The missing middle phenomenon in Indian manufacturing sector: myths or realities?

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Abstract

Purpose – This study attempts to examine the missing middle (MM) phenomena in the context of the Indian manufacturing sector using the unit level information from the database of Ministry of Corporate Affair, Government of India.

Design/methodology/approach – Unlike the previous studies, the present study first bifurcated the missing enterprises into two categories such as "permanently" dropped and "reappeared," in order to pursue a meaningful analysis and derive conclusions with policy insights. Various financial indicators were used to explain the causes of MM phenomena during 2009–2010 and 2016–2017, in a logistic framework.

Findings – The study found that profit margin ratio is higher for the group of medium sized enterprises which continued in comparison to the units which dropped out permanently. Similar is the case with the ratio of investment turnover. The econometric results, however suggest that the relationship between the chances of a firm being dropped out and financial indicators is weak as the coefficients of various financial indicators are found to be statistically significant only for a few years.

Originality/value – The study suggests that the missing middle phenomenon is not a myth in India as very large number of medium-sized firms have been disappearing from the market over the years. Based on firm level data it identifies the factors which resulted in such a phenomenon.

Keywords Missing middle, Manufacturing sector, India

Paper type Research paper

1. Introduction

The Missing Middle (henceforth MM) phenomenon has been debated widely in the literature particularly in the context of underdeveloped countries (Hsieh and Olken, 2014; Tybout, 2014). One of the hypotheses suggests that the medium sized firms are not able to compete in the market and hence, they are withdrawing. On the other hand, it could be the

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small units which get eliminated in the process of competition before they could expand their activities and size. Given government's various pro-business schemes meant for the growth of relatively small and medium sized enterprises, it is possible that financial bungling motivates many small sized firms to emerge and then disappear as soon as their requisition for financial assistance is granted. Also, there is a possibility that while some of the firms want deliberately to remain small by splitting their activities into various components in order to avoid paying more taxes, the large firms pay taxes and are subject to regulations (Levy, 2008; Krueger, 2013). A number of studies in the past have analyzed the firm size distribution and found in favor of MM phenomena, particularly in the case of developing countries (Little *et al.*, 1987; Liedholm and Mead, 1987; Steel and Webster, 1992; Tybout, 2000).

In the Indian context, only a countable number of studies have empirically examined the MM issue (Dhar and Lydall, 1961; Ramu, 1985; Charles and Frank, 1968; Desai, 1979; Rudra, 1977; Poojary, 1996; Bhide, 2000; Rana, 2001; Bhavani, 2002). The MM issue holds critical in the Indian context because of two reasons. First, there has been a serious concern for accommodating the business interest of burgeoning middle-income class population and second, creating sufficient employment opportunities for the growing young population. India's economic development strategy since the beginning of the planning period, has given emphasis to industrial development as the driver of overall economic growth. Despite the major changes in policy strategy from "License Raj" and public-sector led growth to market oriented growth through trade and industrial liberalisation during the post 1990s period, the contribution of manufacturing sector to overall employment and output of the economy has not improved as expected as compared to other major industrializing countries like China and South Korea. It has been argued that low productivity could be one of the major reasons of low growth of manufacturing sector. Studies have shown that for the manufacturing sector as a whole TFP (total factor productivity) gain during the post-reform period (1991–1992 to 2007–2008) has been a low of 0.58 per annum (Bhat, 2013). Trivedi *et al.* (2000), Srivastav and Sengupta (2000), Ray (2002), Goldar and Kumari (2003), Goldar (2004, 2006), Das (2004) found a deceleration in TFPG in the 1990s.

Studies in the past have examined the causes of low manufacturing productivity and found that the disappearance of middle-sized firms is one of the root causes of low productivity and employment in the sector (Mazumdar and Sarkar, 2009; Krueger, 2009). Mohanty (2014) argued that manufacturing in India is characterized by a large "unorganized" sector and a small "organized" or formal sector. Most manufacturing employment is located in the units of employment size "500 (employees) or more" and in the unorganized sector units with 5–9 workers, the proportion of employment in the intermediate middle size group being very small.

