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Assignment 1

Econometrics

**Proposed Econometric Research**

**Research Topic:** The Economic Impact on HSR Merger Rates: Investigating Economic Indicators' Influence on Hart-Scott-Rodino Merger Filing Trends

**Dataset**

The dataset for this research is sourced from the FRED database. It was aggregated on different monthly economic factors. These data points will be factored together to find a correlation to U.S. company's merger filing counts. The data table can be found on the attached excel spreadsheet in the Main Data Table tab. More qualitative information below in *Hypothesis Testing Methods* section.

**Research Question**

This paper aims to show the impact economic conditions have on companies requesting a merger that falls under Hart-Scott-Rodino (HSR) regulations. Companies often have mergers or acquisitions that can improve their business or product. However, these mergers can create too powerful of an institution that leads to monopolistic behavior in the market. To counteract this, HSR antitrust regulation was enacted to govern large mergers/acquisitions that threaten free-market competition.

The HSR regulation sets a standard for mergers to be reviewed by the federal government if the merger significantly lessens competition, exceeds the size-of-transaction threshold, or exceeds the size-of-person threshold. When referring to size-of-transaction test, this means any transaction that exceeds the size of $119.5 million in 2024. Additionally, the size-of-person test is a situation in which two joining companies have a total asset minimum amount of $239 Million for the larger entity and $23.9 million for the smaller entity as of 2024 (SIDLEY, 2024). To note, these thresholds change yearly based on the consumer price index.

In looking at economic conditions and their impact on the amount of HSR merger requests, the underlying causes of large mergers can be derived empirically. Moreover, since these acquisitions ultimately lead to increased marketplace homogeneity, the results can be used to aid in reducing monopolistic behavior and encourage free-market competition. In all, this will be used to help further understand corporate consolidation within the United States.

**Literature Review**

All notable literature surrounding Hart-Scott-Rodino mergers focuses on the impact HSR merger regulation has had on economic and corporate conditions. There is no notable literature on the conditions that foster many mergers requests. Some prevailing research papers about HSR mergers are as follows:

1. The Effect of Twenty Years of Hart-Scott-Rodino on Merger Practice: A Case Study in the Law of Unintended Consequences Applied to Antitrust Legislation
   1. Overall Question: How HSR Regulations have impacted merger practices in the U.S.
   2. Components: Only regulates larger corporations, moves much of merger activity into spotlight, add regulatory costs
   3. Question Value: Demonstrate how this regulation changed business merger behavior
2. Stealth Consolidation: Evidence from an Amendment to the Hart-Scott-Rodino Act
   1. Overall Question: The consequences of HSR regulation on company mergers
   2. Components: Aggregate mergers post and pre HSR to compare new organizational behavior, implements looking at how companies may stealth merger
   3. Question Value: Demonstrate impact of HSR mergers on rejecting mergers before and after
3. Reflections on 20 Years of Merger Enforcement under the Hart-Scott-Rodino Act
   1. Overall Question: How has HSR mergers performed over the last 20 years
   2. Components: Efficacy of this program is based on percentage of mergers reviewed
   3. Question Value: Review the usefulness of the regulation in how it helps consumers, maintains merger control to prevent secret mergers, and creates level playing field for corporations
4. Antimerger Policy under the Hart-Scott-Rodino Act: A Reexamination of the Market Power Hypothesis
   1. Overall Question: Are the mergers this regulation prevents anticompetitive?
   2. Components: Examination of market power and if these mergers impact market power.
   3. Question Value: A critical look on if the mergers it intends to block are blocked
5. The Impact of the FTC’s Proposed Changes to Hart-Scott-Rodino Filing Requirements
   1. Overall Question: What is the impact of the proposed HSR amendments.
   2. Components: Expansion of rules that stiffen the process. Additional rules add another barrier to mergers that fall under this act
   3. Question Value: Analyzing the impact changing aspects of interest will have on HSR mergers

Looking at these, it can be seen most literature is about how HSR mergers impact external factors, not how external factors impact HSR mergers. The proposed research for this topic fills a gap in modeling the HSR behavior that follows economic trends.

