

## Cliometrics: An Underused Quantitative Approach to History

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### ABSTRACT

The study of history emphasizing statistical or quantitative methods is known as cliometrics. Originally applied to the study of economic history, cliometrics now includes the full range of quantitative historic studies. These quantitative studies are used when identifying and studying varied phenomena of the past including wartime patterns, literacy levels, agriculture, and consumerism. Comparing across time and space, we can demonstrate correlations, patterns, and trends that provide insight into cause and consequence. This paper will begin with a review of cliometrics as a field of study and discuss and illustrate some of its applications and relevance.

### INTRODUCTION

What was first called "The New Economic History," then "Cliometrics," was developed in the 1950s by adapting economic theory, econometric methods, and computers analysis to the study of history. The term "cliometrics" was coined by Stanley Reiter at Northwestern University and literally means the measurement of history. Clio, the Greek muse of history, is the daughter of Zeus and Titaness Mnemosyne, the goddess of memory. Cliometrics first practitioners are considered to be Alfred Conrad and John Meyer, who published "Economic Theory, Statistical Inference, and Economic History" in the Journal of Economic History in 1957.

Cliometrics uses:

- Quantifiable evidence,
- Theoretical concepts and models,
- Statistical methods of estimation and inference, and
- Employment of historians' skills in the evaluating the quality of the historical sources.

Cliometric analysis needs to consider both institutional and social context as well as the significance to history. Although the term cliometrics is used to describe work in a variety of historical social and behavioral sciences, it is most often applied to economic history. How broadly the concepts can be applied continues to be debated by history in academia.

The spread of quantitative analysis to mainstream history has been slower, but rapidly proliferating in American universities, establishing research groups engaged in mathematical historical analyses. Princeton has been a leader in this research with published reports on such topics as parliamentary behavior, electoral history, and slavery and race as early as the 1970s.

To some historians, cliometrics is a branch of history rather than a methodology that can be used across historical research. For others, it is a part of classical history. Anything retrieved from archives, whether artifacts, other empirical evidence or quantitative data, can be used to understand the past.



**Figure 1. Clio: Cleveland Museum of Art**

## EXAMPLES OF CLIOMETRIC ANALYSIS

So what has been learned from cliometrics? One of the first 'successes' of cliometrics was the reexamination of Andrew Jackson's role in the banking crisis of the 1830s and the Panic of 1837. Looking at factors such as GDP, decreasing discounts on bank notes, federal land sales and property values, the causes of the banking crisis have been totally reassessed. My own research looked at the impact of increased literacy in early England on formerly prevalent activities such as the parish wake.

Here are some additional examples of how this type of analysis has helped us learn and changed our thinking about the past. The below figures show how 'western civilization exceptionalism' is challenged by a pre 19<sup>th</sup> century perspective.