One of the key drawbacks of the existing studies is that they have failed to analyze the MM phenomena by bifurcating sample firms into "permanently" dropped and those "disappeared and reappeared" in the future. While permanently dropped refers to the situation with firms disappearing from the market permanently, the reappeared category implies a situation where firms either may not have reported financial information to MCA or discontinued production temporarily. Unless we bifurcate the data into the above two categories, the results obtained from the aggregate data analysis on firm size distribution may be biased. To avoid such problems, the present study uses the time series data of both "dropout" and "continued" firms obtained from the database of the Ministry of Corporate Affairs, Government of India. But the database has certain limitations, no relevant information is available for doing productivity analysis and no information is available on the unorganized sector firms. The data also does not provide information on employment which can be used to define the size of the firm. Nevertheless, since the data contains a wide range of firms within the organized sector, a meaningful analysis can be pursued to identify the characteristics of the firms [1] which permanently disappeared and also the possible factors responsible for disappearance.

The remaining structure of the paper is as follows. In the second section, we have reviewed some of the important studies on MM particularly in the Indian context followed by the methodology and discussion on data source in Section 3. Trend analysis of various performance indicators of different firms at the macro and disaggregated levels is done in Section 4. Section 5 deals with the analysis of plausible determinants of missing middle. Econometric analysis of determinants of the missing middle is presented in Section 6 and the last section concludes the paper and offers some policy suggestions.

2. Review of literature

There were only a countable number of studies that have empirically examined the MM issue particularly in the Indian context. Mazumdar and Sarkar (2013) studied size and growth of manufacturing enterprises in Asian countries including India. They found that the lack of infrastructure, adequate supply of electricity, and the lack of decentralization have been important factors in perpetuating the phenomenon of the missing middle. Bagchi *et al.* (2010) reported that fiscal incentives like excise tax exemption up to a certain sales turnover have been in place in one form or another for small scale industries in India. Such incentives could have motivated firms to stay small, outsource extra output and encourage horizontal growth instead of vertical expansion.

Tybout (2000) examined the missing middle phenomena across eighteen developed, developing and under developed countries including India. He found that in the context of the poor performance of manufacturing industries, firm size distribution based on employment size (i.e., less than 10 employees (small sized firms), 10–49 employees (middle sized firms), and 50 or more employees (large sized firms)), developing countries tend to exhibit dualism in which many micro firms coexist with a handful of modern large-scale firms and a missing proportion of moderate-sized firms. He argued that strong business regulation can be the underlying reason behind the disproportionate presence of small entrepreneurs.

In a recent study in the Indian context, Hasan and Jandoc (2010) found little difference in the size distribution of firms in terms of workers (5–49, 50–199, and 200+) between states with have flexible labor regulations versus those have inflexible labor regulations. But in case of only labor intensive manufacturing industries, the study found a greater prevalence of larger-sized firms in states with flexible labor regulations. A study by Ramaswamy (2013) examined the MM issue by taking the size distribution of manufacturing plants in India. The study found contract-worker intensity is higher in the firms with workers size of 50–99 relative to others supporting the proposition that firms use non-permanent workers to stay below the size threshold of 100. It also reported that mean-contract worker intensity is higher in size group 50–99 in states that have inflexible labor laws.

Hsieh and Olken (2014) made an attempt to validate the findings of Tybout (2000) in case of India, Indonesia and Mexico. The study contradicts the findings of Tybout that there is presence of bimodal distribution in India, Indonesia, or Mexico. They pointed out that instead of defining the distribution of firms by share of employment as done by Tybout, the correct way of distribution is number of firms by size. By defining the distribution of units of firms by size, it found that while medium-sized firms are missing in the data, large firms are missing as well and hence there is no presence of bimodal distribution in the data.

In a nutshell, the above literature has identified some of the plausible factors such as lack of credit finance to small scale enterprises, rigid regulations, fiscal incentives, low in efficiency and productivity of firms etc. that determine the number of units of firms in medium sized categories. However, the above studies have failed to analyze the MM phenomena by bifurcating sample firms into permanently dropped and those which reappeared in the future. Unless we bifurcate the data into the above two categories, the results obtained from the aggregate data analysis on firm size distribution may be biased.

The present study fulfills this research gap by using time series data of dropped and continued firms compiled by the Ministry of Corporate Affairs, Government of India.

