

Sub-National Economic Freedom: A Review and Analysis of the Literature

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Abstract

The Economic Freedom of North America (EFNA) index, which ranks the states, was first produced in 2002 and has been updated annually since 2010. The 2017 report was its thirteenth edition. The EFNA index has been cited in over 200 academic articles, book chapters, and policy papers. We provide an examination of that literature. Of the 235 papers that cite the EFNA, 155 used it in an empirical study. Two-thirds of these found economic freedom to be associated with “good” outcomes (such as faster economic growth), and only one found economic freedom to be associated with a “bad” outcome. About one-third of the papers found mixed, uncertain, or insignificant relationships between economic freedom and the dependent variable under examination. Our findings are similar to those of Hall and Lawson (2014) for the literature using the Economic Freedom of the World (EFW) index, a country-level measure.

1 Introduction

Adam Smith wrote *An Inquiry into the Nature and Causes of the Wealth of Nations* over 200 years ago. What makes some places so rich while others are so poor has been a question explored by economists ever since. There is widespread agreement that having better “institutions” is at least one of the factors that leads to greater prosperity. While anecdotal evidence on this abounds (e.g., the relative prosperity of South Korea compared to the relative poverty of North Korea), rigorous econometric testing is difficult due to the difficulty in defining and measuring “good institutions.”

Nearly 30 years ago, Nobel Laureate economists Milton Friedman and Friedrich Hayek and other like-minded economists and policy experts met to formulate a measure of “economic freedom,” consistent with Adam Smith’s idea of “the obvious and simple system of natural liberty”, and thus a proxy for pro-growth institutions.¹ The resulting outcome of the meetings that followed was the *Economic Freedom of the World: 1975-1995* (hereafter, EFW) report, published by Canada’s Fraser Institute in 1996, which provided a numeric measure of economic freedom in more than 100 countries. The report has since been updated annually, and now includes information on 159 countries and territories (Gwartney et al., 1996).

Conceptually, economic freedom refers to the level of freedom individuals, entrepreneurs, and businesses have to use their time and money in the way that they feel is best for them and their family and loved ones, free from unnecessary government restrictions and predation. The technical definition is much more

¹The full quote: “[Without trade restrictions] the obvious and simple system of natural liberty establishes itself of its own accord. Every man...is left perfectly free to pursue his own interest in his own way.... The sovereign is completely discharged from a duty [for which] no human wisdom or knowledge could ever be sufficient; the duty of superintending the industry of private people, and of directing it towards the employments most suitable to the interest of the society.” (Smith, 1904, p. 687).

complicated than that.² As Hall and Lawson (2014) detail, there has been an enormous amount of academic research conducted citing the EFW, over 400 articles through mid-2011. Nearly half of those used the EFW as an independent variable in an econometric test. More than two-thirds of those found economic freedom to be positively associated with some measure of prosperity, broadly defined. Only a few found a negative association with prosperity.

One of the reasons that economically free regions tend to outperform less-free regions is that capital and labor are mobile. Both tend to move from less-free regions to freer regions. While that mobility can be seen at the national level, it is even greater at the sub-national level since it's easier to move to a different state than it is to move to another country. In 2002, the Fraser Institute published *Economic Freedom of North America* (hereafter, EFNA), a sub-national version of the EFW, ranking the U.S. states and Canadian provinces (Karabegović et al., 2002). Since then, that report has been updated twelve times; it has been released annually since 2010 and includes annual data back through 1981.³ As of the 2014 edition, the report now also includes the Mexican states.

The original authors of the EFNA employed a similar methodology as the authors of the EFW. In contrast to the world report, however, the authors of the EFNA were presented with a unique challenge. While comparing the relative economic freedom of jurisdictions within nations did not necessarily require taking account of the impact of the federal government, comparing jurisdictions across nations would require doing so. The authors were able to overcome this difficulty by constructing two indices: one that included all levels of government and one that included only subnational governments (e.g., state and local governments).

There is a large and rapidly growing body of literature examining sub-national economic freedom, and there is now even an index of economic freedom at the local level (Stansel, 2013b), which is based on the methodology used in the EFNA.⁴ This journal recently devoted an entire issue to “Economic Freedom and Regional Economics.”⁵ Similar to the findings in the EFW literature, researchers using the EFNA have tended to find that economic freedom is positively associated with prosperity. Stansel (2013a) and Hall et al. (2015), provide general overviews of some of that literature. Building on those, and on what Hall and Lawson (2014) provided for the literature on national economic freedom, this article provides a review and analysis of the literature on sub-national economic freedom. The next section provides a general documentation of the volume of literature citing the EFNA. Section three provides a more detailed analysis of the nature of that literature and its findings, and section four provides concluding remarks.