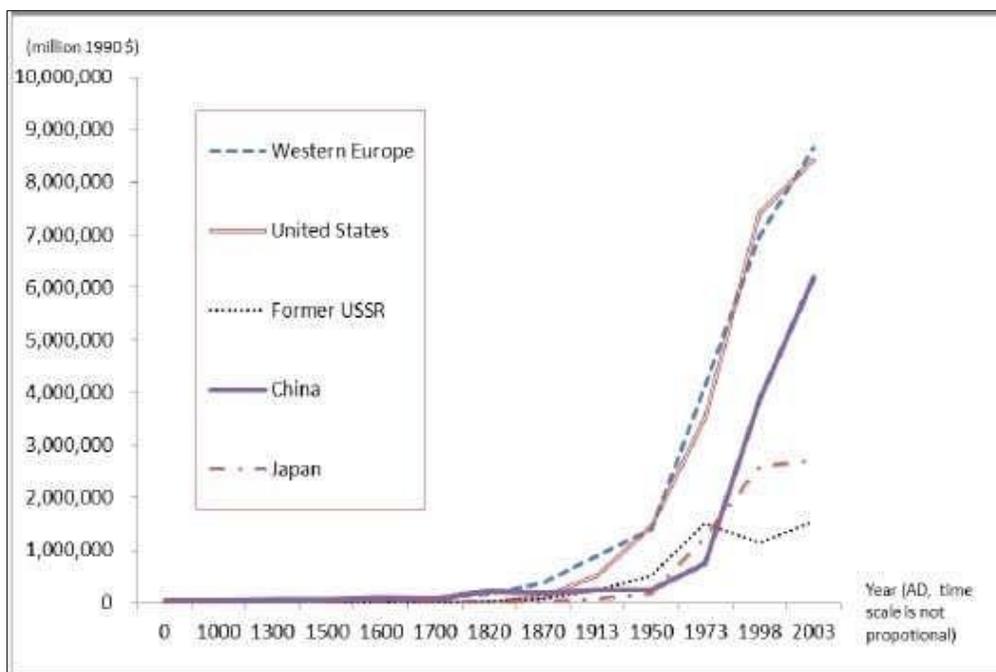


Figure 2. World GDP: Totals of selected regions and countries, 0-2003 AD

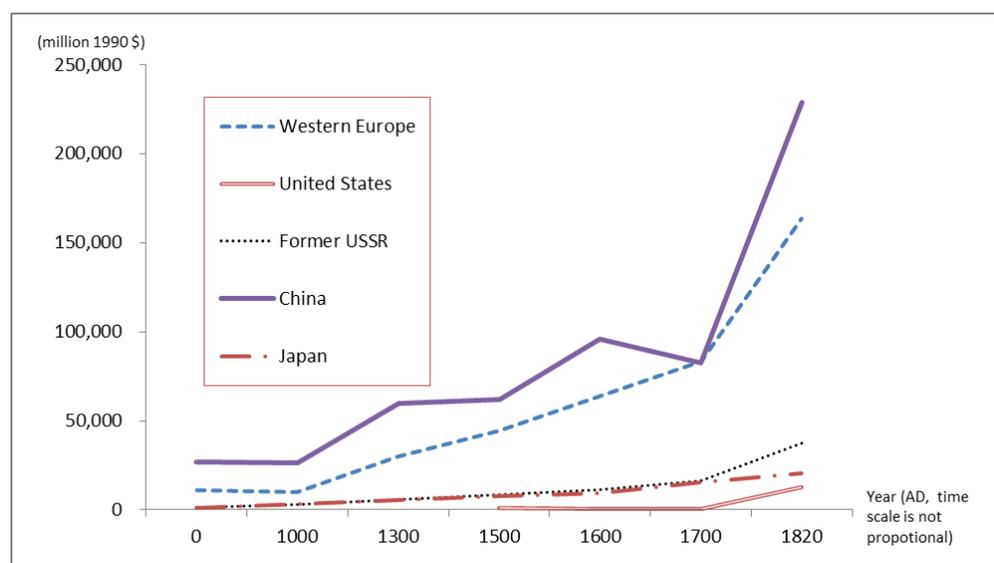
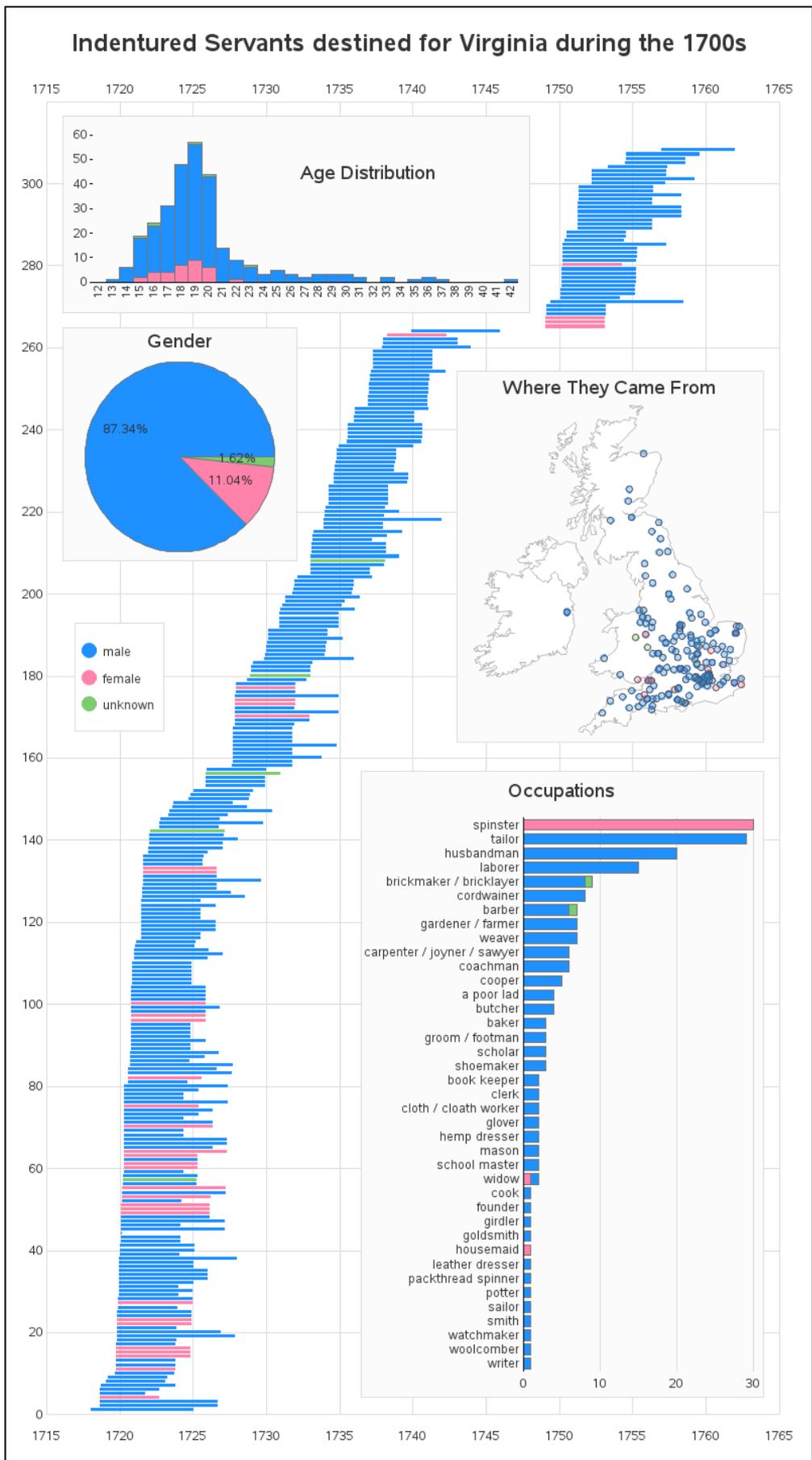


