

# Thrown out of gear

Assessing cluster-wise impact of the lockdown for component makers and original equipment makers

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## Executive summary

The Indian automobile industry, already dented by a protracted downturn before the Covid-19 pandemic, is in for an even more severe and prolonged disruption, as the global situation and domestic lockdown snaps major links of its supply chain.

Currently, India sources 80-85% of components for all vehicle segments domestically, mainly from the National Capital Region (NCR; including Gurgaon, Manesar, Faridabad and Greater Noida), Pune (including Chakan, Talegaon and Ranjangaon), Mysuru and Sriperumbudur and Hosur clusters. The rest is imported.

CRISIL Research mapped the disruption using the two bases of domestic supply chain and imports. The findings:

- Within the domestic supply chain, passenger vehicles (PVs), two-wheelers (2Ws) are highly dependent on the Delhi-NCR and Maharashtra clusters. Hence, prolonged lockdown in these geographies would hurt the supply of components and auto manufacturers operating in these vehicle segments the most
- Component risk for products such as cast engine parts and transmission drives would also increase, as major capacities are located in these two clusters
- Commercial vehicle (CV) manufacturers may be less affected as they source from across clusters
- Tractors, which have medium to high dependence on Delhi-NCR and Tamil Nadu, also face supply risk
- India is dependent on Chinese imports for critical components such as electronic control chips, engine control units & sensors. If logistics between the two countries remains disrupted for longer, it may translate to higher procurement costs (because of the need to airlift components)
- Imports of engine and transmission components from the United States (US) and Germany are likely to be adversely impacted if manufacturing in these regions take time to bounce back
- Congestion at ports because of slow clearance of goods owing to labour shortage, and no significant uptake in exports will lead to an increase in shipping freight rates and higher turnaround times via road

### The domestic supply chain

To pinpoint the impact of the pandemic on the supply chain, CRISIL Research has mapped vehicle segments to domestic auto component clusters they depend on.

The study finds that PVs, 2Ws and tractors have high dependence on the Delhi-NCR and Maharashtra clusters because major original equipment manufacturers (OEMs) are located here, and OEMs based out of these clusters generally source about half of their requirement from their own cluster to optimise logistics.

Any prolonged impact of Covid-19 and lockdowns on component manufacturing in these clusters would hence hurt supplies to auto OEMs in these product segments. In contrast, production capacities in commercial vehicles (CV) are more diversified, with players having a base across the four clusters mentioned above, and Tamil Nadu.

Among various components, major capacities of cast engine parts are based out of Maharashtra and Delhi-NCR belts, especially in case of 2W and PV segments. For tractors, major component risk seems to be in brake and suspension parts, where major facilities are located in Tamil Nadu.

This brings out the pivotal role of the Delhi-NCR and Maharashtra clusters from a supply chain perspective. It also implies higher component risk for products such as cast engines and transmission drives because of relatively higher lead-time required for design and development of moulds in case of diversification of vendors.

**Imports**

India imports critical components such as electronic control chips and sub-components. Our interactions suggest that manufacturing has resumed in China, though not at full capacity. We expect production to start improving in April. However, logistics between India and China remains impacted. This could increase the procurement cost of supplies as some players would look to airlift critical components such as engine control units.

Indian OEMs largely use Jawaharlal Nehru Port Trust (JNPT), Mundra, and Chennai. Of these, highest dependence is on JNPT, again in Maharashtra.

CRISIL Research understands that despite notification from the Directorate General of Shipping on normal operating norms, there is a severe labour shortage in customs handling agencies, of forklift operators, and stuffing/de-stuffing labour. Congestion due to low clearance of goods and no significant uptake in export volumes, has resulted in a) a jump in shipping line freight rates and b) higher turnaround time for road logistics (because loads mostly have one-way movement).

Overall, imports of engine components and drive transmission from the United States (US) and Germany are likely to be adversely impacted if the impact of Covid-19 on manufacturing activity in these regions prolongs. PV and CV players that depend on these imports would consequently feel the pinch.

There is medium dependence in the ‘others’ segment (such as alloy wheels), which is mostly imported from Association of South East Asian Nations and China, which will impact 2W players depending on these imports.

