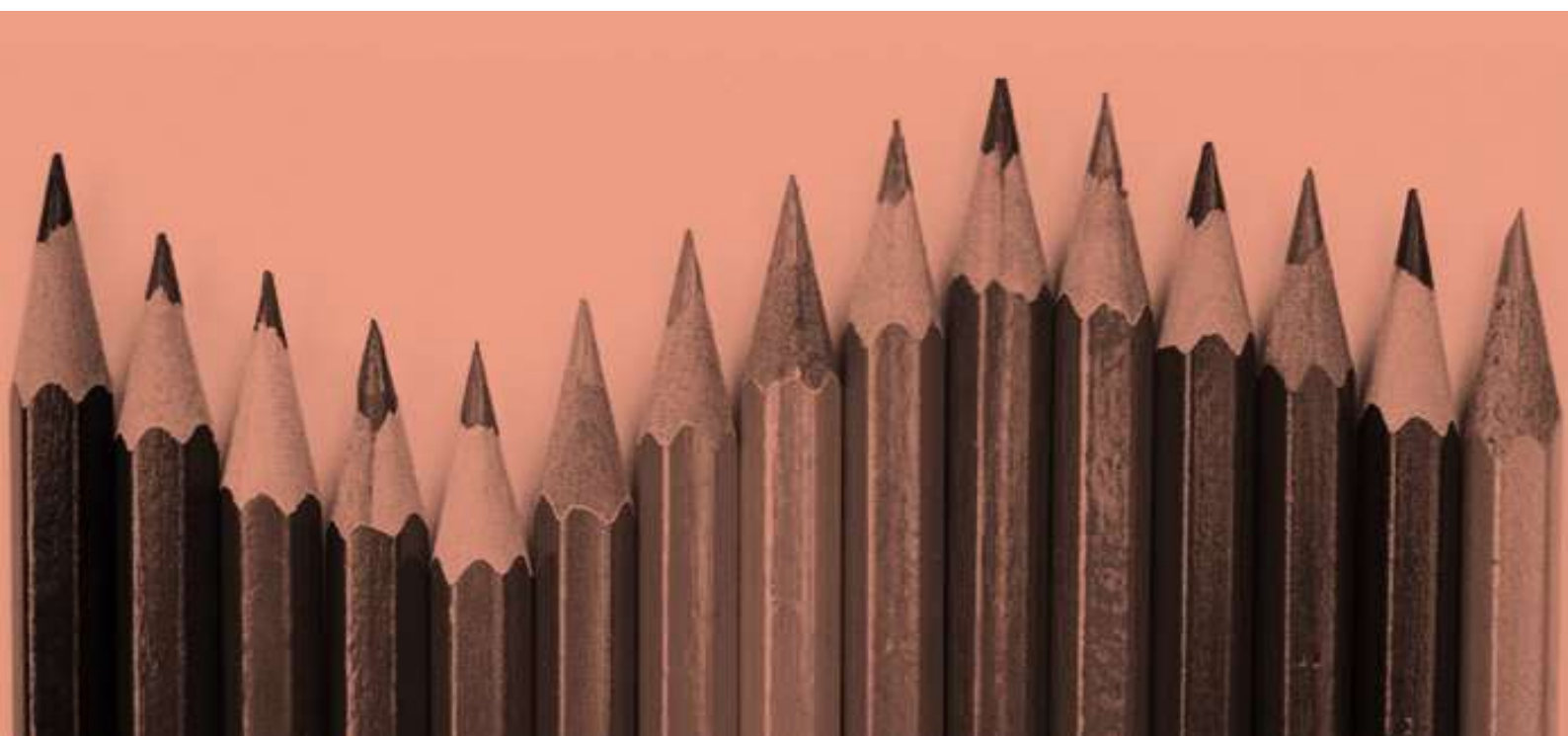


# Inflation: State(s) of Play

All-India inflation masks the growing divergence between states



*Low inflation has opened up room for the Reserve Bank of India to adopt a more accommodative stance to support faltering growth. The real question is how deep or shallow this rate cut cycle is going to be. So, the challenge for the central bank would now be to discern whether we have moved into a lower inflation bracket permanently or is this a temporary phenomenon.*

*In this regard, it is worth looking beyond national inflation patterns and explore what is happening at the state level. The data at the state level shows large variations and growing divergences in inflation, hinting that we are still far from a sustainably low (and converging) inflation environment.*