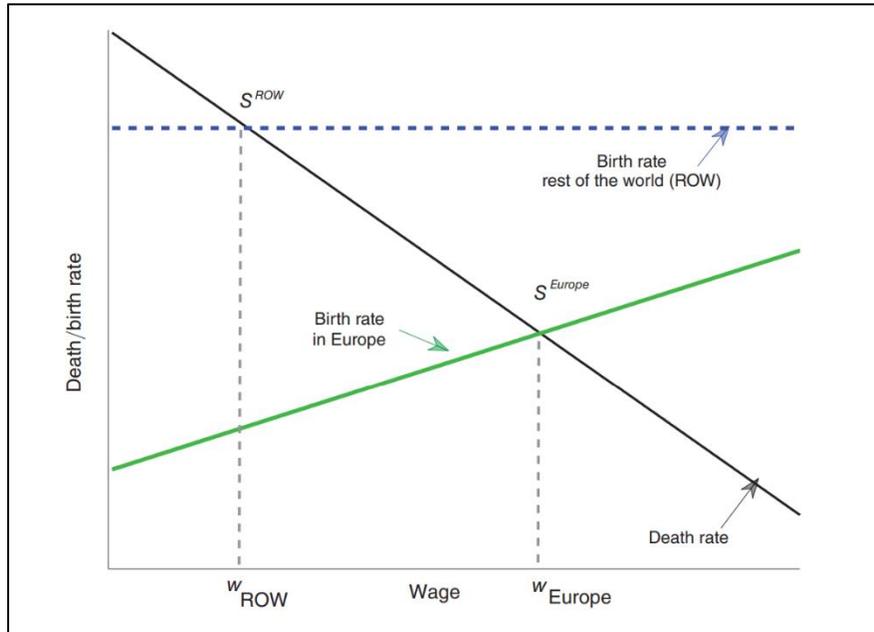
Figure 3. World GDP: Totals of selected regions and countries, 0-1820 AD