3. Methodology and data source

As mentioned in the previous section, due to certain limitations in data, provided by the Ministry of Corporate Affairs (MCAs), Government of India the scope of the study is narrowly defined. Unlike past studies that have used employment size as the yardstick, the present study uses total revenue to define micro, small, medium and large categories, as per the circular issued by the Ministry of Micro, Small and Medium Enterprises (MMSME), Government of India on 7th February 2018 [2]. Use of total revenue to define the size of a firm could be a better measure than employment size as many registered small sized firms are outsourcing their production or services activities in order to avoid the income tax scrutiny and to avail the fiscal incentives from the government. However, in case of developing countries like India where the size of unorganized (unregistered) sector is quite large, using revenue as a yardstick may not correctly reflect the true picture of firm size. In such cases, the number of workers could be a better indicator to measure the size of a firm. Since neither employment numbers nor wages and salaries data are available from the MCA database, the present study uses only total revenue to define the size of a firm. The classifications of enterprises based on total revenue are as (1) micro enterprises (below 5 crore), (2) small enterprises (Rs. 5–75 crore), (3) medium enterprises (Rs. 75–250 crore) and (4) large enterprises (more than Rs. 250 crore).

For the analysis, the present study uses time series data of the last 8 years 2010 (FY2009–2010) to 2017 (FY2016–2017) of various financial indicators from MCA database. The year 2010 (FY2009–10) is considered as the base year. All the variables are taken in nominal form (detailed definitions of variables are given in the Appendix). The study proposes to examine the missing middle issue by selecting two-digit level registered manufacturing industries (the list of industries is given in the Appendix). There are in total 23 industries which are considered in this study. The unit level data for these 23 industries have been inculcated from MCA database. The sample size of the study is illustrated in Table 1. Total number of enterprises is 1,08,599, out of which, the maximum are micro enterprises (69%) followed by small enterprises (26%) and the remaining are medium and large enterprises. This data clearly suggests that the share of both medium and large enterprises is miniscule in India.

The analysis of the study is done in three stages. In the first stage, the data at aggregate level for different types of enterprises is used to find out the missing middle, for which the total number of enterprises has been classified into micro, small, medium and large categories based on revenue data. After the classifications, the trends and performance analysis of the micro, small and medium enterprises (MSMEs) and the large enterprises over the 8 years have been carried out to find out the reasons of missing middle.

Types of enterprises	No. of enterprises	% Share
Micro	75,122	69.2
Small	28,399	26.2
Medium	3,485	3.2
Large	1,593	1.5
Total	1,08,599	100.0

Note(s): Sample size is based on criteria of enterprises that have reported total revenue data during the base year 2010 (FY2009–10)
Source(s): Ministry of Corporate Affairs (MCAs), Government of India

Table 1.
Sample size

In the second stage, the missing middle (MM) analysis is done at the disaggregate level of using two-digit industry classifications. And in the final stage, both data analytical and econometric exercises have been carried out to find out the plausible factors that determine the missing middle in India.

In the econometric analysis, we apply a logit regression technique to estimate factors that determine missing middle. In this model the dependent variable is a binary one, representing 1 for dropout firms, otherwise 0. A logit model could be written as:

$$L_i = \ln\left(\frac{P_i}{1 - P_i}\right) = \beta_1 + \beta_i X_i..., \tag{1}$$

where $P_i = E(Y = 1/X_i) = \frac{1}{1+e^{-(\beta_1+\beta_i X_i)}} = \frac{1}{1+e^{-Z_i}}$, $Z_i = \beta_1 + \beta_i X_i$.

L is the logit; P_i is the probability of firms being dropped out permanently; and $(1–P_i)$ is the probability of firms continued. As Z varies from $-\infty$ to $+\infty$ (P goes from 0 to 1), the logit L goes from $-\infty$ to $+\infty$.

4. The missing middle: trends at the aggregate and disaggregate levels

4.1 Aggregate level

At the aggregate level, we analyze the number of enterprises in different categories (size) that have been dropped permanently and partially (reappeared) over the years. We define "drop" in terms of enterprises that have reported total revenue in the base year and not submitted their financial statement in future year(s). As explained earlier, the sample size of the study shows that there were 1,08,599 enterprises in base year (2010). Out of which, 4,466 enterprises had dropped out in 2011, which increased further to 7,063 in 2012 and continued to increase in subsequent years. Across different categories of enterprises, micro enterprises have reported relatively a larger drop followed by small, medium and large enterprises. This trend remains uniform across enterprise categories and over time starting from 2011 to 2017 (Table 2).