The following table summarises the sourcing risk for various components based on:

- On the domestic side, depending on concentration of facilities
- On the import side, depending on countries most affected

**The supply risk matrix: components at risk due to Covid-19, domestically procured and imported**

Components	Domestic supply chain				Imports
	PV	CV	2W	Tractors	
Engine components	High	Medium	High	Medium	High
Drive transmission	High	Medium	Medium	Medium	High
Brakes and suspension	Medium	Medium	Medium	High	Medium
Rubber parts	High	High	Medium	Medium	Medium
Electricals	Medium	Medium	Medium	Medium	Medium

Source: CRISIL Research

Note: Engine components include cast parts like cylinder heads, cylinder blocks, crank case, piston rings and engine valves

Colour coding of supply risk in case of prolonged lockdown

High	Medium	Low
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# Delhi-NCR, Maharashtra nerve centres for OEMs and extended lockdown spells bad news

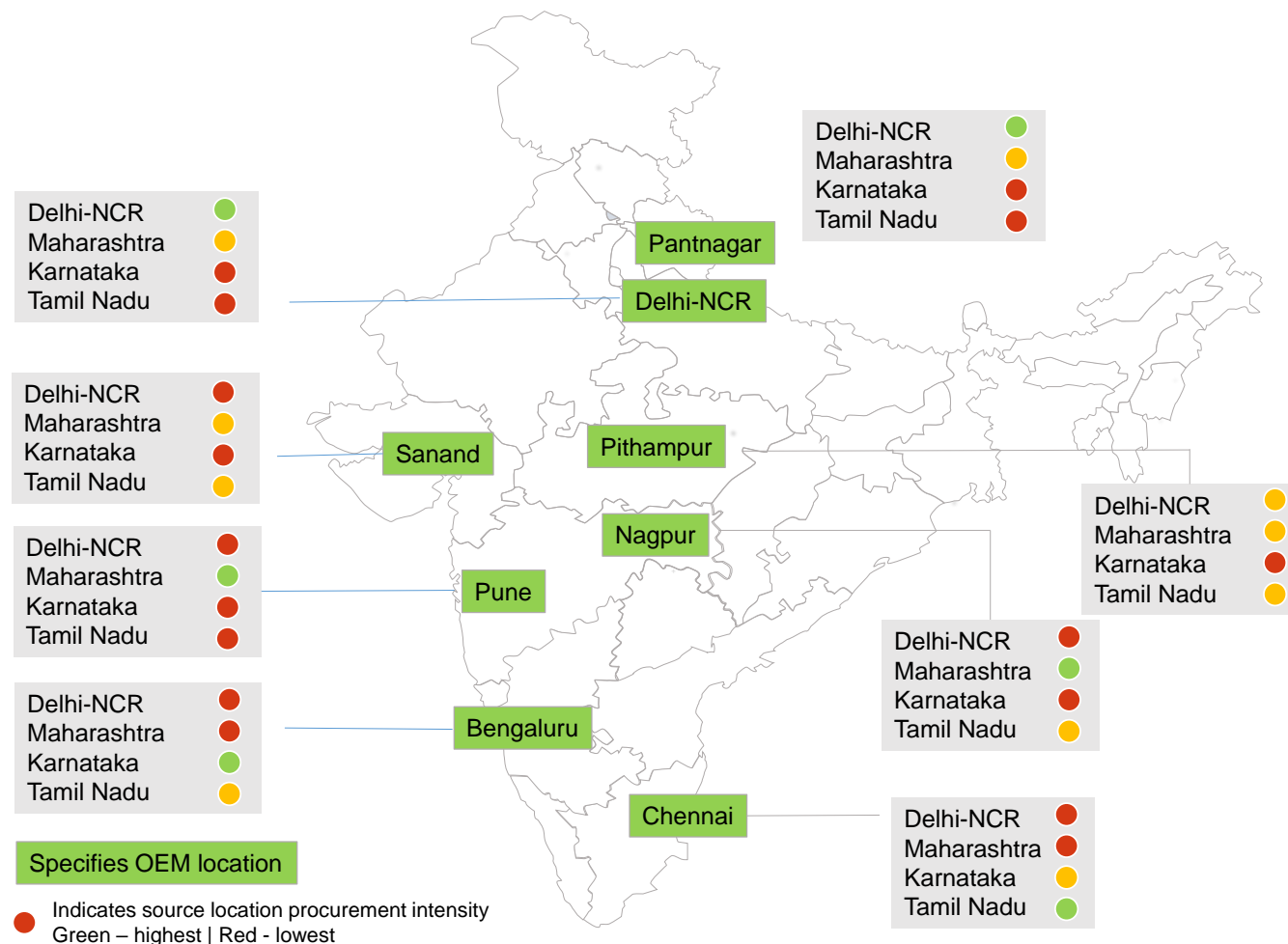
## A. OEM-vendor linkages: Delhi-NCR and Maharashtra are important for north and west-based OEMs