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## *Highlights*

- *The divergence in inflation rate across states has increased since the beginning of 2018.*
  - *In February 2019, while inflation in Kerala was 5.5%, Himachal Pradesh saw disinflation of -2%.*
  - *This divergence is not just driven by conventionally volatile components such as food, but also by more stable and sticky demand side components such as Miscellaneous items (includes health, education, recreation, personal care items, transport, household goods etc.).*
  - *The divergence in Misc. Items inflation highlights the growing structural differences in terms of supply side capacities and purchasing power across states.*
  - *Overall inflation divergences can be explained more by the variation in rural inflation than that of urban inflation.*
  - *The high divergence in rural inflation is not just led by variation in food inflation. Divergences in core inflation also play a role.*
  - *High rural core inflation in many states could mean that non-agri sector demand is still holding up. Weakness in rural activity might be restricted to the agri sector.*
  - *States with higher share of services as a % GDP have recorded higher inflation. Services in Kerala account for 64% of GDP and has an inflation rate of 5.5%.*
  - *No correlation between share of agriculture in each state with the inflation pattern.*
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# The Growing Divergence

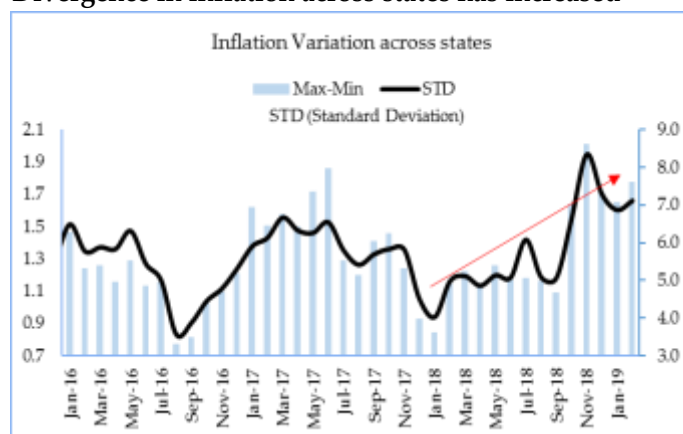
All-India inflation has gradually declined from over 4.5% in April 2018 to 2.6% in February 2019. **However, these figures mask the growing divergence in inflation across states.**

The standard deviation, a simple measure of variation - distance of states' inflation from the mean, has been increasing. **In 2017-18, the standard deviation was close to 1.3, while this year it has risen to 1.7.** A higher standard deviation indicates greater divergence.

The range of inflation rates across states has also widened. While inflation continues to rise above 5% in Assam, in Himachal Pradesh there has been disinflation (-2%, average over last five months) – resulting in a range of 7%. Compared to this, the difference between the highest and lowest inflation states was 4.9% in April 2018.

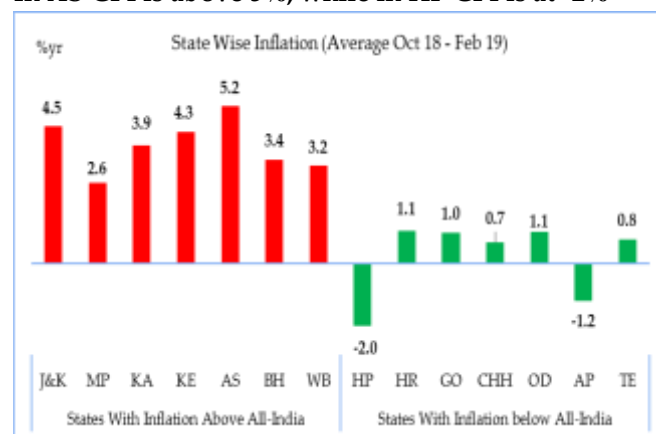
**There are three ways to explain these divergences: 1) Difference between Food and Core Inflation across states, 2) Difference between rural and urban inflation across states, 3) How the structure of the economy impacts inflation – Is an agri dominant state witnessing lower inflation?**