Year	2011	2012	2013	2014	2015	2016	2017
*Permanently dropped**							
Micro	2,263	4,045	5,409	7,777	10,145	12,691	17,969
Small	421	792	1,150	1,671	2,171	2,812	5,064
Medium	72	128	173	271	360	442	939
Large	22	42	75	108	153	206	812
Total	2,778	5,007	6,807	9,827	12,829	16,151	24,784
Dropped in a particular year and reappeared in the subsequent years							
Micro	1,317	1,446	1,240	2,939	1,073	1,496	–
Small	300	490	357	873	912	517	–
Medium	47	54	47	94	474	33	–
Large	24	66	67	92	225	4	–
Total	1,688	2,056	1,711	3,998	2,684	2,050	–
Total drop							
Micro	3,580	5,491	6,649	10,716	11,218	14,187	17,969
Small	721	1,282	1,507	2,544	3,083	3,329	5,064
Medium	119	182	220	365	834	475	939
Large	46	108	142	200	378	210	812
Total	4,466	7,063	8,518	13,825	15,513	18,201	24,784

Note(s): *Refers to enterprises that have disappeared permanently and have never reappeared in subsequent years or never reported financial statement in subsequent years.base year of the study is 2010 (FY2009–10)
Source(s): Calculated from MCA database

Table 2.
Enterprises dropped over the base year (in numbers)

Out of the total drop out of 4,466 enterprises in 2011, 2,778 were found to have permanently dropped and the remaining (1,317) had disappeared in 2011 but reappeared in the subsequent years (between 2012 and 2017). An important conclusion can be drawn from here: the number of enterprises that were dropped permanently in 2011 are substantially more than the number of enterprises that disappeared temporarily and reappeared between 2012 and 2017. The similar trend between the permanently dropped and reappeared is also visible in the subsequent years. In case of permanently dropped, the highest numbers are found in micro enterprises followed by small, medium and large enterprises.

In order to find out how the number of dropouts has changed over the period, we present the data in terms of cumulative percentage change. Table 3 illustrates the cumulative percentage change of enterprises that dropped out permanently. In the case of medium sized enterprises, out of the total enterprises (3,485 in 2010), 2.07% dropped out in 2011, which increased continuously and reached to 26.94% in 2017. Notably, the cumulative percentage of drop out of medium sized enterprises in 2017 was relatively higher than micro and small sized enterprises but less than the large sized enterprises. It suggests that the rate of change of missing medium sized enterprises is increasing at a faster rate than other categories of enterprises.

4.2 Disaggregate level

At the disaggregated level, we use National Industrial Classification (2008) two-digit level manufacturing data to analyze the missing middle phenomenon. In Table 2 we had reported permanent drop out of medium and large sized manufacturing enterprises/firms in each year over the base year. Here we try to find out which types of medium sized industries contributed more to the total drop out of the enterprises. From total drop out of 72 medium sized enterprises in 2011, it is found that maximum enterprises belonged to industries like basic metal, chemical and chemical products, food products and beverages, paper and paper products, wearing apparel, electrical machinery, furniture and textile industries, which is a mix of both labor and capital industries (Table 4). Other important observation is that while basic metal, chemical and

Table 3.
Enterprises disappeared permanently over the base year (cumulative percentage change)

Types of enterprises	2011	2012	2013	2014	2015	2016	2017
Micro	3.01	5.38	7.2	10.35	13.5	16.89	23.92
Small	1.48	2.79	4.05	5.88	7.64	9.9	17.83
Medium	2.07	3.67	4.96	7.78	10.33	12.68	26.94
Large	1.38	2.64	4.71	6.78	9.6	12.93	50.97
Total	2.56	4.61	6.27	9.05	11.81	14.87	22.82
Source(s): As in Table 2							

Table 4.
Medium sized industries (two-digit level) disappeared permanently over the base year (in %)

Industry code (NIC, 1998)	2011	2012	2013	2014	2015	2016	2017
27	18.1	15.6	17.3	18.8	17.2	18.3	16.7
24	13.9	12.5	13.3	12.6	12.5	13.1	14.3
15	11.1	11.7	11.6	11.1	11.7	12.9	11.5
21	6.9	3.9	3.5	2.6	2.8	2.3	1.6
18	5.6	3.9	4.1	3.7	3.3	3.2	3.0
31	5.6	3.9	5.2	4.1	3.9	4.5	4.7
36	5.6	8.6	7.5	8.1	7.8	7.2	5.3
17	4.2	3.9	5.8	7.0	10.0	9.3	8.7
Others	29.2	35.9	31.8	32.1	30.8	29.2	34.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Source(s): Authors' calculation							

chemical products and food products and beverages have consistently shown higher drop out over the period, other industries reported fluctuating trends. Furthermore, out of these top eight industries, half of them are labor-intensive manufacturing industries.

