

Practical Economic Modelling: Reflective essay

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510 words

Assignment description

The final piece of work will constitute a short reflective critical essay of around 500 - 1,000 words in length. Students should compare and contrast the strengths and weaknesses of the modelling approaches they have utilised in their assessment. Where appropriate, students should consider how the same piece of research could have been undertaken using an alternative modelling approach. The essay must relate to the research methodology literature and must not be a simple description of the projects undertaken.

The third year elective module Practical Economic Modelling has introduced three modelling techniques: Multinomial Logistic Regression, Data Envelopment Analysis, and Monte Carlo Simulation approach. Of the three, I have utilized the first and the last in assessed submissions.

1 Logit

Logistic regression is a method that builds on top of linear regression to enable modelling of probability of different outcomes characterized by a categorical variable. Its simplest application is estimation of probability of a binary outcome based on other variables. This application has been generally used and

Attempt for model aiming to achieve this task was made by (selfref), in the second year Econometrics module. This has however failed to capture the non-linear nature of probability, defying its asymptotic behavior. Using logit model to estimate likelihood of an individual to be obese would be a more appropriate approach.

More complex are cases where the categorical variable has more than two categories. An attempt was made to explain determinants of subjective wellbeing, characterizing life satisfaction, based on demographic, economic, and lifestyle related variables. Because the predicted variable is hardly measurable on a uniform scale, the probability model used seems appropriate. Even though the model exhibited a strong bias towards the mode of the collected data, it offered insight into effects of individual variables in context.

2 DEA

Data envelopment analysis is another presented technique, which builds on and supports the theory of firm in microeconomics.

It provided a useful explanation of the theory when used with real-world data.

Its practical use was however harder than it seemed. Collecting relevant and reliable data from sources accessible to students is one of its greatest pitfalls.

Even though it is easily applicable to the banking sector and publicly owned firms, analyzing an established sector with privately owned firms seems to be far more complicated. Despite conducting research on the sector, its product, inputs and vague indices on its prices, the analysis without precise data, which is often classified, will always provide vague results with no support for resulting recommendations.

Using less credible data, some analysis was conducted, mainly looking at the year on year difference in efficiency of UK airline companies between 2015 and 2016. Despite endless chase for numbers and combining multiple sources, it failed to get hold of

complete matrix of price-quantity data. Using financials to support the analysis was slightly helpful, yet enforced too many assumptions.

In their book on benchmarking methods and their application in R, Peter Bogetoft (2010) mention Stochastic Frontier Analysis, which was also applied on the airline industry according to Yu (2016). Ghorbani et al. (2010) compare these methods to additional benchmark named Data Frontier analysis. They establish that “stochastic frontier model generates lower technical efficiency estimates than (...) deterministic models.” For this reason, DEA was likely the most appropriate to use, as the aim of the analysis was to identify methods for individual firms to improve, as well as to compare over-time differences in the estimated efficiencies

510 words

References

- Ghorbani, A., Amirteimoo, A. & Dehghanzad, H. (2010), 'A comparison of DEA, DFA and SFA methods using data from caspian cattle feedlot farms', *Journal of Applied Sciences* **10**(14), 1455–1460.
- Kleiber, C. & Zeileis, A. (2008), *Applied Econometrics with R*, Springer New York.
- Peter Bogetoft, L. O. (2010), *Benchmarking with DEA, SFA, and R*, Springer New York.
- Yu, C. (2016), *Airline Productivity and Efficiency: Concept, Measurement, and Applications*, Emerald Group Publishing Limited, chapter 2, pp. 11–53.