**Divergence in inflation across states has increased**



Source: Mospi, HDFC Bank

**In AS CPI is above 5%, while in HP CPI is at -2%**



Source: Mospi, HDFC Bank

## I. Food versus Core

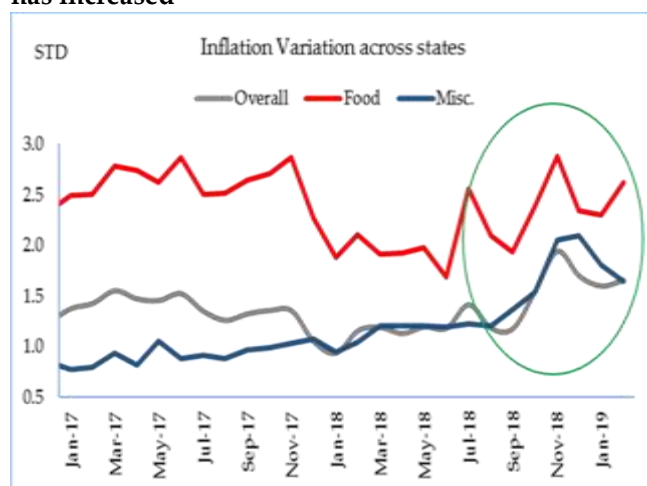
Prima facie, one would expect this divergence to be driven primarily by volatile components such as food and fuel. **But, over the last year, variation (standard deviation) in Misc. Items inflation across states has also increased.**

Misc. Items sub-group includes household goods and services, health, education, recreation, personal care and effects and is taken as a proxy for core inflation. *The standard core inflation*

measure comprises of misc. items, housing and clothing and footwear. Since housing inflation data at the state level would be influenced by the implementation of HRA pay-outs (not all states have implemented this) and would add to the divergences, we do not include it in our variation analysis. Further, clothing and footwear has a relatively smaller weight (ranging from 4% to 9% across states) in headline state inflation. So for the ease of comparison we look at misc. items – which is already provided as a composite sub-group by the CSO and has the highest weight in the core – as a proxy for core inflation in our analysis.

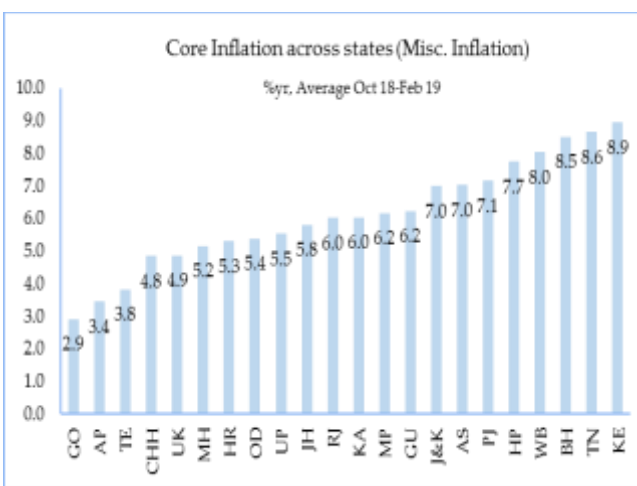
The increasing variation in core inflation signals the presence of different demand and supply dynamics (especially for services), gaps in infrastructure capacities and incomes across states. The sheer magnitude of the range (between high inflation state and low inflation state of 6%) in inflation figures makes it difficult to ensure a uniform impact of monetary policy rate decisions.

**Variation (standard deviation) in Misc. inflation has increased**



Source: MOSPI, HDFC Bank, Note: Misc. items are taken as a proxy for core.