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5. The missing middle: plausible determinants

The literature suggests that there are a number of factors that determine the decision of a firm to exit the market. These factors are access to credit, fiscal incentives, taxes, productivity and efficiency etc. Since the MCA data does not have information on all these indicators, the study identifies some of key financial indicators to explain the MM. They are:

(1) *Profit margin ratio*: this ratio is defined as net profit to total revenue and it explains two scenarios: (1) if the ratio is positive it implies that the revenue is greater than expenditure and firm is stable, and (2) if the ratio is negative it suggests that the revenue is smaller than expenditure and the firm is unstable.

(2) *Assets turnover (revenue) ratio*: this ratio is defined as the turnover to assets ratio and it explains two scenarios: (1) if the ratio is greater than 1 (one) it implies that one unit of asset increase creates more than one unit of revenue suggesting the firm is more efficient, and (2) if the ratio is less than 1(one) it suggests that one unit of asset increase generates less revenue and hence, the firm is less efficient.

(3) *Investment turnover ratio*: it is defined as turnover to investment ratio, which captures the number of units of revenue generated per unit of investment. Higher is the ratio value, more efficient is the firm and vice-versa.

(4) *Liabilities asset ratio*: it is defined as liabilities to assets ratio or debt to assets ratio and it explains two scenarios (1) if the debt is greater than assets or the ratio is more than one it implies, the firm is less efficient or financially unstable and (2) if the ratio is less than one it implies the firm is more efficient or financially stable.

5.1 Profit margin ratio

In the case of all enterprises, the data shows that the ratio is consistently higher for the enterprises that continued to stay in the market compared to the ones that dropped out. This suggests that enterprises that remained functional for a longer period have performed better in terms of generating profits than the ones dropped out. The data for different types of enterprises also indicate a similar kind of trend in most of the years. In the case of micro industry, we find that the ratio is negative for two years and positive in the remaining years. And the ratio is higher for the continued enterprises than the ones which dropped out. Data for small enterprises indicates higher value of profit margin ratio for the enterprises which continued than the dropped-out ones. Further, the small enterprises data shows that the ratio is negative in many years, indicating small enterprises have incurred losses due to higher expenditure. The medium sized enterprises that have continued to stay in the operation show better performance in terms of generating profits than the ones dropped out. It suggests that low profit margin could be one of the reasons that have influenced the decision of a firm to exit from the market. Profit margin ratio of large enterprises reported in the table point to the fact that it is relatively higher for the firms which continued than the ones which dropped out but not for all the years.

5.2 Asset turnover ratio

The asset turnover ratio reflects on revenue generated per unit of asset. As explained earlier if the ratio is greater than one it implies that the enterprises are more efficient in generating revenue per unit of asset and vice-versa. The estimates indicate that the value of the ratio is

more than one in all the cases except the micro enterprises in 2016–2017, suggesting they have efficiently used their existing infrastructure in the production/sales process. Further we find that the ratio is different for different types of enterprises. While the ratio has declined in case of micro and small, it remains more or less stable for medium, and increased for large enterprises. This supports the findings of studies in the literature that large size enterprises are more efficient than micro and small enterprises due to the use of better technology and management (Tybout, 2000). The comparison of asset turnover ratio between the "dropped out" and the "continued" medium sized enterprises suggests that although the ratio is more than one in both the cases, it is relatively lower for the former group of enterprises than the latter.

5.3 Investment turnover ratio
The investment turnover ratio is expected to be positive for efficient enterprises. Higher is the ratio, better is the performance. In other words, it explains the amount of revenue generated from per unit of money invested. In the case of all enterprises, the ratio shows a positive and higher value for the continued group of enterprises than the ones that are dropped out, which indicates that the former group of enterprises is able to generate more revenue from one-rupee investment than the latter. Across different categories of enterprises, the ratio shows the expected trends: the enterprises which dropped out are under performing in terms of revenue generation and less efficient as compared to those which are continuing. As far as medium size enterprises are concerned, the data shows that the investment turnover ratio is positive and relatively higher for the continued group of enterprises than the ones dropped out.

