

# Economics and Software: On Collaboration between Stata and SPSS

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## Abstract

This paper analyzes the validity of software used in econometrics. SPSS is frequently used in clinic science, but Stata is more common in econometrics. These two are not used in conjunction because the data produced by each are distinct. However, after converting the data to csv on SPSS, it can be regressed in Stata, which expands the possibilities of analysis in econometrics.

Keywords: Software, Econometrics, Stata, SPSS, Csv data

JEL Code: C87, C88, I11, I12

## 1. Introduction

In recent years, the importance of econometrics has grown. Especially in Japan, evidence of policy effects has been given a place of importance, and data are being made. The use of software is necessary for econometric research and educational institutions now teach students of economics on how to use various programs. More, in buying, students can be cheaper by discount of their status.

There is much less analysis of software programs in economics literature than in public health articles. One reason is the limited number of programs that fit the narrow scope of the analysis methods used in economics research. In contrast, there are numerous articles analyzing various programs used in public health.

The limits of software correlate with limited methods of analysis. In economics, there are multiple methods of regression, but statistical tests are primarily limited to T-tests or F-tests. On the other hand, numerous methods of analysis are used in public health, but methods of regression are minimal. This contrast results in few interdisciplinary studies across economics and public health.

This study considers about the possibility of collaborating software in economics. We primarily explore the research possibilities of using Stata in conjunction with SPSS, which is often used for analysis in public health research. By outlining a method for this, we expand the possibilities of econometrics analysis, in which allows more interdisciplinary studies.

The remainder of this paper is organized as follows. Section2 describes the software currently used for econometrics analysis. Section3 explains SPSS and the possibilities of collaborating with Stata. The conclusion is outlined in Section4.

## 2. Software of Economics

In modern econometrics, the most commonly used software programs are Stata, EViews, and ArcGIS.

Stata allows for many types of analyses such as two-stage least squares regression and maximum likelihood estimation. Panel data can also be analyzed in Stata. Currently, most economics universities in Japan use Stata as educational software and train students in its use<sup>1</sup>. The *Stata Journal*, a professional scientific journal, publishes commands and examples in Stata<sup>2</sup>. The program is also used in the natural and clinical science<sup>3</sup>. As of 2018, Stata 15.0 is the most current version published by Light Stone Corporation.

EViews is often used for time series data analysis in macro econometrics. It analyzes calibration for economics, which make it useful for macroeconomics and finance analysis. As of 2018, EViews 10.0 is the latest version published by IHS Markit.

ArcGIS, published by Esri, has become popular in recent years. It analyzes geographic information systems (GIS), primarily for mapping analysis. In recent years, the scope of GIS analysis has grown, increasing the popularity of ArcGIS, due to the clear and sharp results it produces. It has been used for health economic analysis of morbidity as well as environmental economic analysis of CO2 emissions<sup>4</sup> and is also used at many educational institutions.

The development and use of free software has also been growing in econometrics such as Gretel, R and QGIS, which are alternatives to Stata, EViews and ArcGIS respectively.

Although the diversity of software for econometrics is slowly growing, the programs are usually not discussed in economics articles.

## 3. Collaboration of Stata and SPSS

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<sup>1</sup> Jeffry M. Wooldridge's *Introductory Econometrics: A Modern Approach* (1997) is used in universities as a representative text of econometrics.

<sup>2</sup> See Cox and Steichen (2002).

<sup>3</sup> As an example of clinical science analysis, see Mishina, et al. (2014), and as an example of natural science, see Cox, et al. (2008). More, Cox (2001) describes detailed methods to use circular data.

<sup>4</sup> See Ishimura (2017).

Public health analysis article often discuss software. In many cases, the subject of economics and public health research is the same. For example, social capital and well-being, morbidity, and customs are analyzed by both scientific areas. In the latest 20 years, empirical analysis has grown substantially with the use of micro data.

SPSS, published by IBM Company, is often used in clinical science as well as research and educational institutions. It has been used solely because of the data style, which is the original SPSS statistics data document.

SPSS is not used as often as Stata in econometrics analysis because of the distinctive data style of SPSS. Stata is also more effective in regression analyses than SPSS. Stata commands can be applied for many methods of regression. Thus, considering the importance that econometrics places on regressions, Stata is more popular than SPSS.

SPSS and Stata can be used in conjunction by converting the data in an SPSS document to comma separated values (csv) data through SPSS. Csv data are compatible with Stata. Therefore, we can employ the converted csv data for regression analysis in Stata.

This method is particularly important for health econometrics. Clinical science tends to collect more subjective data than economics. However, methods of regression are limited to clinical science. There are many methods for regression in econometrics. Thus, we can use these on the extensive subjective data through this collaboration<sup>5</sup>.

#### 4. Conclusion

The possibilities of empirical science grows as software is developing. By evidence of policy effects, this importance continues to grow. In public health, advanced research is carried out by ECXEL<sup>6</sup>. However, in econometrics, this study is not conducted at all because of the limited methods and curriculum, which is problematic.

In this paper, we argue that empirical analysis can be improved by the collaboration of SPSS and Stata. SPSS, which treats health data, and Stata, which allows multiple methods of regression, have not been used in conjunction. However, empirical economics needs flexibility of methods and perspective. Using methods of Stata by changing the

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<sup>5</sup> For example, we did regressions on subjective well-being and the decision to quit of long-term care workers of Japan (Kato: 2016). This analysis used data on “Fact-Finding Survey on Long-term Care Work” with SPSS. Therefore, after converting this data to csv format, we conducted regression analysis. Thus, we could obtain ordered logit regression separating the sample into three groups, and analyze the difference between workers by organizations.

<sup>6</sup> See Higashi, et al. (2018).

data to csv data via SPSS enables us to expand empirical economics.

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