

## Techmatt™ Business Innovation Economics Case Briefs: Innovation Measurement In Firms

From *How To Measure Innovation in the Products and Services of Firms and Use it to Explain GDP Growth for the Second Half of the 20th Century* (2007) [www.techmatt.com/techmatt/S-Curves-GDP.pdf](http://www.techmatt.com/techmatt/S-Curves-GDP.pdf)

### Innovation and the Firm

An individual firm's total innovation metric is given by its product performances divided by unit costs of manufacture, or (p/c).

### Fierce Competition in the Beer Industry

Competition in the beer industry provides a striking example of how some firms survived and prospered by it, building on their innovation metric, yet others – such as Falstaff - disappeared.

No one can drink Falstaff beer today but in the 1950's it wasn't far behind Anheuser-Busch in popularity, see figure 14. But by 1970, though its performance

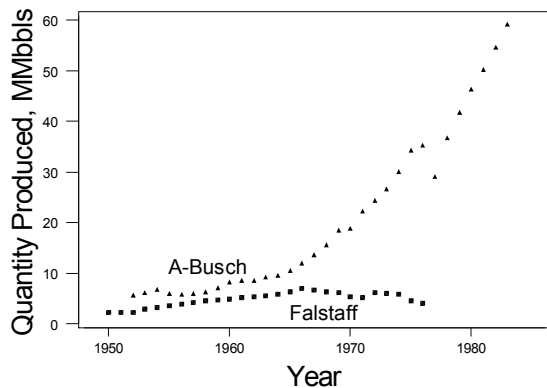


Figure 14 – The popularity of Falstaff peaked in 1966 and then went into decline.

was catching up, figure 15, its manufacturing technology (p/c) was falling behind, figure 16.

The criterion for survival is that a company's innovative manufacturing technology (p/c) must be held greater than a certain parameter. This parameter can be calculated and it maps out a danger zone. In the next figure it is cutaway to show Falstaff falling into it from 1972 –75. It bounced back in 1976 but too late.

With these methods to track innovative progress

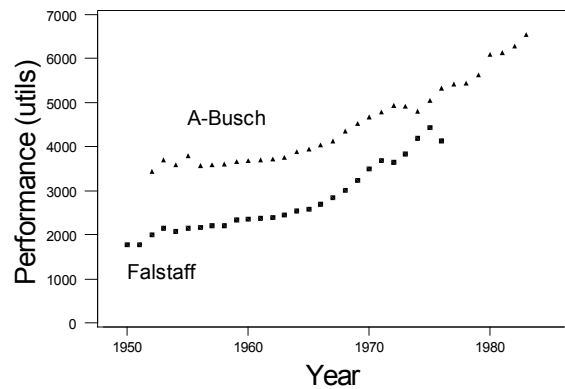


Figure 15 – Falstaff beer raises the perception of its quality and starts to catch up with Anheuser in the 1950' and 1960's.

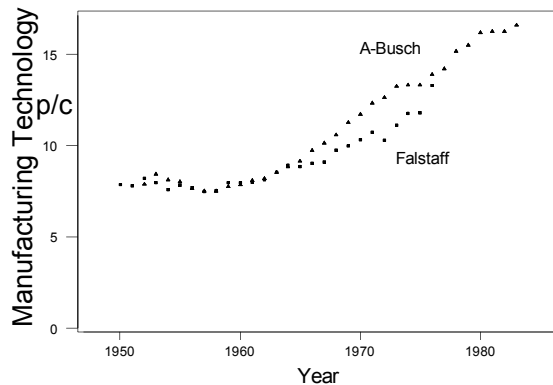


Figure 16 – But Falstaff's manufacturing technology is falling behind.

