Size Classification in Compilation of Performance Indicators of Private Corporate Sector

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The paper is prepared by Shaoni Nandi (Research Officer) and Anujit Mitra (Director) of the Corporate Studies Division, Department of Statistics, and Information Management, Reserve Bank of India. The views expressed in this paper are of the authors and not of the organization to which they belong.
Outline

- Introduction
- Research Questions
- Literature Review
- Methods
- Findings
- Conclusion
- Further Research
The Securities & Exchange Board of India (SEBI) was established in 1992.

Under Section 11 of the SEBI Act, it is the duty of the Board to protect the interest of the investors in securities and to promote the development of, and to regulate the Securities Market, by such measures as it thinks fit.
Excerpts from Press Releases of Quarterly GVA – Central Statistical Office Ministry of Statistics and Programme Implementation

Indicator used for measuring GVA from hotels and restaurant sector is the private corporate growth in this sector. The private corporate sector growth in the hotels and restaurant sector as estimated from available data from listed companies with BSE and NSE at current prices is 24.8 percent during Q1 of 2015-16.

Manufacturing
5.3 The private corporate sector growth (which has a share of around 65 percent in the manufacturing sector) as estimated from available data of listed companies with BSE and NSE is 7.9 percent at current prices during Q1 of 2015-16 as against 13.8 percent in Q1 of 2014-15.

Mining and quarrying
5.2. As per the available information, private corporate sector growth in the mining sector as estimated for major listed companies of BSE and NSE at current prices is 8 percent in Q1 2015-16 as compared to 23.5 percent in Q1 2014-15.

Methodology Change in India

The Central Statistics Office (CSO) in the new series of national accounts statistics, introduced a number of methodological changes along with the change of base year from 2004-05 to 2011-12. It has shifted from the establishment approach to enterprise approach to measure growth in line with SNA 2008 and started making extensive use of the earnings statements of the private corporate sector.

Reliable and frequent quarterly data

• The data submitted by the listed companies to the stock exchange provide valuable information on the state of the economy
• Only listed companies file quarterly earnings statements
• The data is as reliable for research as it is to investors
Present Scenario

NGNF Listed Companies: Tail Risk in Corporate Leverage (per cent)

<table>
<thead>
<tr>
<th>Leverage</th>
<th>Number of Companies (as percentage of total companies)</th>
<th>Share of Debt to Total Debt</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sep’14</td>
<td>Mar’15</td>
</tr>
<tr>
<td>Negative Net worth or DER&gt;=2</td>
<td>18.4</td>
<td>19.0</td>
</tr>
<tr>
<td>Negative Net worth or DER&gt;=3</td>
<td>13.6</td>
<td>14.2</td>
</tr>
</tbody>
</table>

Risk profile of select industries as on end September 2015
Research Questions

Does stress affect all companies of all sizes equally?

Small companies are impacted harsher by crisis?

Larger companies are more resilient?

Or small companies restructure and show the earliest signs of recovery?

How to identify size?

Which companies are significant from the national accounts perspective?
## Review of Literature

### Growth

- **Growth** - the rate of change of size
- **Gibrat’s law** - Growth independent of Size, has been rejected in many later empirical investigations - Evans and Hall suggest inverse relationship
- Singh and Whittington find a positive relationship.
- Literature on the applicability of the law in the developing economies is scanty
- Smaller companies may tend to grow faster in developing economies (Nassar et al)
- Indian context: Das - current size negatively impacts growth Shanmugham and Bhaduri: smaller and older firms exhibit a higher growth rate

### Policy Change

- In the Indian context, one of the first and major package of the reforms in July 1991 was a massive deregulation of the industrial sector (Mohan)
- Small companies became relatively powerless to cope up with the increased competition from large domestic players and cheaper imports available due to the new industrial trade policies (Ghosh)
- Kakani and Kaul reaffirmed the bias of liberalisation towards large companies in an industry level analysis
- Tapolova and Khandelwal found no correlation of size and input tariffs or level of protection that was relaxed

### Profitability

- Size is significant positive factor in determining the quarterly performance of the private corporates in both pre- and post-crisis periods in India (Nandi et al).
- Majumdar in his study of 1,020 Indian firms found that larger firms are more profitable and less productive.
- Absolute firm size may increase the average costs of a firm, thereby diluting the strength of the relationship between size and profitability (Shepherd).

