Example 1

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**Project Proposal: Using Benford’s Law to Detect Fraud in Foreign Financial Assistance Transactions**

*Introduction*

Developing countries deal with large obstacles in accessing up-to-date information about foreign financial aid, development, and humanitarian flows. This information is vital to countries in order to plan and manage resources effectively. Similarly, citizens in developing countries and in donor countries lack the information they need to hold their governments accountable for the use of resources. According to the Natural Bureau of Economic Research, “based on some measures of corruption – the more the government is, the more foreign aid it actually receives.” This project will look at publicly available financial foreign aid transactions and attempt to identify corrupt financial transactions using Benford’s law.

*Relevant Research*

Poverty reduction in developing countries has always been a great concern for the international community. As Okada and Samreth explain in their paper, *The Effect of Foreign Aid on Corruption: A Quantile Regression Approach,* foreign aid in both multilateral and bilateral forms from international institutions and donor countries is considered to be an important element contributing to poverty alleviation in developing countries. However, foreign aid may also have impact on the quality of governance, particularly corruption, in the recipient countries. The authors point out that foreign provides public officials with more room for rent-seeking behavior leading to an aggravation in the recipient countries. Okada and Samreth using a quantile regression approach conclude that multilateral aid has a reduction impact on corruption while bilateral aid has no reduction impact.[[1]](#footnote-1)

Asongu and Jellal also investigated corruption in foreign aid by studying the channels of delivery for foreign aid. The authors focused on the assessing the channels of foreign to corruption in 53 Africa countries for the period of 1996-2010 and discuss two major findings. The two major findings are that foreign aid channeled through government’s consumption expenditure increases corruptions and development assistance channeled via private investment and tax effort decreases corruption. They conclude that foreign aid that is targeted towards reducing corruption should be channeled via private investment and tax effort, not through government expenditure.[[2]](#footnote-2)

Benford’s law has been promoted as providing auditors a tool that is simple and effective for the detection of fraud. Benford’s law is based on the observation that certain digits appear more frequency than others in data sets. As Durtschi, Hillison, an Pacini explain in their paper, *The Effecive Use of Benford’s Law to Assist in Detecting Fraud in Accounting Data*, digital analysis based on Benford’s law can be use used and show where auditors exercise caution. The paper also provides an example demonstrating where Benford’s law proved successful in identifying fraud in a population of accounting data.[[3]](#footnote-3)

*Research Question*

The main focus of this research is to apply Benford’s law to foreign financial aid transactions and answer the following questions:

* What is the distribution of foreign financial aid transactions that have a high likelihood of corruption?
* What type of organizations, multilateral or bilateral, have more foreign financial aid transactions flagged as possibly fraudulent?
* What is the distribution of type, private or government expenditure, of transactions that are flagged as fraudulent?

*Methodology*

For this research, financial foreign aid data will be collected from the International Aid Transparency Initiative (IATI) which is an organization that provides a data standard and location for donor organizations to publish data on their activities. Transparency International’s Corruption Perception Index (CPI) will also be collected to rank corruption of recipient countries. After the data has been collected, Benford’s law will be applied to the transaction values to view the distribution of digits in the transactions. After this has been performed, using the CPI and output of Benford’s law a likelihood of fraud value will be applied to transactions. Once these data transformations are performed, the above questions will be investigated, graphics will be produced, and the author will draw conclusions on types organizations that have higher amounts of transactions that are more likely to be fraudulent and tied to corruption.

*Assumptions*

The main assumptions for this research focus on the data available to perform the analysis. The author assumes that the data in the web portal are the organization’s unaltered data set. Also, the assumption is that Benford’s law can be applied to this type of financial transactions.

1. Okada, Keisuke and Samreth, Sovannroeun (2011): *The effect of foreign aid on corruption: A quantile regression approach.* [↑](#footnote-ref-1)
2. Asongu, Simplice A and Jellal, Mohamed (2013): *On the channels of foreign aid to corruption.* Published in: Economics Bulletin , Vol. 33, No. 3 (29. August 2013): pp. 2191-2201. [↑](#footnote-ref-2)
3. Durtschi, Cindy, Hillison, William, and Pacini, Carl (2004): *The Effective Use of Benfrod’s Law to Assist in Detecting Fraud in Accounting Data Published in Journal of Forensic Accounting.* Vol. V pp. 17-34. [↑](#footnote-ref-3)