2 Summary of EFNA Index Citations

We have conducted an exhaustive search for articles that explicitly cite the EFNA, using the search term “Economic Freedom of North America”. Unfortunately, a search using the Social Sciences Citation Index failed to pick up many of the articles that cited and employed the EFNA. It is unclear what led to this under-counting of citations⁶, but a search using Google Scholar proved more fruitful. A search using the term “Economic Freedom of North America” yielded 372 results. We checked each supposed citation, and found that 235 unique, published papers and book chapters actually cited the EFNA through the end of 2016.⁷ Of the 235 papers, 179 were published in peer-reviewed academic journals, 26 were published as book chapters, 21 were published by public policy research institutions, and 9 were university working papers.

²The authors of the most recent EFW (Gwartney et al., 2017) utilize 42 separate variables in five broad areas (size of government, legal system and property rights, sound money, freedom to trade internationally, and regulation) to measure economic freedom.

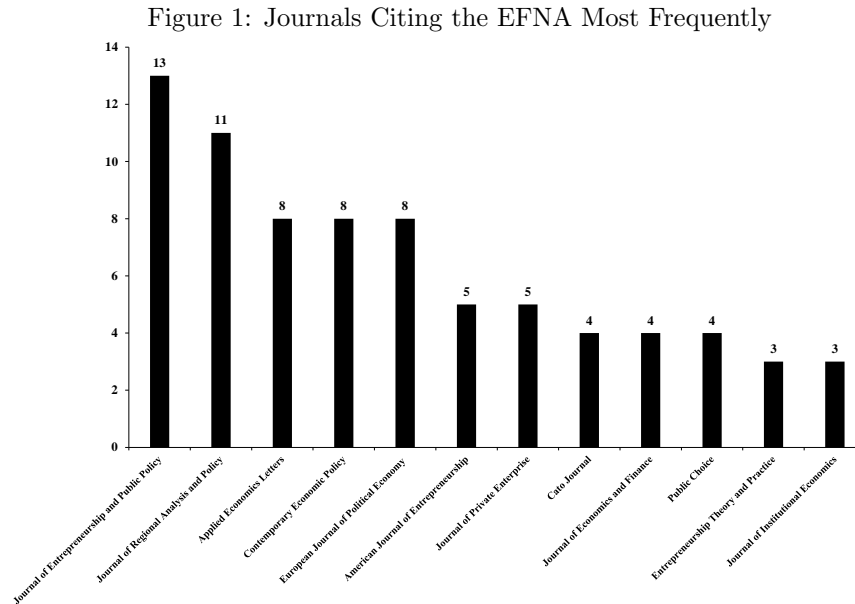
³The most recent report, the 13th edition, is Stansel et al. (2017).

⁴It should be noted that there have been other state economic freedom indices published in the past, but they have not been updated annually. The *Freedom in the 50 States* report has now been produced four times (in 2016, 2013, 2011, and 2009), most recently Ruger and Sorens (2016). However, that report focuses only on the U.S. states; it includes neither the Canadian provinces nor the Mexican states. Also, it does not provide annual data. The most recent version contains four years of data across the period 2000-2014, compared to the EFNA's 34 years of annual data (1981-2014). For these reasons, it is somewhat less useful for scholars conducting econometric research, and has thereby been used far less for such research.

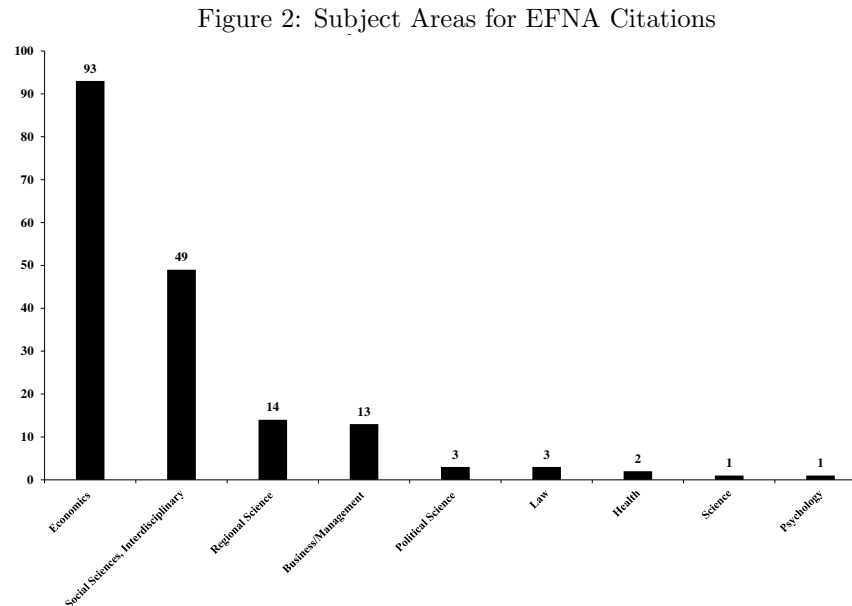
⁵Guest editor, and EFW co-author, Joshua Hall provided an excellent introductory article for that issue (Hall, 2013).

