

Appendix B ⁶⁵ (p76)

An Alternative Method to Enumerate (p/c)

Physical quantity constitutes the most common data held by manufacturers but its appearance is rare in Economics. This Appendix shows how the calculation of innovation metrics can be achieved with numbers that are gathered across the economy.

Appendix C ⁶⁵

Application to the Service Sector

Using a Fast Food Industry example this Appendix illustrates how the MELF can be applied when ‘data holes’ are filled, Commerce (2007). One particular one is identified for the Service Sector and filled in this appendix.

Appendix D ⁶⁵

Applying the Surrogate Method to an Unbiased Experimental Price Index

Because the MELF provides a method of calculating quality change it follows that bias from quality change can be eliminated. This Appendix shows how (Figure D2).

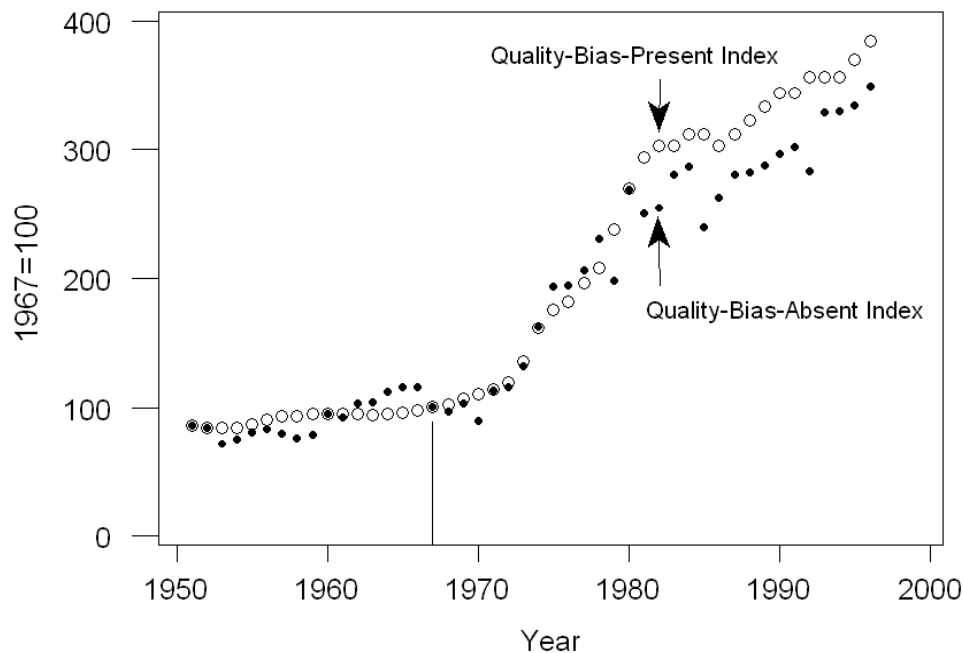


Figure D2 – The PPI index is upwardly biased compared to this experimental one from ~1980⁶⁷

⁶⁷ For those interested in Public Policy a Quality-Bias-Absent index would need to be combined with a separate adjustment for quality improvement, using Σp . Such a composite would put Social Benefits more in tune with living reality.

The Direct Economic Measurement of Innovation

Each **Part** uses otherwise neglected data, or interprets such data, to illustrate increasingly complex commercial activity that puts innovation into Economics. Its direct economic measurement becomes a talisman linking growth to original factors that are arranged with utmost simplicity to provide new possibilities for economic enhancement.

Part Ia - Develops an otherwise unknown economic equation that enumerates absolute product advantage by an analogy between creative destruction for money in the economy and species competition for food in nature. It overcomes the limiting anchor of current evolutionary modeling, which is the firm; an entity with little correspondence in nature. 5-13

Part Ib - Verifies its ability to quantify product performance[‡] in a dozen varied commercial instances, where performance is known or can be reliably judged, making it universal, and providing insight into limitations of the current hedonic method for correcting price indices. 15-33

[‡] 'quality' in Economics

Part II – Uses the equation to resolve the 'Price of Light' quandary that has stymied understanding of quality change bias in price indices for decades. 35-37

Part III - Develops algebra from the equation that shows GDP is driven primarily by innovation. 39-40

Part IV – Provides an economics of the Innovation Funnel, a mathematical treatment of creative destruction that exactly defines innovation and its measurement. 41-44

Part V - Applies this direct economic measurement of innovation to enumerate the consequences for individual firms when creative destruction grows the economy, while incidentally providing a new tool for investors. 45-54

Part VI - Sums manufacturing innovation to reveal a unique rising shape that provides a congruent match between current commercial R&D spending on creative destruction and future GDP. This not only reveals the long sought temporal link, but also provides a global innovation explanation for the great productivity slowdown from the 1970s. 55-64

Part VII – Shows that Factor Productivity, derived from Neo-Classical Growth Theory, is insufficiently related to innovation and must be measuring something else. Offers a new way to envisage economic growth using an Innovation Parallelogram across which simple mathematics between new variables controls creative destruction by the Innovation Funnel mechanism. Recommends that the proposed direct economic measurement of innovation be included in National Accounting so that its currently missing mechanistic role for growth is properly tabulated therein; an essential for informed economic policy. Shows, in a Last Word, how **Parts I-VII** belatedly fulfill the recommendations of a President of the American Economic Association to the National Bureau of Economic Research. 65-70

Part VIII – Appendices **A** to **E** – including how to treat the Service Sector, presenting an experimental bias-free inflation index, introducing a universal product life cycle – with References, a Beyond GDP note, a Glossary and an Epilog on the Role of Science. 71-90

Innovation in Economics

Missing Pieces

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