Let us look at the linkages between OEM plants for PV/CV/2W and tractors and their sourcing pattern.

Delhi-NCR is home to manufacturers such as Maruti Suzuki India Ltd (MSIL), Honda Motorcycles and Scooters India, India Yamaha Motors, Honda Cars Hero MotoCorp, Suzuki Motorcycles India Ltd, and International Tractors Ltd. All these brands are volume players in their respective segments. As a result, Delhi-NCR commands a higher share in their sourcing plan. Maharashtra, with its Pimpri-Chinchwad and Chakan belt also boasts of major 2W players such as Bajaj, and PV players like Tata and Mahindra. Both these clusters source over 60% from within the cluster. As a result, major auto component capacities are located around these two clusters.

Notably, OEM plants in the Delhi-NCR cluster and Pantnagar also source from Maharashtra.

### OEM vendor sourcing pattern according to plant locations



Source: CRISIL Research

**B. Vehicle segment cluster linkages: PVs, 2Ws, and tractors highly dependent on two clusters**

The table below shows vendor sourcing intensity by vehicle category.

‘Green battery’ indicates high dependence of a vehicle segment on a particular cluster. Thus, PVs, 2Ws, and tractors have a high dependence on Maharashtra and Delhi - NCR, whereas CVs are much distributed across clusters. In value terms of goods sourced, CRISIL Research estimates that ~50% of goods supplied comes from Maharashtra and Delhi – NCR. Thus re-commencement of manufacturing operations in these clusters is critical for the automotive supply chain.

**Vehicle segments and auto component sourcing clusters linkages**

	PV	CV	2W	Tractors
NCR				
Maharashtra				
Karnataka				
Tamil Nadu				
Others				

Source: CRISIL Research

**C. Cluster and component linkage: Cast parts of engine to be hit the hardest if shutdown extends in two clusters**

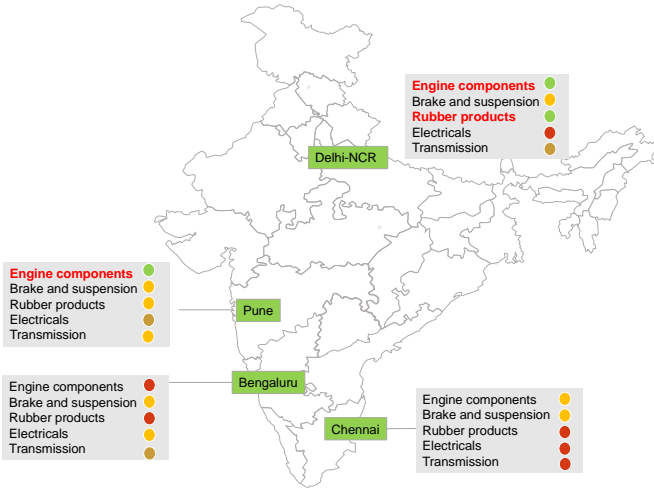
CRISIL Research has studied profiles of companies operating out of these four clusters. We have only considered companies with an employee strength of over 500 and classified as ‘Domestic Tier -1 Supplier’ to the Indian auto industry.