### Shocks

- Next event of impact was the global financial crisis (GFC), which was powerful enough
- There is not much of literature discussing the issue in Indian context excepting RBI studies, which have repeatedly mentioned of poorer performance of small companies post GFC.
### Size of a Company

<table>
<thead>
<tr>
<th>Conventional Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
</tr>
<tr>
<td>Paid Up Capital</td>
</tr>
<tr>
<td>Assets</td>
</tr>
<tr>
<td>Employment</td>
</tr>
<tr>
<td>Market Capitalisation</td>
</tr>
</tbody>
</table>

- The concept of firm size is abstract and not directly reckonable.
- It can be quantified using recognisable indicators. There is no perfect metric of firm size.
- Firm size is expected to give a quantitative estimate of the scale of operations, strength and an overall measure of the competency of a company.
- Larger companies are expected to be more competent, with better performance indicators, thus having economic significance in its domain of operation.

### Size in Literature

<table>
<thead>
<tr>
<th>Reference</th>
<th>Year</th>
<th>Measure of Size</th>
<th>Economy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singh and Whittington</td>
<td>1975</td>
<td>Balance Sheet value of Net Assets</td>
<td>UK</td>
</tr>
<tr>
<td>Evans</td>
<td>1987</td>
<td>Employment</td>
<td>US</td>
</tr>
<tr>
<td>Hall</td>
<td>1987</td>
<td>Employment</td>
<td>US</td>
</tr>
<tr>
<td>Das</td>
<td>1995</td>
<td>Sales</td>
<td>India</td>
</tr>
<tr>
<td>Majumdar</td>
<td>1997</td>
<td>Log of Sales</td>
<td>India</td>
</tr>
<tr>
<td>Shanmugham and Bhaduri</td>
<td>2002</td>
<td>Nominal Sales deflated by WPI</td>
<td>India</td>
</tr>
<tr>
<td>Kakani and Kaul</td>
<td>2002</td>
<td>Market Capitalisation</td>
<td>India</td>
</tr>
<tr>
<td>Tapolova and Khandelwal</td>
<td>2011</td>
<td>Percentiles of sales</td>
<td>India</td>
</tr>
<tr>
<td>Nandi et.al.</td>
<td>2015</td>
<td>Log of Assets</td>
<td>India</td>
</tr>
</tbody>
</table>

- The choice among the alternative measures of size depends on:
  - a priori economic considerations (the merits and limitations of the various measures in light of economic theory)
  - practical considerations of data availability, etc., and
  - the estimation problems and statistical properties of various measures (Shalit and Shankar 1977).
**Relative Size Measure:**

- Takes into account the changing dynamics of the economy
- Ensures comparability over time
- Captures the scale advantages of a firm with respect to other firms in the market
- Accounts for the relative market power in consequence of hierarchies amongst the firms in an economy
Practical Considerations – Data Availability and Statistical Properties

**Assets**

- **Timeliness & Frequency**
  - Total Assets is available in the balance sheets.
  - Audited balance sheets are available annually with a significant time lag.

- **Data Quality**:
  - Unaudited statement of assets and liabilities are available in half-yearly basis for the listed companies.
  - However, this data is relatively new with limited history.

- **Statistical Properties**:
  - Among the listed private corporates, the majority of the assets are owned by the manufacturing sector.
  - The asset size of the IT sector is lower in comparison with the manufacturing sector.
  - GVA to asset ratio of the IT sector exceeds that of the manufacturing sector manifold.
Paid–up–Capital - Snapshot of Companies Scale of Operations?