⁶Klein and Chiang (2004) offer one potential explanation.

⁷Papers that were available online (for instance, through SSRN) but not yet published were not counted, nor were papers that had been presented at conferences but not yet published. We did, however, include in this figure papers that were published as academic articles, book chapters, institutional working papers, and institutional research papers.



The 179 journal articles appeared in 106 different journals. Figure 1 contains information on which journals cited the EFNA most frequently ($N \geq 3$). With 13 citations, the *Journal of Entrepreneurship and Public Policy* came in first place, followed by this journal (*Journal of Regional Analysis and Policy*) with 11 citations.

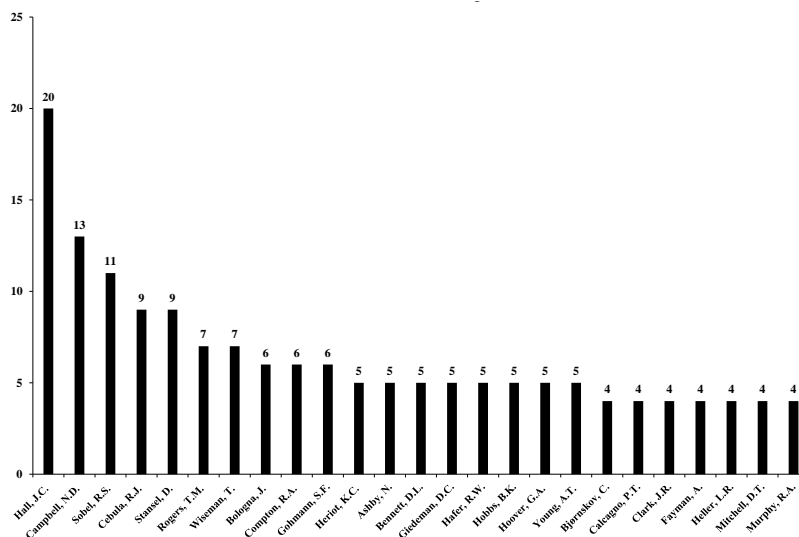


With respect to subject areas, economics journals contained more than 50% of the total citations, followed by interdisciplinary social science journals, which had 27% of the total citations. Figure 2 shows the frequency of all of the subject areas for the journals that contained an EFNA citation. These two subject areas comprise more than three quarters of the citations. Regional science journals contained the third most citations, though they lagged behind the interdisciplinary journals by a wide margin.

Two-hundred seventy-two separate authors wrote or contributed to these 235 papers. Figure 3 shows

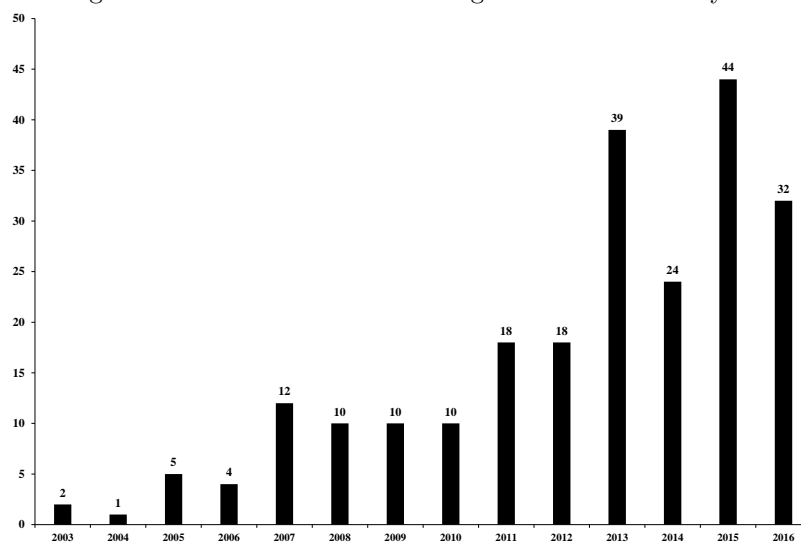
which authors cited the EFNA most frequently ($N \geq 4$). Joshua Hall has cited the EFNA the most times, with 20 papers containing a citation to various years of the report. Hall is a co-author on the *Economic Freedom of the World Report*, and primarily writes on a broad variety of issues related to economic freedom. Noel Campbell, Russell Sobel, Richard Cebula, and Dean Stansel are next.