**Misc. items CPI is 8.9% in Kerala, only 2.9% in Goa**



Source: MOSPI, HDFC Bank

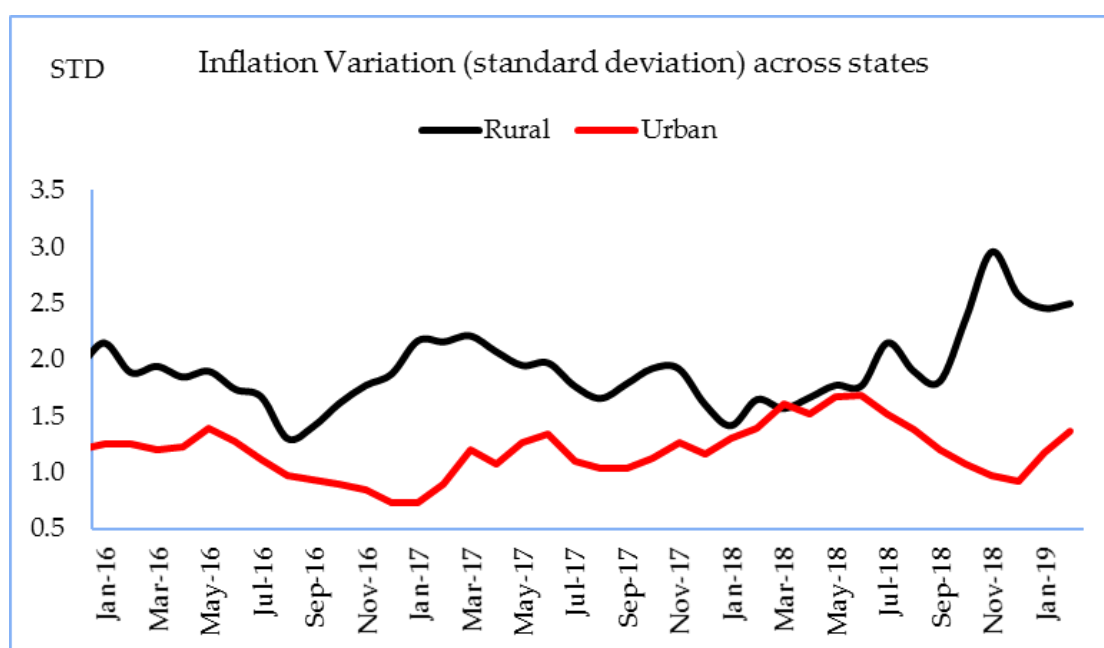
**Box: Why look at state level inflation trends?** For one, for the effectiveness of an inflation targeting monetary policy framework, convergence of inflation levels is desirable. Second, large variations in inflation levels across states have a bearing on the wage setting process and therefore impact the second round effects to inflation. Third, state level divergences highlight the regional differences in terms of supply and demand capacities that need to be bridged.

## II. The Rural-Urban Divide

Another way to analyse the state inflation divergences is to look at the rural and urban divide across states. Over the last year the variation in rural inflation across states has been higher than that of urban inflation. The standard deviation for rural inflation across states has been close to 2.5 compared to 1.4 in urban areas. This signals that a large part of the variation in inflation across states can be explained by the rural inflation patterns.

A correlation matrix between headline inflation and rural inflation across states shows that states like Karnataka, Kerala, Tamil Nadu, Assam, Punjab that have inflation above the national average also have higher rural inflation. On the other hand, in states such as Himachal Pradesh, Telangana, Goa, Andhra Pradesh, Odisha and Haryana, lower rural inflation has pulled down the overall inflation level.