5.4 Liabilities asset ratio
Liabilities to asset ratio explains the financial stability of an enterprise. If the ratio is greater than one, it suggests that the debt incurred by the enterprise is higher than the assets, indicating the enterprise is financially unstable. The estimates of liabilities to debt ratio for all types of enterprises show that the ratio is lower for continued group of enterprises than the ones dropped out. In other words, the dropped-out enterprises had higher debt to assets ratio than the enterprises that are continuing. This suggests that dropped out enterprises were financially unstable than the continued group of enterprises. In the case of medium size enterprises, the liabilities to debt ratio is higher for the dropped-out enterprises than those which are continuing. Thus, the data suggests that financial instability could be one of the reasons of disappearance of medium-sized firms in India.

To sum up, the above analysis of trends of financial indicators of different types of enterprises point to the fact that profit margin ratio, assets turnover ratio, return to per unit of investment and liabilities assets ratio are plausible factors that determine the fate of a firm as to whether continue or exit the market. We also found that medium sized enterprises that dropped out have reported low profit margin, financial instability and low levels of efficiency compared to the enterprises that have continued over the period. In order to get a robust analysis on causes of missing middle, in the next section we pursue econometric analysis of the data.

6. The missing middle: econometric analysis
In this section we empirically analyze factors that explain the causes of dropout of medium enterprises. The relationship between the dependent and independent variables has been explained in terms of marginal effect. The marginal effect explains the probability or chances of dropout of a medium enterprise due to one-unit change in the explanatory variables or determinants.

The results of medium-sized enterprises reported in Table 5 show that profit/revenue ratio is negative in all the years but statistically significant only in two instances. In other words, it

Variables	(1) drop11 dy/dx	(2) drop12 dy/dx	(3) drop13 dy/dx	(4) drop14 dy/dx	(5) drop15 dy/dx	(6) drop16 dy/dx	(7) drop17 dy/dx
profit_R	−0.0386** (0.0157)	−0.0258* (0.0132)	−0.0129 (0.0136)	−0.0219 (0.0145)	−0.0273 (0.0206)	−0.0204 (0.0208)	−0.0339 (0.0484)
R_asset	−0.00131 (0.000896)	−0.00153* (0.000840)	−0.00142 (0.000940)	−0.00695*** (0.00145)	−0.000456 (0.00120)	−0.00328** (0.00162)	−0.0100*** (0.00352)
liab_asset	0.0189*** (0.00488)	−0.00610 (0.00568)	0.00537 (0.00546)	0.00653 (0.00721)	−0.00603 (0.00899)	0.00338 (0.00925)	0.0171 (0.0109)
_linc_g_m_2	0.00397 (0.00718)	−0.00743* (0.00403)	−0.00740*** (0.00356)	0.00814 (0.00755)	−0.00324 (0.00700)	−0.0152** (0.00647)	0.0431* (0.0227)
_linc_g_m_3	−0.00245 (0.00657)	−0.00521 (0.00414)	−0.00338 (0.00376)	0.00122 (0.00684)	−0.00337 (0.00698)	−0.0120* (0.00667)	0.0138 (0.0216)
_linc_g_m_4	0.00943 (0.00774)	0.00383 (0.00501)	−0.00613* (0.00362)	−0.00268 (0.00658)	−0.00688 (0.00680)	0.00229 (0.00758)	0.0450** (0.0226)
Observations	3,163	3,124	3,064	3,077	2,899	2,461	2,350

Note(s): profit ratio = profit margin ratio, turn ratio = assets to turnover ratio, liab ratio = liabilities to asset ratio. drop11 = enterprises dropped out in 2011, dy/dx = marginal effect determinant factors on dropped out binary variable. Standard errors are in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

Table 5.
Logit regression model – marginal effect (medium-sized enterprises)

implies that higher is the profit, lower is the chances of dropout of medium firms but the relationship between two variables is found to be weak as it is not statistically significant in most of the data points. The coefficient of revenue/asset ratio indicates that the higher is the ratio, the chances of dropout is less. It is found that the ratio is negative in all the years and statistically significant in four out of seven years, suggesting that efficiency in utilization of physical resources may influence the probability of dropout of medium-sized enterprises. Another factor namely liabilities to asset ratio suggests that higher is the ratio more are chances of firms being dropped out. Therefore, the coefficient of this ratio is expected to be positive. The results are evident that the coefficient of liabilities to assets ratio turns out be positive in most of the years but statistically significant only in one case, indicating that the effect of the ratio on chances of dropout is weak. To capture the impact of firm size on dropout, we have distributed medium sized enterprises into quintiles. The results suggest that lower is the firm size, less is the chance of a firm being dropped out and as the firm size increases, the chances of being dropped out also increases.