“such aggregate amount of money credited as paid-up as is equivalent to the amount received as paid-up in respect of shares issued and also includes any amount credited as paid-up in respect of shares of the company, but does not include any other amount received in respect of such shares, by whatever name called” – Companies Act 2013

- Choice of Capital Structure depends on a number of other factors and there are popular theories in this context
- Leverage i.e. the debt to equity ratio pattern varies across industries
- High leverage has become an issue of concern for India of late
- Retained earnings can also be an important source of funds and this also reflects in the total share capital of the company. Share prices in the stock market often are a thousand times of the paid up component
Sales/ Revenue

- Revenue/Sales is an indicator of the quantity production of the goods and or services of the company in comparable units across sectors and industries
- Sales figure is available for listed companies on a quarterly basis within limited time lag
- A relative measure based on sales captures
  - the market power
  - relative hierarchy of a company
- A relative scale also enables comparison across time accounting for inflation and dynamics of an EME like India

Fragmentation of Production Process

- Manufacturing process in India has been. Assembling of completely built units, simple repurchase and sale and other models have become common
- Actual production is carried out in phases and not necessarily within a single company
- Transportation, storage and communication advancements have aided in this process
- This effect would be much more pronounced in the new age net-based companies in wholesale and retail trade category
Formation according to Size Groups of GVA

- Gross Value added turns out to be more relevant in this context in comparison to the standard measures of size.
- A relative measure will have the dual advantages of incorporating the changing dynamics over time and capturing the hierarchies among the companies.
- The value added is directly related to the competence and economic importance of a company.
- The value added will be able to indicate size of a company including its scale of operations and enable comparison across sectors and industries.
- It is available on a quarterly basis and hence usable on a higher frequency.
- Concentration is extremely high with value added. Three distinct breaks are observable over the years.
Analysis of Size Groups

Rank of Small Companies - Sales vs GVA

No. of Companies and per cent share (Sales) - Large Companies

No. of Companies and per cent share (Sales) - Medium Companies

No. of Companies and per cent share (Sales) - Small Companies
### Lower Vertical Integration and correlation of Sales and GVA in small companies

#### Size wise Vertical Integration

<table>
<thead>
<tr>
<th>FY</th>
<th>Large</th>
<th>Medium</th>
<th>Small</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-01</td>
<td>26.4</td>
<td>17.3</td>
<td>5.1</td>
</tr>
<tr>
<td>2001-02</td>
<td>26.4</td>
<td>17.1</td>
<td>4.2</td>
</tr>
<tr>
<td>2002-03</td>
<td>26.8</td>
<td>16.9</td>
<td>4.3</td>
</tr>
<tr>
<td>2003-04</td>
<td>26.8</td>
<td>16.7</td>
<td>4.1</td>
</tr>
<tr>
<td>2004-05</td>
<td>26.4</td>
<td>16.3</td>
<td>4.9</td>
</tr>
<tr>
<td>2005-06</td>
<td>27.0</td>
<td>18.0</td>
<td>6.2</td>
</tr>
<tr>
<td>2006-07</td>
<td>28.8</td>
<td>18.3</td>
<td>7.3</td>
</tr>
<tr>
<td>2007-08</td>
<td>29.6</td>
<td>19.1</td>
<td>6.5</td>
</tr>
<tr>
<td>2008-09</td>
<td>26.6</td>
<td>18.1</td>
<td>4.7</td>
</tr>
<tr>
<td>2009-10</td>
<td>27.9</td>
<td>19.7</td>
<td>7.1</td>
</tr>
<tr>
<td>2010-11</td>
<td>26.5</td>
<td>17.8</td>
<td>7.6</td>
</tr>
<tr>
<td>2011-12</td>
<td>25.1</td>
<td>16.5</td>
<td>5.5</td>
</tr>
<tr>
<td>2012-13</td>
<td>24.7</td>
<td>17.1</td>
<td>5.3</td>
</tr>
<tr>
<td>2013-14</td>
<td>25.7</td>
<td>17.2</td>
<td>3.9</td>
</tr>
<tr>
<td>2014-15</td>
<td>28.4</td>
<td>18.0</td>
<td>3.9</td>
</tr>
</tbody>
</table>

