

Does a democratic government attract more foreign direct investment? Evidence from a machine learning approach

Dongcheng Yang

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1 Literature Review

1.1 The controversial effect of democracy on FDI inflow

There exists a large and growing literature on the relationship between political regime and FDI. However, answers to this issue could not be disclosed from theory because the theoretical impact of democracy on FDI is unclear. [Li and Resnick \(2003\)](#) build their theory on the logic of why firms invest abroad and derive a theory suggesting that democratic institutions affect FDI inflows both positively and negatively. The positive transmission mechanism is through property rights protection. A democratic government tend to offer more friendly policies regarding to property issue. The negative pathway considers the oligopolistic or monopolistic positions, which might be more easily obtained by Multinational Enterprises (MNEs) when operating in autocratic countries. No related literature tends to incorporate both effects in the same analysis framework and solve for the equilibrium.

Empirically, by using different estimation methodology and data sets, different scholars arrive at totally different conclusions.

Utilizing both cross-section and panel data analysis, [Busse \(2003\)](#) finds that democracy raises FDI inflows in emerging countries. [Jensen \(2003\)](#) empirically assesses the positive predictions about the political preconditions for attracting FDI

using data from 114 countries. [Jensen \(2008\)](#) finds that democracy in emerging countries reduces expropriation risk for foreign investors. [Jakobsen and De Soysa \(2006\)](#) examine the same issue, and find that a negative relationship between democracy and FDI is fully dependent on sample size and estimation methodology. Their results support a strong positive relationship between democracy and FDI inflows to emerging countries. [Guerin and Manzocchi \(2009\)](#) test the effect on bilateral FDI flows from advanced to emerging countries between 1992 and 2004 and find that it is positive.

Nevertheless, some other scholars argue that this relationship is negative. According to [Li and Resnick \(2003\)](#), when the level of property right protection is controlled, democracy reduces FDI in developing countries.

[Oneal \(1994\)](#), [Alesina and Dollar \(2000\)](#), [Büthe and Milner \(2008\)](#) did not find a significant relationship between democracy and FDI. The most recent literature investigating on this causal effect is [Kazemi and Azman-Saini \(2017\)](#). This paper assesses the simultaneous role played by economic freedom and democracy in attracting FDI inflows. Employing a dataset covering 87 countries over the period of 1981-2010, [Kazemi and Azman-Saini \(2017\)](#) manifest that the influence of economic freedom on FDI inflows is positive and significant. On the other hand, the democracy has no significant role in attracting FDI.

[Asiedu and Lien \(2011\)](#) use natural resource as an interpretation of the controversy in literature and find that natural resources in host countries alter the relationship between FDI and democracy. Based on their conclusion, democracy promotes FDI if and only if the value of the share of minerals and oil in total exports is less than some critical value. [Mathur and Singh \(2013\)](#) put more emphasis on the importance of economic freedoms rather than political freedoms. They find that more democratic countries may receive less FDI flows if economic freedoms are not obtained.

This paper argues that the controversy in literature mainly comes from the statistical strategy with regard to the composition of existing democracy indicators. The major problem is with the method employed to integrate the secondary data. It has been testified that the existing indicators do not fully uncover the information of political events and regime changes ([Gründler and Krieger, 2016](#)). Thus, one of the

major contribution of this paper is to take advantage of machine learning approaches to recalculate the democracy index. By using the constructed new indicators, I would show the robust effect of democracy on FDI inflow.

1.2 Method of calculating democracy index

A complete algorithm to calculate democracy indicators revolves around three steps. According to [Munck and Verkuilen \(2002\)](#), first of all, a definition of democracy has to be settled down. Secondly, based on the definition, some instrument variables have to be selected. Thirdly, some computational method for adding these variables should be taken advantage of.

Each step of the algorithm could be problematic. For instance, the democracy indicators mentioned in [Dahl \(1973\)](#), [Rawls \(2009\)](#) and [Vanhanen \(2000\)](#) are three representative traditional sources. Since there was no agreement on the definition of democracy, different sources take reference of quite different instrument variables. [Dahl \(1973\)](#) mainly focuses on election process. [Rawls \(2009\)](#) adds human rights and social inequality into the variable list. [Vanhanen \(2000\)](#) takes competitiveness in elections and participation as the measurement. The common problem with respect to these three indicators is the limited number of variables for calculation. Although narrowing the scope of variable selection could give us more year-country data points for analysis, limitation of the variable number would definitely give rise to measurement error. Two mostly referenced sources of democracy indicator are Polity IV score brought up by [Marshall et al. \(2014\)](#) and [House \(2014\)](#). These two data sources have quite similar definition of democracy level. However, they both suffer from the problem with aggregation strategy. They simply add up the underlying secondary data to arrive at the final index which is neither dichotomous nor continuous.

[Acemoglu et al. \(2019\)](#) come up with an approach to obtain a dichotomous indicator. Based on this approach, a country-year pair is documented as democratic if the [House \(2014\)](#) classified it as free or partly free and the Polity IV indicator is larger than zero. To deal with the cases where there is confliction between Polity

IV and Freedom House, [Acemoglu et al. \(2019\)](#) further take advantage of [Boix et al. \(2013\)](#) and [Cheibub et al. \(2010\)](#). The drawback of this approach is that dichotomous variable is not a good way to manifest nuanced difference between countries.

Overall, the two major problems of democracy indicators include the selection of the instruments and the computational algorithm of the aggregation process. To solve these two problems, inspired by [Gründler and Krieger \(2016\)](#), this paper would take eight instrument variables into the analysis framework and use Support Vector Machines (SVM) approach for the democracy index output. The final indicator is a continuous variable from 0 to 1.

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