7. Conclusions

This study has analyzed the missing middle (MM) phenomena in the case of Indian manufacturing industry using the unit level enterprise data compiled by Ministry of Corporate Affairs, Government of India. Unlike the previous studies, the present study first bifurcated the missing enterprises into two categories such as "permanently" dropped out and those "reappeared" in the future in order to derive a meaningful conclusion on missing middle. Then, it considered only the permanently dropped-out cases for econometric analysis. The unit level data suggests that out of a total of 1,08,599 enterprises in the base year (2010), 4,466 enterprises had dropped out (permanently and temporarily) in 2011, which increased to 7,063 in 2012 and continued to increase till 2017. Out of the total dropout cases (4,466 enterprises in 2011), 2,778 had permanently dropped out and the remaining (1,317) had disappeared in 2011 but reappeared in the subsequent years (between 2012 and 2017). This suggests that the number of enterprises that had dropped out permanently in 2011 were substantially more than the number of enterprises that reappeared between 2012 and 2017. In the case of medium sized enterprises, the cumulative percentage of dropout was 2.07% in 2011, which increased to a whopping 26.94% in 2017 and was even higher than the percentage of dropped out firms among the micro and small sized enterprises.

The study used some of the key financial indicators to explain the possible causes of missing middle phenomena. Estimates of profit margin ratio, which explains the financial stability of a firm is found higher for continued group of medium enterprises than the ones dropped out. Similarly, the ratio of investment turnover shows positive value in all the years and relatively higher for the continued group of medium enterprises than the ones dropped out. In the case of assets turnover ratio, the study found that the ratio is greater than one in all types of enterprises but, while it recorded a fall in case of micro and small, it remained by and large stable for medium and increased in case of large enterprises, suggesting higher efficiency of the large enterprises. Another financial indicator such as liabilities to debt ratio is found higher for the dropped-out enterprises in comparison to those which are continuing. The econometric results, however, suggest that the relationship between the chances of a firm being dropped out and financial indicators is weak as the coefficients of various financial indicators are seen to be statistically insignificant in various years.

On the whole, the study suggests that the missing middle phenomenon cannot be ignored altogether due to the weak relationship between the dependent and the explanatory variables. The limitation of data in terms unavailability of important information such as employment, fixed capital, infrastructure parameters etc. should be borne in mind as these variables could have been helpful in working out meaningful estimation and analyzing the MM phenomenon.

Nevertheless, the available data itself suggests that there are a large number of medium-sized firms which disappeared from the market over the period. Therefore, the policy conclusion is to expand the base of medium sized firms, which would help achieve inclusive growth and employment creation. Moreover, the industrialization based on medium-sized enterprises may usher in new possibilities for promoting exports and economic growth. Strategies to improve the financial performance of the medium sized enterprises need to be adopted so that their survival in the market gets restored. Special loans will have to be extended to these enterprises and the recovery may be linked to the productive performance of the units. In other words, incentives to the better performers will have to be offered on a significant scale. The access to finance will have to be improved and the availability of funds from diversified sources is an important consideration. The profit-revenue ratio, for example, is seen to reduce the probability of drop out of the medium sized enterprises but the relationship is weak. The policy interventions must try to strengthen this relationship by raising the profitability of many such enterprises. Assurance of inputs at lower and subsidized prices and other cost cutting mechanisms can contribute to their profitability. Reducing the role of the intermediaries is another dimension on which the government support will be called for. Marketing assistance is crucial for the enterprises to sell their products at a reasonable price. Training programs for entrepreneurship development and product and process diversification are essential so that the youths from middle-class households with their modest financial resources are able to participate in the industrialization process, which will contribute to inclusive growth with its positive ramifications.

Notes

1. The terms enterprise or firms are often used interchangeably in this study. We have also used the term industry/establishment wherever it is applicable. An establishment is a single physical location at which business is conducted or where services or industrial operations are performed. An enterprise or firm is a business organization consisting of one or more domestic establishments under common ownership or control.

