

Sample Translation

Finance

- See below for the original Chinese manuscript.
- **A native-speaker of English who has studied finance** proofreads the translated English.
- The quality of the translated manuscript is suitable for publication in an international journal.

相异系统下之超效率模型分析

I. Introduction

Based on past literature, efficiency estimations include both parameter estimation and non-parameter estimation. The parameter estimation is represented by Data Envelopment Analysis (DEA). Although DEA provides the basis for efficiency ranking for the decision-making unit, there are two common problems with DEA. First, when traditional DEA is used for efficiency estimation and the efficiency value for several decision-making units is one, it fails to adequately distinguish these efficiency decision-making units and thus ultimately causes trouble in ranking. Moreover, the production points falling into the systems frontier have different efficiency performance due to different locations. Consequently, the original DEA will not be able to satisfy the needs. Second, in DEA the systems frontier simulates the production possibility set for an industry. However under certain conditions, an industry can have different production possibility sets. The decision-making units within an industry can be in different systems frontiers. As a result, the decision-making units within the same industry also have nonhomogeneity. Thus, when DEA is adopted, the decision-making units within an industry can be in different systems frontiers and performance assessment is unable to be conducted for the whole industry. Subsequently, we need to adopt some approaches for differentiation. Using domestic and foreign literature, it is possible to locate studies on the two problems separately. Nevertheless, there is currently no study which considers the two problems simultaneously. Therefore, this article explains the system-ranking-efficiency model to be developed to handle the nonhomogeneity problem and efficiency-ranking problem within the decision-making units in an industry.

This article uses Taiwan's securities industry as research sample. According to Taiwanese authorities, the business types for securities firms are versatile. Specifically, there are three business types: securities broker, securities dealer and securities underwriter. Integrated securities firms run the three types of business. Furthermore, those who only run one or two types of businesses are called securities brokerage firms. Given that the capital for integrated securities firms is at least \$1 billion NTD, they usually have a much larger scale and broader business scope than securities brokerage firms.

Integrated security firms differ in terms of business type, market position and niche. The integrated securities firms and the securities brokerage firms also differ in relation to their business structures. Due to these differences, it seems inappropriate to assess the performance for the two types of securities firms at the same time. However, separate assessment of their performance seems to lack the ability to allow construction of a holistic picture of the securities industry. Obviously, it is challenging to assess the performance of different types of securities firms. Therefore, to resolve such a pragmatic issue, it is necessary to take a feasible, modified approach to estimate the efficiency value. Using this approach, it is possible to begin analyzing the efficiency ranking for Taiwan's securities industry correctly and effectively.

I. Introduction

文献上对于效率的估计,可分为参数(parameter)估计法与非参数(non-parameter)估计法二种。其中,参数估计法乃以数据包络分析法(Data Envelopment Analysis; DEA)为代表。虽然数据包络分析法提供了各决策单位效率排名的基础,但是它经常会存在两个问题:第一,以传统的数据包络法估计效率值,若有多个决策单位之效率值为1时,则无法对这些效率决策单位做出区分,因此会产生排名上的困难。况且,同样落在生产边界上的生产点,因落点位置的不同,在效率表现上应该有所差距,但此时原始的数据包络法无法满足需求;第二,在数据包络分析中,生产边界模拟出一个产业的生产可能集合。但在某些情况下,一个产业可能存在有不同的生产可能集合,产业内的决策单位也有可能分属于不同的生产边界。也就是说,同一产业内的决策单位,具有异质性。因此采用数据包络分析法时,产业内的决策单位可能会隶属于不同的生产边界,无法对整个产业一起做出效益评估。这时我们就必须利用某些方法加以区别。

综观国内外相关文献,有上面的二个问题分别讨论分析,但尚未有将二问题一起探讨者。针对这种情况,本文将二个问题合二为一,提出发展 system-ranking-efficiency 模型处理产业内决策单位有异质性与效率排名之问题。目的是在实际运用时,能有效解决产业内厂商既具有异质性、又具有多个效率决策单位存在的问题。

本文以台湾证券业为研究样本,是由于证券商营运的业务多样化。根据台湾主管机关的定义,证券商主要的业务有三类:证券经纪商、证券自营商及证券承销商。同时经营三种业务者为综合证券商(integrated securities firms)。只承做一种或二种业务者称为专业证券商。由于综合证券商资本额至少为十亿元,因此就公司规模大小来说,通常综合券商较专业券商庞大许多,业务范围也较广。两类券商营业性质不同,在市场上的优势与利基也不同。综合券商与专业券商在业务结构上的这些差异,显然不适合贸然将两类券商合并在一起,评估其经营效益。然而,当分开评估两类券商的效率时,似乎又拼凑不出整体证券业的完整结构。可见,对于不同类型的券商,在评估证券业经营效益时,显得相当棘手。为解决此一实际上的问题,必须以其它可行的修正方式,来估计效率值,才可以正确且有效地对台湾证券业作正确的效率排名分析。