

The CLT again

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Ms AC of Pasadena, CA, writes: “If you’re taking suggestions for blog topics, I’d appreciate a little economist speak on Wal-Mart. Everyone’s talking about Wal-Mart in SoCal. Here’s an LA Times article about it.” [You’ll need a login.] You’re right, Ms AC, that much ink has been spilled on the Wal-Mart question, but I think our cognitive efforts are best spent on other topics; I’ll explain why.

Picture the following graph: at $X = 1$, we have the number of companies with only one employee (Y =many), at $X = 2$, the number of companies with only two employees (Y =not quite so many), and so on up to Wal-Mart. You get a curve that starts off very tall and quickly descends, until you get to $X = 1.4$ million, where $Y = 1$ —Wal Mart.

[Technical part: This graph takes a particular shape, the Pareto Curve [$Y = K/\exp(x)$, K an arbitrary constant]. You get a Pareto distribution when you have a Normally distributed *rate* of growth (expressed as a percentage of current size). I’m glossing over many details, and the sources of variability that do exist; if you want more see Sutton [1997].]

So the funny thing is that the shape of this curve doesn’t change. This graph has been drawn for a century back, and it’s always the same. [Because Normally distributed growth rates are a direct result of the immutable law of nature known as the Central Limit Theorem (CLT, puerile pronunciation optional).] The scale changes: if you haven’t noticed, there are more people on Earth now than there were a century ago, and this means the entire curve gets bigger. There are many more one-person businesses, and the point at which the natural Pareto curve is high enough to support another business is now over a million.

Then observation bias kicks in: we pay little notice to the number of one-man operations, and our mental count of corner shops increases in direct proportion to our mental count of corners. But when the largest company in America is suddenly surpassed by a still larger company, this is something we all take notice of.

So there’s my best economist-speak on the topic. The largest business in the world will continue to get larger, but this isn’t interesting unless the entire distribution of firm sizes shifts, which doesn’t happen so much. Sometimes the top ranked firm will be ousted by another, inspiring a flurry of business press articles, but any sea-change, sky-is-falling generalizations we make from two data points is guaranteed to be spurious.

Further, there is nothing revolutionary about how Wal Mart gained its top spot. Its size in the Internet-and-ubiquitous-highway era is as appropriate as that of Sears, Roebuck, & Co. in the Mail-and-railroad era. Wal Mart's ability to haggle supplier prices down is not revolutionary, nor is its efforts to keep its employees out of unions and away from benefits. I mean, trying to keep workers from organizing is nothing new; and despite McDonald's's best efforts, 'McJob' has still made it in to the dictionary.

Now, one important feature to the natural growth of the whole firm-distribution curve is that the size-of-one-person curve remains entirely fixed, with six billion individuals who all have size one. This leads to a gigantic market asymmetry: when 1,000 people compete against one employer, the one employer has any of a number of advantages.

The natural counterpart to the firm is the labor union, and what I get from the constant expansion of Wal Mart and the corresponding labor problems is that labor unions aren't keeping up. To be honest with you, dear reader, I don't have data on this [submissions welcome], but am inclined to believe that unions have a harder time of expanding.

The key difference is that unions attempt to be democratic. For a firm, adding a new store which won't be as profitable as the first store is still a profit-making venture; for a union, adding new workers will be a potential strain on the union's benefits system and are a dilution of the current members' votes. [Still futher, there are loads of legal restrictions on union organization that are just plain evil. Next time you meet a conservative, ask him/her if he/she/it thinks unions should be legally restricted. Well-meaning types believe that markets work best when they're symmetric, so unions should have no arbitrary legal restrictions; evil conservatives think that businessmen, not the market, are best at allocating resources, so unions shouldn't exist.] I'm going too far afield here, but the size of one unit of labor needs to keep up with the size of one unit of firm. The way to do this is not to try to influence the distribution of firm sizes, which is basically immutable, but to change the unions so that they can expand in pace.

References

John Sutton. Gibrat's legacy. *Journal of Economic Literature*, 35(1):40–59, March 1997.