**Rural inflation recording greater variation across states compared to urban inflation**

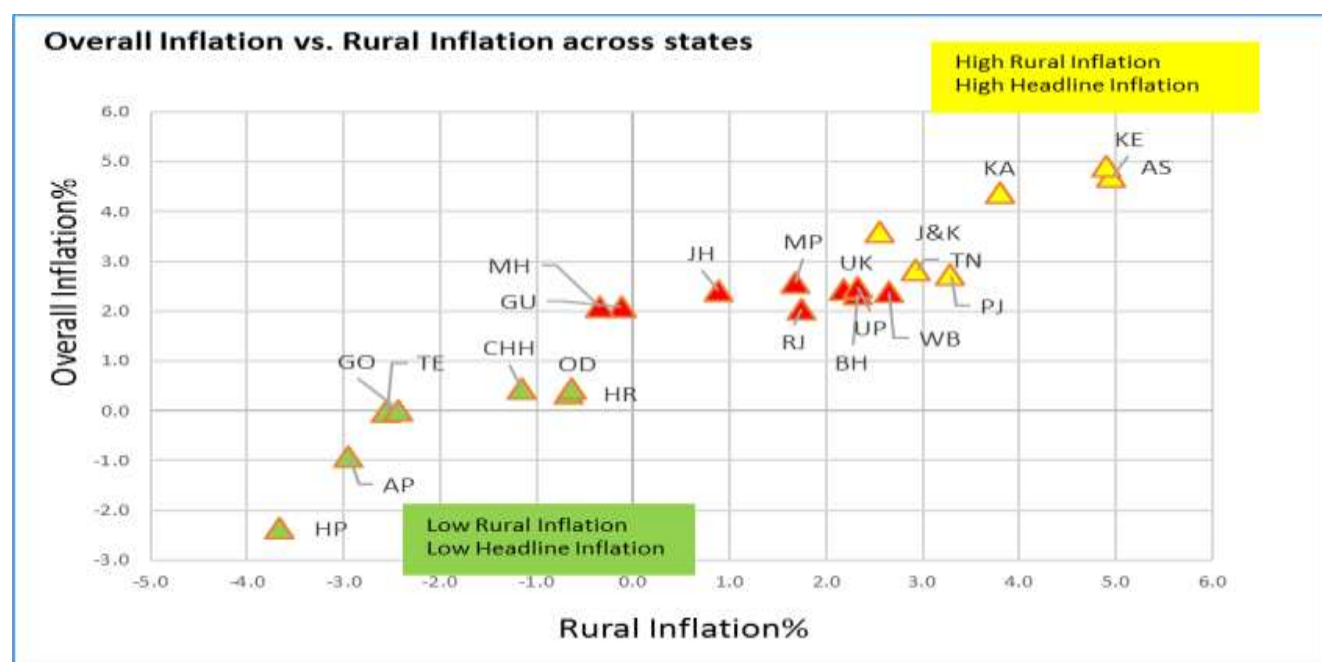


Source: MOSPI, HDFC Bank

**So what is driving the variation (standard deviation) in rural inflation across states?**

Is it led by food or core inflation at the state level? The answer is mixed. Low food prices have led to a decline in rural inflation in certain states. But there are others that have not benefitted from these lower prices to the same extent. In states such as Kerala, Tamil Nadu and Karnataka, high core (misc. items) inflation is keeping rural inflation high.

Dividing the states into two categories – high inflation states (inflation above national average) and low inflation States (inflation below national average) highlights the key drivers.



Source: MOSPI, HDFC Bank, Note: Inflation average of last three months.

### Low Inflation States: HP, AP, TE, GO, HR

Low rural inflation in these states has been driven by a compression in food prices over the last few months. For instance, in Haryana, despite core rural inflation being close to 5.9% (average of Dec-Feb'19), a fall in rural food inflation by -5% has capped the overall inflation figure. Overall, these states have witnessed the sharpest decline in food prices and as a result disinflation in rural inflation.

### High Inflation States: AS, KE, KA, TN, PJ

High rural inflation in these states has been driven by high level of rural core (misc.) inflation. Also, these states have seen a relatively lower drop in rural food prices in the last few months. For instance, in Tamil Nadu, rural food inflation fell by 1.6% while rural core inflation rose by 11.4%.

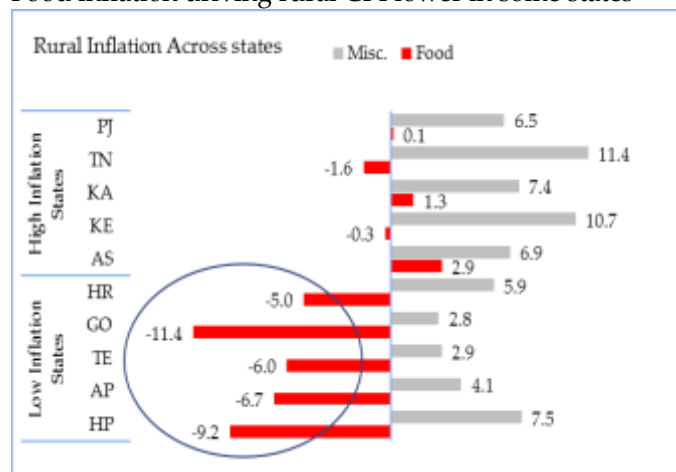
This pattern suggests that these states could be seeing relatively healthier non-agri demand in the rural areas compared to the low inflation states.

Rural CPI higher than urban CPI in high inflation states

	Rural Inflation	Urban Inflation	Overall
<b>Low Inflation States</b>			
Himachal Pradesh	-3.7	3.7	-2.4
Andhra Pradesh	-2.9	2.6	-0.9
Telangana	-2.6	2.2	0.0
Goa	-2.4	1.7	0.0
Haryana	-0.7	1.5	0.3
<b>High Inflation States</b>			
Assam	4.9	4.7	4.9
Kerala	5.0	4.2	4.7
Karnataka	3.8	4.8	4.4
Tamil Nadu	2.9	2.7	2.8
Punjab	3.3	1.9	2.7

Source: Mospi, HDFC Bank, Note: Inflation average of last 3 months.