2. file:///C:/Users/nicsi/Downloads/Cabinet%20approves%20proposal%20for%20Amendment%20to%20the%20Micro,%20Small%20and%20(2).pdf The present study did not use the new definition of MSME announced by the Government of India on 13th May 2020 because of its uses for the recent data points. And the impact of various stimulus measures announced by the government on success of MSMEs will be realized only after a couple of quarters. https://static.pib.gov.in/WriteReadData/userfiles/Aatmanirbhar%20Presentation%20Part-1%20Business%20including%20MSMEs%2013-5-2020.pdf

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Appendix
Definition of variables
The study uses some of the key financial indicators that have been collected in each year using four different forms namely AOC4 and XBRL (profit and loss account (PL)) and AOC4 and XBRL (balance sheet account (BS)) by MCA for the missing middle analysis. While some enterprises have reported their financial numbers by filling up of AOC4 form, others have used XBRL form. Since the analysis takes into account all enterprises, data reported in these two different forms have been combined and the definition of each variable is given in Table A1.

Variables	2010 and 2011 AOC4_PL	XBRL_PL	2012 to 2017 AOC4_BS	XBRL_BS
(1) Total revenue	curtotlincome	totalincome	Curtotalrev	totalrevenue
(2) Total expenditure	curtotlexp	totalexpenditure	curtotalexpenses	totalexpenses
(3) Profit	curnetpftlss	netprofitloss	Curprofitloss	totalprofitloss
(4) Long term borrowing	cursecuredloan + curunsecurdloan	Securedloans + unsecuredloans	curlhgtermborrow	longtermborrowings
(5) Total liabilities and provisions	curliabilities + curprovisions	currentliabilitiesprovisions	curshorttermborrow + curtradepayables + curothrcrntliabilities + curshorttermprovisions	totalcurrentliabilities
(6) Investment	curinvstmnts	investmentsnet	curinvestment + curnoncmtinvstmnt	currentinvestments noncurrentinvestments
(7) Total assets	curtotalamt	currentassets	curassetstotal	totalcurrentassets

Note(s): Where,

curtotlincome = current total income, totalincome = total income, curtotalrev = current total revenue, totalrevenue = total revenue, curtotlexp = current total expenditure, curtotalexpenses = current total expenses, totalexpenses = total expenses, curnetpftlss = current total profit loss, netprofitloss = net profit loss, curprofitloss = current profit loss, totalprofitloss = total profit loss

cursecuredloan = current secured loans, curunsecurdloan = current unsecured loans, securedloans = secured loans, unsecuredloans = unsecured loans, curlhgtermborrow = current long term borrowing, longtermborrowings = long term borrowings, curliabilities = current liabilities, curprovisions = current provisions, currentiabilitiesprovisions = current liabilities and provisions, curshorttermborrow = current short term borrowings, curtradepayables = current trade payables, curothrcrntliabilities = other current liabilities, curshorttermprovisions = current short term provisions, totalcurrentliabilities = total current liabilities, curinvstmnts = current investment, investmentsnet = investment net, curinvestment = current investment, curnoncmtinvstmnt = noncurrent investment, currentinvestments = current investment, noncurrentinvestments = noncurrent investment, curtotalamt = current total amount, currentassets = current assets, curassetstotal = current asset total, totalcurrentassets = total current assets

Table A1.
Definition of variables

2-Difgit, NIC-1998	Industry
15	Manufacture of food products and beverages
16	Manufacture of tobacco products
17	Manufacture of textiles
18	Manufacture of wearing apparel; dressing and dyeing of fur
19	Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear
20	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
21	Manufacture of paper and paper products
22	Publishing, printing and reproduction of recorded media
23	Manufacture of coke, refined petroleum products and nuclear fuel
24	Manufacture of chemicals and chemical products
25	Manufacture of rubber and plastics products
26	Manufacture of other non-metallic mineral products
27	Manufacture of basic metals
28	Manufacture of fabricated metal products, except machinery and equipment
29	Manufacture of machinery and equipment n.e.c
30	Manufacture of office, accounting and computing machinery
31	Manufacture of electrical machinery and apparatus n.e.c
32	Manufacture of radio, television and communication equipment and apparatus
33	Manufacture of medical, precision and optical instruments, watches and clocks
34	Manufacture of motor vehicles, trailers and semi-trailers
35	Manufacture of other transport equipment
36	Manufacture of furniture; manufacturing n.e.c
37	Recycling

Table A2.
List of two-digit level manufacturing industry

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