#### Correlation: Sales vs GVA

<table>
<thead>
<tr>
<th>FY</th>
<th>Large</th>
<th>Medium</th>
<th>Small</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-01</td>
<td>0.93</td>
<td>0.55</td>
<td>-0.17</td>
</tr>
<tr>
<td>2001-02</td>
<td>0.95</td>
<td>0.46</td>
<td>-0.31</td>
</tr>
<tr>
<td>2002-03</td>
<td>0.94</td>
<td>0.49</td>
<td>-0.37</td>
</tr>
<tr>
<td>2003-04</td>
<td>0.93</td>
<td>0.44</td>
<td>-0.21</td>
</tr>
<tr>
<td>2004-05</td>
<td>0.90</td>
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<tr>
<td>2005-06</td>
<td>0.87</td>
<td>0.48</td>
<td>-0.23</td>
</tr>
<tr>
<td>2006-07</td>
<td>0.87</td>
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<td>-0.05</td>
</tr>
<tr>
<td>2007-08</td>
<td>0.86</td>
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<td>-0.43</td>
</tr>
<tr>
<td>2008-09</td>
<td>0.86</td>
<td>0.50</td>
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<tr>
<td>2009-10</td>
<td>0.86</td>
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</tr>
<tr>
<td>2010-11</td>
<td>0.86</td>
<td>0.51</td>
<td>-0.04</td>
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<tr>
<td>2011-12</td>
<td>0.78</td>
<td>0.47</td>
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<tr>
<td>2012-13</td>
<td>0.74</td>
<td>0.45</td>
<td>-0.08</td>
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<tr>
<td>2013-14</td>
<td>0.70</td>
<td>0.51</td>
<td>-0.41</td>
</tr>
<tr>
<td>2014-15</td>
<td>0.71</td>
<td>0.47</td>
<td>-0.16</td>
</tr>
</tbody>
</table>
Performance of the Size Groups – Major Findings

- Large companies usually have a higher sales growth than that of the medium and small sized companies.

- Large companies show better performance in terms of profitability. This confirms the choice of value added as a measure of size as the advantages of scale and a relative hierarchy of firms, in terms of operating margins are clearly established.

- Small companies have uniformly reported negative operating margins i.e. their production costs exceeded the value of production. There is a very clear band within which the margins of each of the groups lie and these are significantly distant from each other.

- Generally, the performance indicators show three breaks in the period 2001-2015.
  - 2001-04: characterised by a very high contraction of the GVA by the small companies, while the large companies recorded an average growth of around 12 per cent.
  - 2005-07: showed an increase in GVA growth for the large companies while the magnitude of contraction for the small companies reduced. Profit margins improved for all the three size groups.
  - 2008-09: characterised by lower sales and GVA growth for the large and medium sized companies while that of small companies contracted sharper. The large and medium companies, however, on an average could hold on to their operating profit margins.
  - 2009-15: the sales and GVA growth moderated and operating profit margins declined across the groups.
Conclusions

Increased importance of private corporate sectors and size wise analysis

- The significance of the private corporate sector in the Indian economy has magnified over time ever since the liberal reforms initiated in 1991.
- The new enterprise approach to national account statistics adopted by the Central Statistical Organisation since 2015 also focuses on the private corporate sector more than before.
- While India could not remain isolated from the GFC, it has been observed that not all companies have equal resistance and resilience to the extensive shocks of the crisis.

Definition of Size and Choice of Measure

- Assets, paid up capital, market capitalisation, value added and employee numbers are the common measures of firm size in literature.
- Relative measurement scale is more robust and consistent, since it automatically adjusts for changing price levels, changing levels of concentration, besides capturing relational advantages among firms created through hierarchies of market share.
- Considering the merits and limitations of various conventional measures of size, a relative scale of size classification based on value added is the most appropriate measure of size classification in the context of analysing performance indicators from the earnings results of the private corporates for the purpose of national accounts and macro-economic analysis.
Key Findings – Performance Indicators

- Large companies show a higher growth rate of value added over time empirically indicating that Gibrat’s law of independence or the expected negative relationship of size and growth in EME’s may not hold in the Indian context.

- It is found that correlation between value added and sales is low for small companies. Therefore, companies, which generally earn high revenues, do not necessarily have a high value addition.

- The large companies so identified using this relative scale are better performing and more resilient to shocks, while the small companies take more time to recover.

- Degree of vertical integration is higher in the case of large companies, empirically implying that more vertically integrated firms are robust and perform better over time.

- Proposed size classification provides a systematic method of identifying large, medium, and small companies, taking into account the specific issues relevant in the Indian context.
Further Research

- Sector/industry wise differences in Capital Structure
- Changes in capital structure under stressed scenarios
- Applicability of Gibrats law, examining the stochastic and the distributional aspects in the different sectors and under varied macroeconomic scenarios
- Causes and consequences of varying degrees of vertical integration

Thank You