With this sample, we have evaluated which sub-component segment has a high degree of dependence on which cluster. The objective is to understand whether there is a risk to manufacturing operations of OEMs, in case any of the clusters take longer to tide over the lockdown.

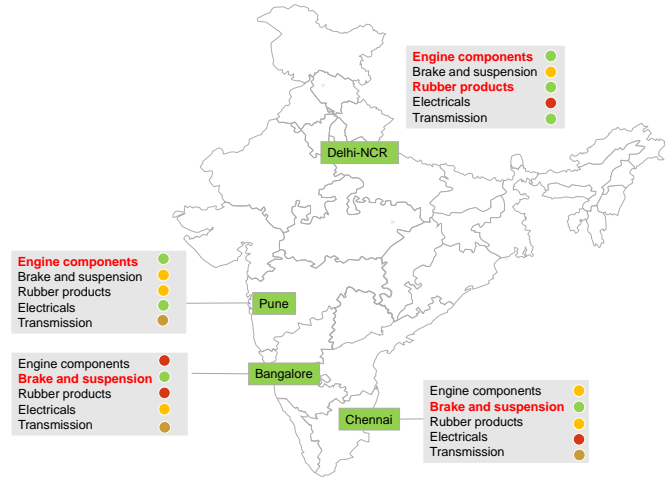
For this, we have built a relative scale of facilities operating out of the four clusters for the four vehicle segments - 2Ws, PV, CV, and tractors. Segments highlighted in red and bold denote high dependence on that particular cluster for that component group.

‘Green’ indicates high dependence of the vehicle segment on the auto cluster for select components. ‘Red’ indicates low dependence of the vehicle segment on the auto cluster.

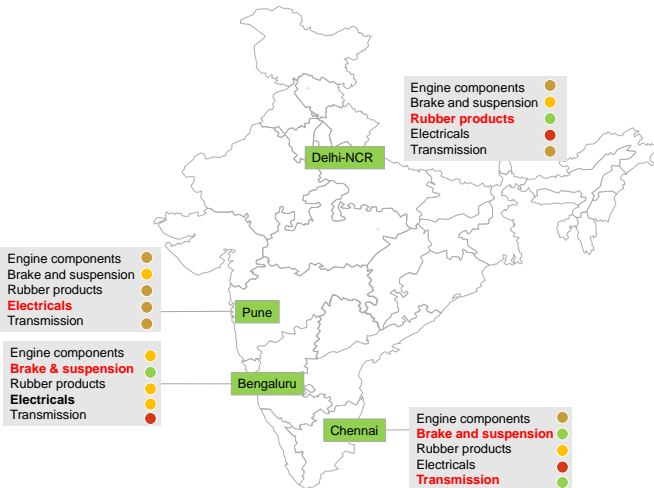
**2Ws**



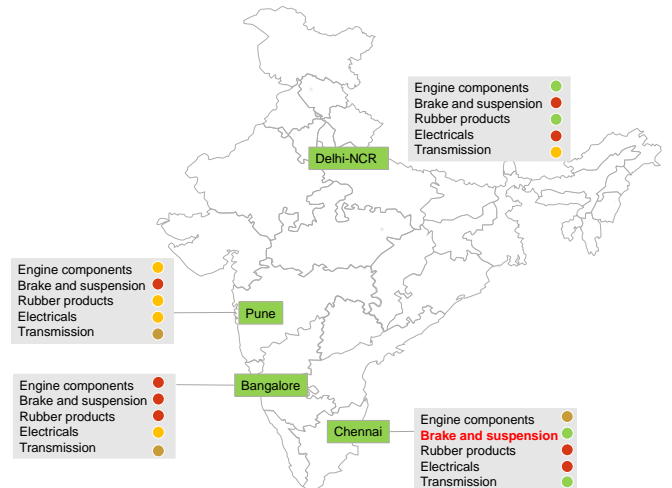
**PVs**



**CVs**



**Tractors**



Source CRISIL Research

Note: Engine components include cast parts like cylinder heads, cylinder blocks, crank case, piston rings and engine valves

**What are the components at risk, and from where?**

From the above charts, it is clear that:

- 2W and PVs source cast parts such as cylinder heads, cylinder blocks, crank case, piston rings, engine valves etc. from Pune-Maharashtra and NCR.
- Electrical and electronic parts for PVs are mainly sourced from Pune-Maharashtra
- Tractors have a high dependence on Tamil Nadu for brakes and suspension
- For CVs, transmission appears to be the component at risk, as diversification of facilities is limited and major facilities are based in Tamil Nadu

## Prolonged lockdown will hit imports from the US, Japan, Germany

Imports can be classified as: OEM sourcing and aftermarket products. Imports contribute to ~25% of overall auto component consumption in India. Overall imports are expected to be ~\$12 billion in fiscal 2020, which is a de-growth from ~\$14 billion in fiscal 2019.

65% of total imports caters to OEM sourcing and 35% to aftermarket consumption. Major components imported by India are: engine components (-36%), drive transmission (-26%), and items not grouped but classified under Harmonised system nomenclature (HSN) code 8708 (-31%). This list also includes child parts or sub-assemblies of drive transmission and engine components.

### Import geography linkages of auto components

Detail	ASEAN	China	US	Japan	Korea	Germany
Covid-19 exposure	Moderate	Moderate	Severe	Moderate	Moderate	Severe
Import share (%)	12%	18%	8%	12%	15%	17%
Major contributing auto component segment 1	Miscellaneous parts (45%)	Miscellaneous parts (41%)	Engine parts (25%)	Transmission (40%)	Miscellaneous parts (41%)	Engine parts (40%)
Major contributing auto component segment 2	Engine parts (35%)	Engine parts (33%)	Transmission (25%)	Engine parts (33%)	Transmission (30%)	Transmission (30%)

Source: CRISIL Research, UN Comtrade

India's import share is fairly distributed. One of the factors is OEM linkages to subsidiaries present in importing countries. For example, MSIL imports from Japanese subsidiaries of Suzuki, whereas HMIL does so from subsidiaries of its parent Hyundai in Korea. It is hard to classify 'miscellaneous items' totally under the aftermarket bracket, as it includes child parts used by domestic tier I suppliers as well.

So far, China has resumed production, while the US, Japan, and Germany are under restrictions. In such case, specific OEMs will face supply disruptions in short to long term.



## Labour shortage adding to the stall

CRISIL Research estimates that ~95% of inward goods supplied to OEMs in India are transported through roadways. This is barring a few exigencies, where air cargo was used to prevent plant shutdown.

	Port usage (inbound only)		
	JNPT	Mundra	Chennai
NCR	60%	40%	-
Maharashtra	100%	-	-
Karnataka	-	-	100%
Tamil Nadu	-	-	100%

Source: CRISIL Research

Due to the continuing lockdown, logistics has come to a grinding halt. The table below sums up CRISIL Research's analysis based on interactions with leading logistics players in the country:

Parameter	Roadways	Port side
Participating labour force	Drivers and cleaners are not available as migrants have left for their home locations and it is not easy to replace skilled drivers, especially in sectors such as tractor trailers	Constraints at custom handling agencies and material handling local labour, thus increasing congestion of goods (import) in Container freight station (CFS)/In land container depot (ICD). Situation more acute in ports, where roads are the dominant medium of onward transport
Movement of goods	Only essential commodities	Restrictions on port movement lifted, export movement has barely started, but still currently operating at 10% of usual capacity
Freight increase	Major transporters are of the opinion that supply and income pressures will keep freight prices in check, once the lockdown relaxes	Asia-North Europe rates increased 20% because of Covid-19 capacity limitations and empty vessel repositioning
Turnaround time	LSP are expecting dwell time for goods vehicle to increase by 50% post COVID-19 lockdown Reason: High one-way movement and absence of return loads	Cargo evacuation pressure will increase significantly post opening of lockdown and it will take a couple of days for ports to get back to normal operations
Government policy	No toll for transportation of essential goods during the lockdown period	All ports have extended no container detention charges from March 22 to April 14. This measure is expected to continue till May 3, as major port operations are based out of Mumbai   Chennai

Source: CRISIL Research

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