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A Data Analysis of Chinese Lotto Industry
基於數據科學方法的中國彩票業分析

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摘要

本研究基於國內外對彩票銷量的研究，依據中國彩票業的實際發展情況，基於 2008 年至 2014 年中國彩票銷量各月份的時間序列資料以及該時段各省份彩票銷售的面板資料，分析了我國彩票業發展的現狀，並研究了影響彩票銷售的因素彩票銷售。同時基於研究結果提出了對彩票發行中心在彩票發行的規劃和管理上的建議。基於資料分析本研究得到以下幾個主要結論：第一，就我國目前彩票業發展情況來看，我國彩票銷售從 2008 年到 2014 年一直表現出比較強的增長速度，樂透數字型彩票一直是銷量第一的彩票類型，視頻型彩票和競猜型彩票增長很快，而即開型彩票增長相對緩慢，在 2011 年後一直呈現負增長，各省彩票總銷售和人均銷售都存在較大的差異；第二，人口總量，城鎮化率和 GDP 對彩票總銷量有顯著正影響；人均可支配收入、未接受教育比例和個體從業人數比對人均彩票銷量有顯著正影響，私營企業人數比對彩票人均銷量有顯著負影響；人均可支配收入、65 歲以上人數比對彩票銷量占 GDP 比有顯著正影響；第三，對於體育彩票的三種彩票類型（即開型、樂透型、競猜型），GDP 和人均 GDP 都對競猜型體育彩票有顯著正影響，而對即開型和樂透型彩票的銷量，GDP 有顯著正影響，人均 GDP 沒有；第四，彩票銷售在春節所在月份明顯降低，並且流動人口越多的地區銷售減少得越明顯，這與春節休市，銷售管道限制以及人口流動都可能存在關係。世界盃期間體育彩票銷售明顯增長，並且在 2014 年足球世界盃期間人均 GDP 越高的地區體育競猜彩票增長越明顯，說明在人均 GDP 高的地區體育競猜型彩票更受歡迎。

關鍵字：彩票總銷量，彩票人均銷量，影響因素，面板數據

Abstract

Based on previous academic research about lottery sales and the development of China's lottery industry, this study analyzes the state of China's lottery industry and investigates the factors that influence lottery sales using real data from the years 2008 to 2014. Based on the research's findings, recommendations and suggestions are provided for the management of the China's lottery system. This study leads to the following four main conclusions. Firstly, throughout the investigated period from 2008 to 2014, China's lottery industry and overall lottery sales exhibited strong growth. Based on sales data, the Lotto lottery has been and is still China's largest lottery. The video lottery and sports lottery are also experiencing rapid growth, while the instant lottery's growth has been exhibiting negative growth since 2011. The sales and per capita sales data vary across provinces. Secondly, the data indicates a significant positive correlation between population, urbanization rate, GDP and total lottery sales, as well as a significant positive correlation between per capita disposable income, the illiteracy rate, self-employment rate and per capita lottery sales. A negative correlation was observed between the percentage of individuals working in private enterprise and Per capita lottery sale. Per capita disposable income and the percentage of the population above 65 years old was also found to significantly and positively influence the ratio of lottery sales to GDP. Thirdly, the influencing factors differ across the different lottery games (instant lottery, lotto, and sports lottery). GDP and per capita GDP both significantly influence the sales of the sports lottery, whereas per capita GDP does not affect the other two games. Lastly, total lottery sales consistently decrease in the month of the Spring Festival, as well as during periods of increased floating population rate. This decrease may be related to the public holiday during the Spring Festival, the population migration and limited sales channels. On the contrary, sports lottery sales increase significantly during the World Cup, and a higher growth is observed in provinces with higher per capita GDP.

Key words: Total lottery sales, Per capita lottery sales, Influential factors, Panel Data

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