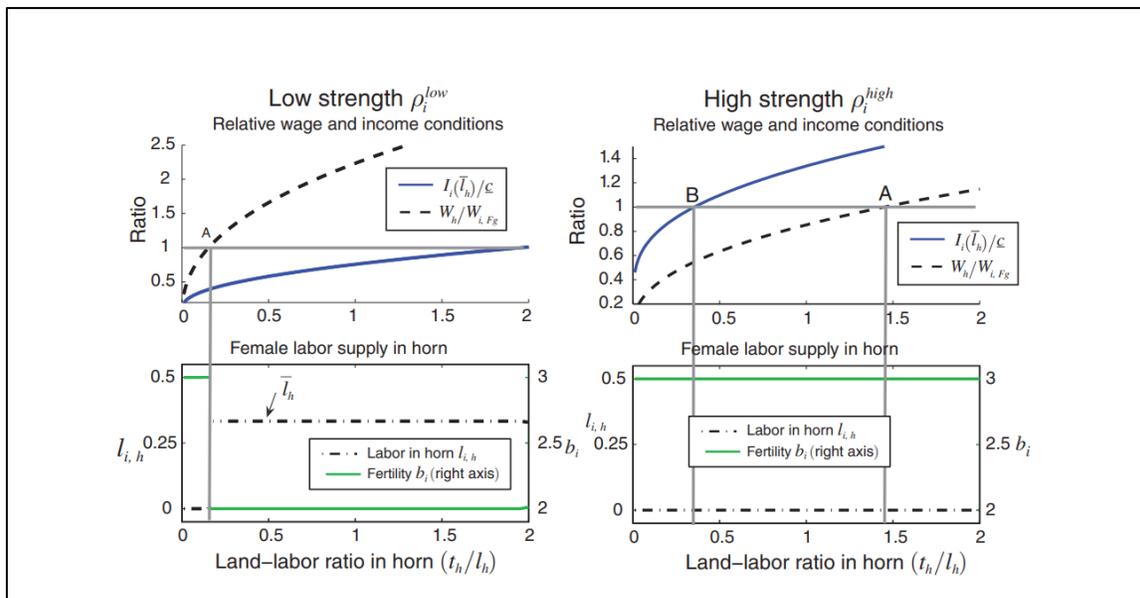
**Figure 4. SESUG 2019 Graphics Competition Winner. 1700s Virginia Indentured Servants.**

In the preceding graphics by Robert Allison (SAS, retired), available data sets for all indentured servants entering Virginia in the 1700s are combined to get a better picture of the workforce. Age, gender and occupation are quantified.