Food inflation driving rural CPI lower in some states



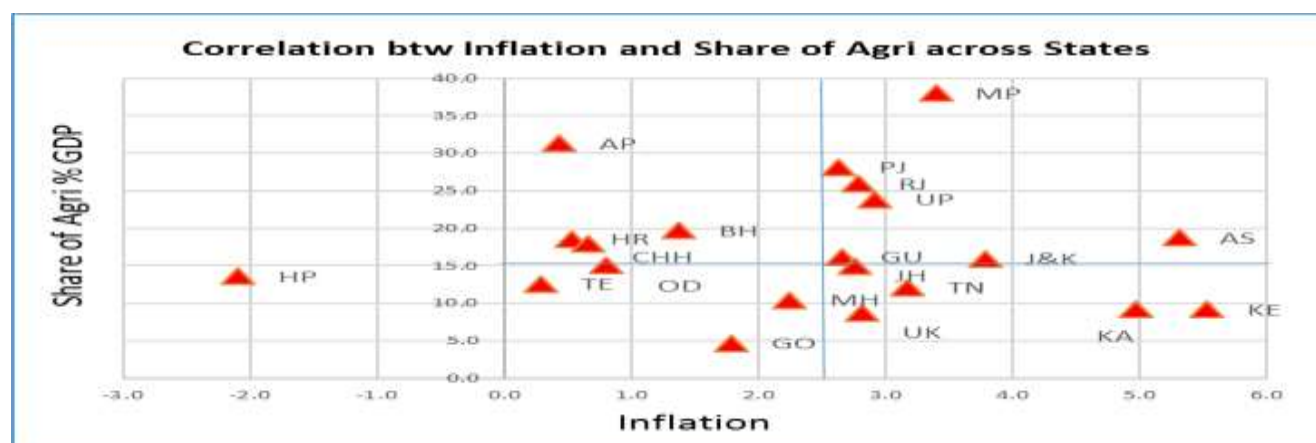
Source: Mospi, HDFC Bank, Note: Inflation average of last 3 months.

### III. Agri, Manu, Services: Impact of the structure of the economy on inflation

The above analysis shows a strong link between rural inflation and food inflation in explaining some part of the divergences between state inflation data. Based on these findings, one would expect a significant correlation between the share of agriculture in a state and its inflation pattern.

That is to say, that states with higher share of agriculture could have witnessed a larger impact of the current compression in food prices. Therefore, agri dominant states would see lower inflation in recent times while those with lower share of agri would have relatively higher inflation.

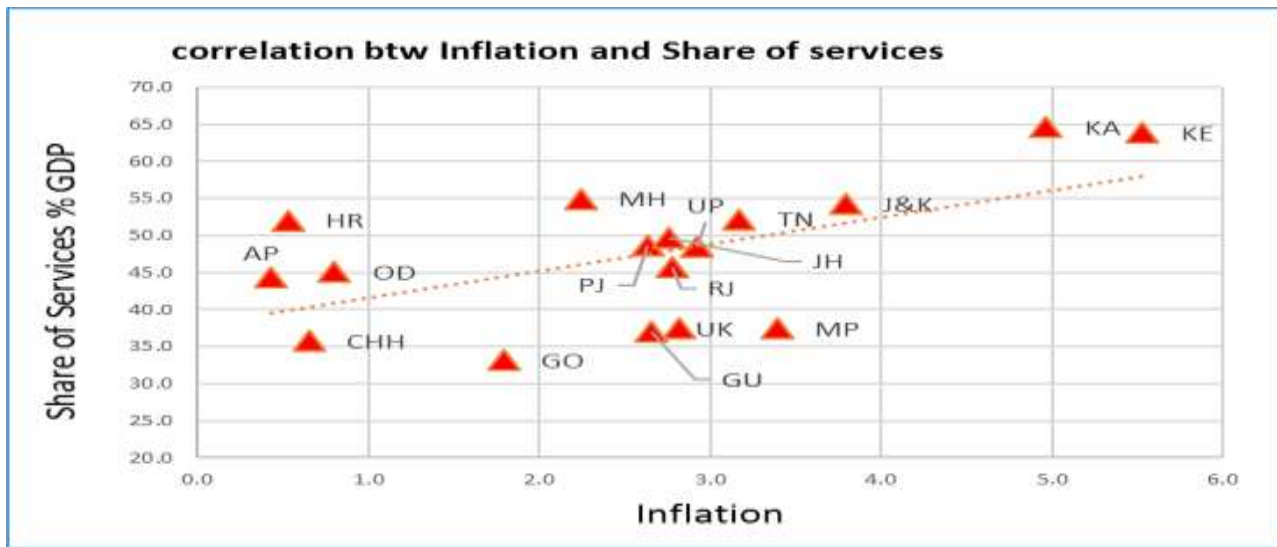
**However, there is an absence of any significant correlation between the share of agriculture to GDP in a state and its inflation level.** States such as Madhya Pradesh, Punjab, Rajasthan that have a high share of agriculture as a % of state GDP (above 20%) continue to witness inflation above the national average. On the other hand, states such as Goa, Telangana with relatively lower reliance on agriculture have low inflation.