**Hypothesis & Reasoning**

The hypothesis for this research is that economic conditions have an inverse relationship to HSR merger numbers. To explain, when economic conditions are generally lower than average, the amount of HSR merger requests will increase. The reason for this hypothesis is based on economic indicators impact on businesses. While a company may have a good product, its implementation strategy may lead to a decline in revenues. These hardships are exponentiated by bad economic time periods and lead to the suffering company having no competitive foothold. Firms that cannot remain competitive either shut down or get bought out. Thus, worse economic conditions lead to more competitive companies buying out struggling companies. This behavior is the basis for this research and hypothesis.

**Hypothesis Testing Methods**

This hypothesis will be tested using data from the FRED database compared to HSR data from the Federal Trade Commission with the following characteristics:

1. All data spans October 1989 – September 2018 with data present for every month

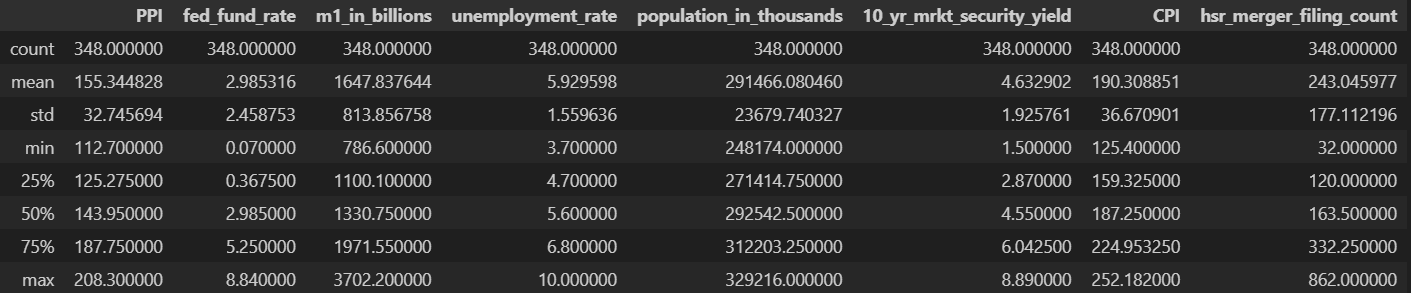
2. This data is representative of the United States population & economy

3. The data is time series data covering time-period mentioned in (1)

4. This dataset consists of 348 data samples

The regression model will be constructed using *Scikit-Learn* (sklearn) *linear\_model* application programming interface (API). The model(s) will be aggregated using the pipeline module applied to a grid search cross validation technique for model/data scaling optimization. In using these methods, all input data will be partitioned into testing and training datasets to score models accuracy after compiling. To do this, before constructing the model, 10% of the dataset will be randomly removed for testing purposes (this will be done using a random seed value in the *train-test-split* module in sklearn). In the cross-validation analysis, the model will be given a five-fold validation where data is segmented into five separate datasets. Each run will hide one of these five folds during model fitting and the model will be evaluated towards the end based on the hidden fold. This Sklearn model will be adjusted during the course of research and will also be compared to the stats model API to try and get the best performance metrics. Overall, these will be used together to aid in preventing overfitting of the regression model. The theoretical OLS regression structure of the model will be as follows:

*hsr*\_*merger*\_*filing*\_*count*=*β*0 +*β*1 ⋅*PPI*+*β*2 ⋅*fed*\_*fund*\_*rate*+*β*3 ⋅*m*1\_*in*\_*billions*+*β*4 ⋅*unemployment*\_*rate*+*β*5 ⋅*population*\_*in*\_*thousands*+*β*6 ⋅*ten*\_*yr*\_*mrkt*\_*security*\_*yield*+*β*7 ⋅*CPI*+*ϵ*

Aggregate statistics:

**References**

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