Decay rate of firm activities and non-Gibrat's law

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By employing the ORBIS database provided by Bureau van Dijk that contains information on around 200 million private firms worldwide, we compared the status of Japanese firms in 2008 with 2014 and observed the dependence of the decay rate of firm activities on sales in 2008. We found that the decay rate of firms, whose sales are small, is high and exponentially decreases as sales in 2008 become larger. This property is closely related to non-Gibrat's and Gibrat's laws that are observed in growth rate distributions of sales data in two successive years. In our previous work [1], we found that the distributions of the positive growth rates of sales decrease as initial sales become larger and that those of the negative growth rates hardly change, and we called this property non-Gibrat's law. On the other hand, the distributions of the positive and negative growth rates of sales over some size threshold hardly change as initial sales become larger. This property is well known as Gibrat's law that the growth rate distribution does not depend on the initial sales [2, 3]. Non-Gibrat's and Gibrat's laws are observed in sales data of firms that are active in two successive years. On the other hand, decayed firms are active in the initial year and non-active in the subsequent year. Total of the number of firms which follow non-Gibrat's and Gibrat's laws and the number of decayed firms is the number of active firms in the initial year. Therefore, by observing not only non-Gibrat's and Gibrat's laws but also decay rare of firm activities, we can consider behavior of all active firms in some year. From these discussions, the reason why the distributions of the negative growth rates of sales hardly depend on the initial sales in non-Gibrat's law is interpreted as follows. The negative growth of small sales leads smaller sales in the subsequent year. If the smaller sales do not exceed the size threshold that keeps firms' activity, the firms probably decay and disappear in the growth rate distribution and appear in the distribution of decay rate of firm activities. In this presentation, we will show that these qualitative relation between non-Gibrat's law and the property of decay rate of firm activities is confirmed by quantitative data analyses.

References

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