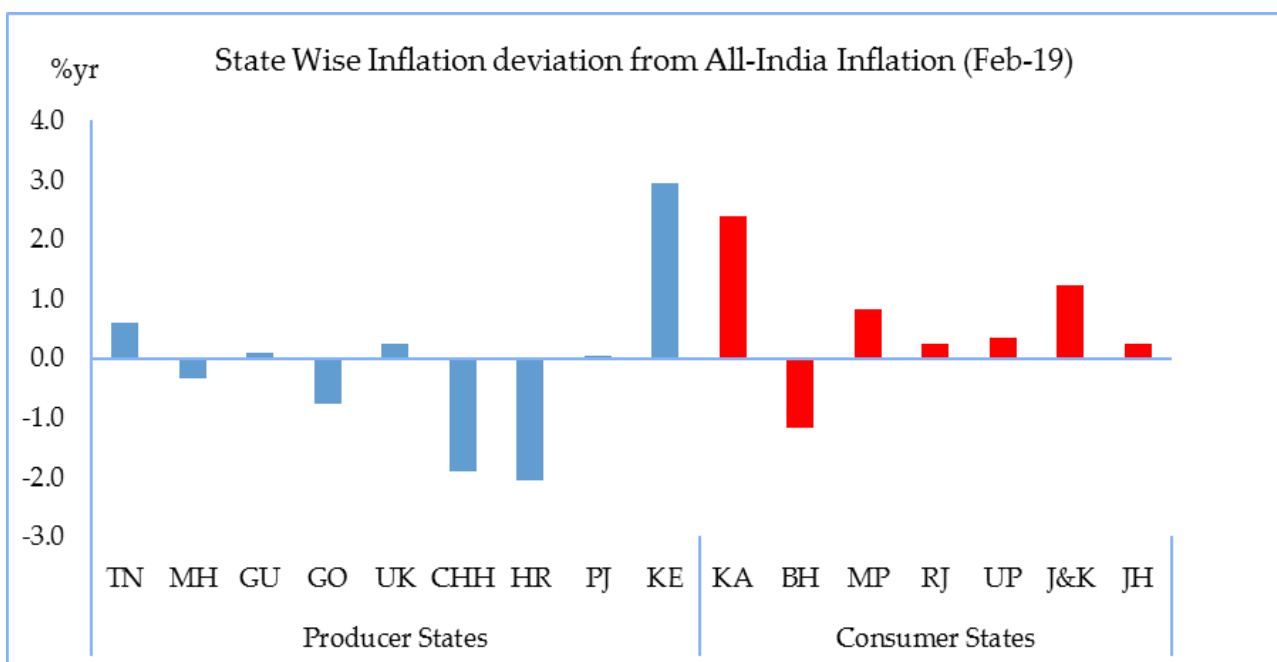
Source: MOSPI, HDFC Bank, Note: Inflation data is average of last five months

However, a correlation analysis of the share of services across states with their inflation rates shows a stronger relationship. States like Karnataka and Kerala, that have a high share of services as % GDP have also witnessed higher levels of inflation. While Chhattisgarh and Goa, that have a low share of services, have witnessed lower inflation.



Source: MOSPI, HDFC Bank, Note: Inflation data is average of last five months

Lastly, dividing states into primarily producer (higher share of production) and consumer states (higher share of consumption), inflation is on average lower in producer states as compared to consumer states.





Source: MOSPI, HDFC Bank, Note: Inflation data is average of last five months

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