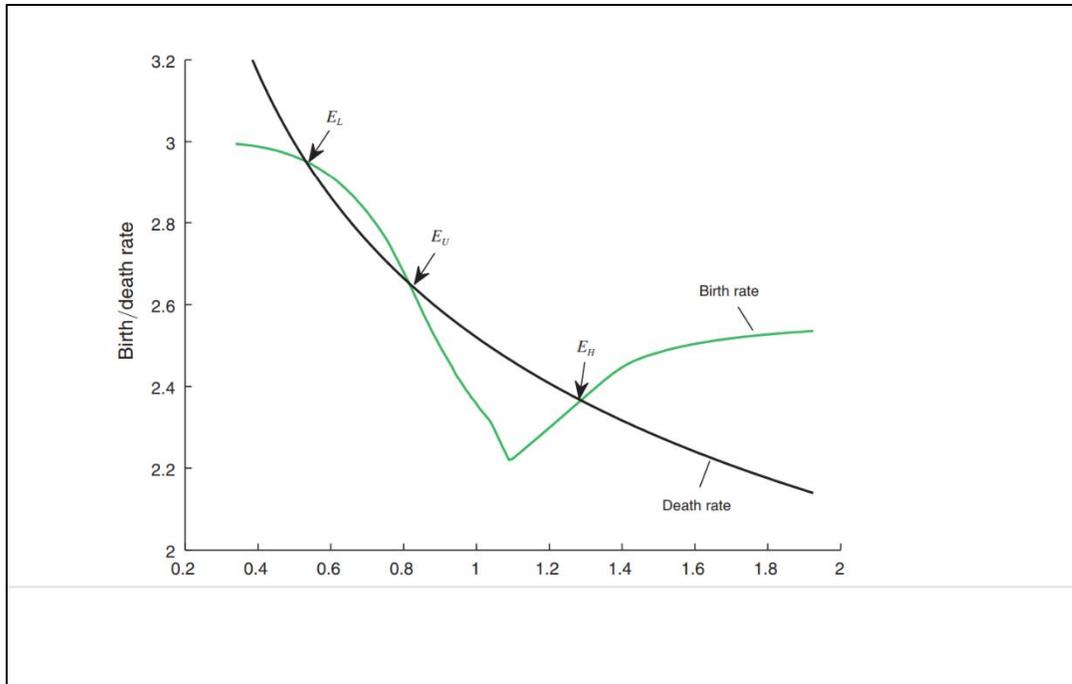
In a more controversial analysis, Voigtländer and Voth [2013] argue a unique perspective on the rise of the Industrial Revolution. Their research shows that the Black Death gave rise to a European marriage pattern that in turn set in motion a process that led to the Industrial Revolution. The three graphics below are used as part of that analysis.



**Figure 5. Steady States with and without European Marriage Pattern or EMP (Europe versus the rest of the world).**



**Figure 6. Female Labor Supply in Horn for Low- and High-Strength Types**



**Figure 7. Average Peasant Income per Capita.**

They conclude that the relatively low land productivity in grain, a weakness of the European agricultural system, strengthened fertility restriction after the Black Death, laying the foundation for Europe's early rise to riches and the advent of the Industrial Revolution.

## ACHIEVEMENTS IN CLIOMETRICS

One of the major achievements of cliometrics is the discovering and compiling of new data sets that can then be used by future researchers to better understand the past as well as evolution and change over time. New techniques allow much more data to be useful. Text mining techniques can create quantifiable data sets from a variety of records.

Another achievement is the development of new techniques and areas of inquiry to look at data. Here are some of these:

- Counterfactual analysis - which is determining the impact of an event or factor by considering what would have happened without its presence.
- Age heaping models - which, as applied, approximates the basic numerical skills and education of a population and this impact on a variety of variables.
- Anthropometrics – looking at the size and ability of the human body over time.

## DISCUSSION QUESTIONS

1. Will casual students of history accept equations, models and statistical methods as part of the process?
2. Should cliometrics be restricted to economic history? To what kinds of issues should it be applied?
3. Does the application of quantitative analysis to history tend to oversimplify the results?
4. Should cliometrics be considered revisionist history?

5. Will quantitative methods make history scientific?
6. Should this be a requirement for the study of history?

## CONCLUSION

Cliometrics applies quantitative analysis to history. Historical data sets are difficult to validate and often are incomplete. Yet, applying these methods has made it possible to question previous findings, thus increasing our knowledge, refining earlier conclusions, and correcting mistakes. Using time as a variable we can broaden the scope to look at how and why change occurred.

Cliometrics continues to overturn some accepted truths and in the process cause hard feelings, resentment, and controversy. However, cliometrics also continues to further our understanding of growth and development over time.

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## ACKNOWLEDGMENTS

I would like to acknowledge 1993 Nobel laureates Robert Fogel and Douglass North; without their pioneering research, cliometrics might not be considered the legitimate field of study that it is today.

## RECOMMENDED READING

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