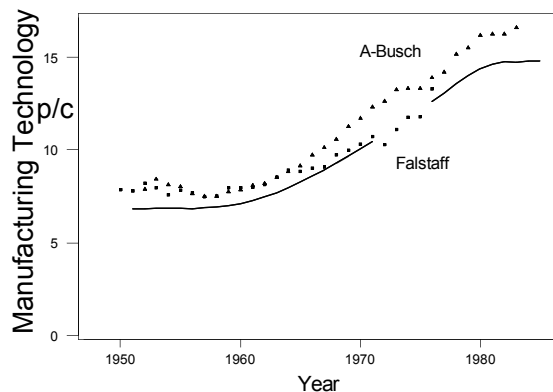


Figure 17 – Falstaff's manufacturing technology heads for the danger zone after 1964 and rides into it in 1972.

perhaps Falstaff could have done in 1966 what they finally did in 1976, and be here today.

Instead Falstaff had to shut its breweries but cleverly wrung the last value from its name by becoming a 'virtual' beer – brewed for the retaining brand owner - an end-game ploy that stretched until 2005. In the meantime Anheuser-Busch, who soared above the danger zone did so with some very innovative practices. Among them was brewing at capacity in the slow winter months and storing in refrigerated warehouses until the summer. In that way they could meet demand not only without risking investment in new capacity, but also because unutilized capacity

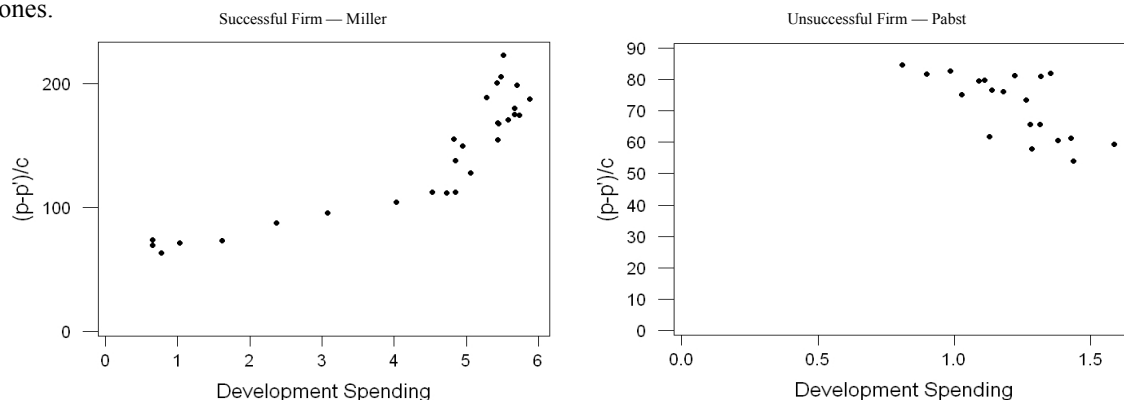
We see in this example that this innovation metric is capturing factors other than just product innovation – and gives rare insight into how competitive innovation works as the ultimate engine of economic growth.

The firms that survive take the products of their better technology forward; those that don't are absorbed or disappear. The economist Joseph Schumpeter aptly called it 'creative destruction' and this study breaks new ground in properly quantifying this important mechanism.

## Addendum: The Consequences of Innovation Productivity in Firms

### Innovation in Firms

Creative destruction, the originating mechanism of economic growth, operates at firm level. Firms must produce products at prices that cover their costs with a profit margin, if they are to expand. Firms forced into loss by competition contract, merge or disappear. As the innovation metric controlling a firm's destiny is  $p/c$  firms must increase  $p$ , and decrease  $c$ , by spending money to develop new technologies and improve old ones.



But a firm buys innovation from its suppliers in goods purchased from them so its development spending strictly increases  $(p-p')$ , where  $p'$  is the performance incoming from its supply chain.

Graphs of  $(p-p')/c$  against  $D$  were obtained for firms in the Beer Industry.

For success, development spending must be at least enough to deliver a positive slope.

Armed with this, individual firms can use financial and market data to measure (a) their total innovation metric  $(p/c)$  - as well as (b) the innovation metric  $(p-p')/c$  they contribute. They can also compare themselves to their competitors, who will be obliged to do the same, in a process that should stimulate economic growth.