Figure 3: Authors with the Most Articles Citing the EFNA Index



The number of unique papers citing the EFNA has risen from 2 in 2003 to a high of 44 in 2015. Figure 4 shows citations per year.⁸

Figure 4: Number of Articles Citing the EFNA Index by Year



It should be noted, since the EFNA is seven years younger than the EFW, it is likely that the citation counts have not yet hit a per-year steady state, as they have in the EFW. According to Hall and Lawson (2014), since 2008, the EFW has been cited approximately 50 times per year. It is still too early to tell whether EFNA citations have hit a similar plateau.

⁸The numbers on the graph do not quite add up to 235. This is because there were six papers that were accepted to journals in 2016, but not yet assigned to a particular volume or issue. These six papers account for the shortage.

Finally, the papers that cite the EFNA have themselves been cited over 3,100 times. Table 1 contains a list of articles with the most citations ($N \geq 30$) that cite the EFNA.

Table 1: Articles Citing the EFNA Index with the Most Citations

Most Citations	Year	Number of Citations
Sobel	2008	326
Kreft and Sobel	2005	290
Agarwal et al.	2014	153
Sobel et al.	2007	112
Crain and Hopkins	2010	110
Ashby	2007	105
Hall and Sobel	2008	96
Ashby and Sobel	2008	81
Campbell and Rogers	2007	73
Goetz and Rupasingha	2009	62
Gohmann et al.	2008	59
Bezmen and Depken II	2006	55
Karabegović et al.	2003	54
Hall and Sobel	2006	54
Lopez et al.	2009	52
Garrett and Rhine	2009	52
Compton et al.	2011	51
Valdez and Richardson	2013	50
Sobel et al.	2010	35
Bennett and Vedder	2013	35
Hafer	2013	33
Bjørnskov and Potrafke	2012	32
Mukamel et al.	2012	32
Wiseman and Young	2013	31
Campbell et al.	2012	31
Apergis et al.	2014	30

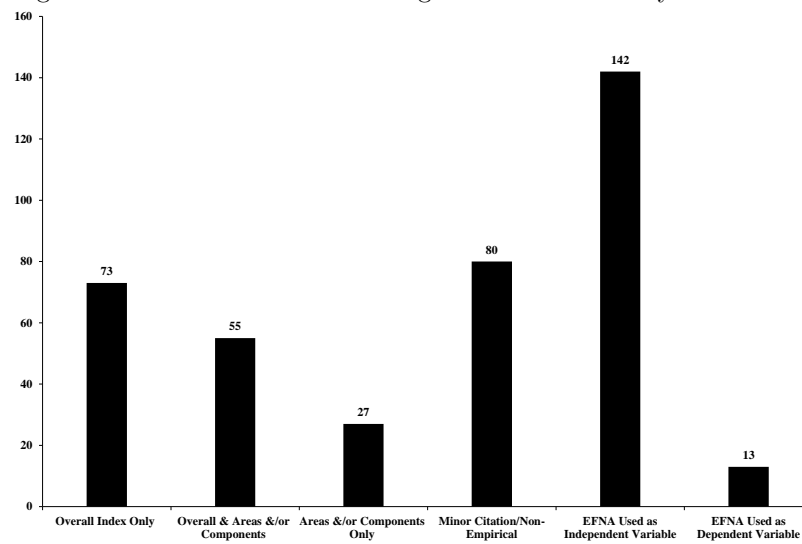
3 Analysis of EFNA Index Citations

All 235 publications citing the EFNA were found and reviewed, then coded based on the nature of their EFNA citation. Figure 5 details how each study employed the EFNA. Of the 235 publications, 155 employ it as a variable in an empirical study (142 as an independent variable and 13 as a dependent variable). The remaining 80 papers are either non-empirical in nature, or simply cite the EFNA. The EFNA is comprised of ten variables divided into three areas: 1. Government Spending, 2. Taxes; and 3. Labor Market Freedom. Out of the 155 papers that used the EFNA in an empirical study, 73 employed only the summary score, 55 used the summary score *and* either index areas or the component variables that make up those areas, and 27 used only the index areas or component variables. Those 155 papers that use the EFNA in an empirical analysis are the focus of this study.⁹

Additionally, the EFNA contains two types of indices: one called the *subnational index* that examines only the effects of state (provincial) and local governments, and one called the *all-government index*, which includes the effects of the federal government on the outcomes observed in each state or province. The subnational index is meant to be used for facilitating comparisons of jurisdictions within a given country; the

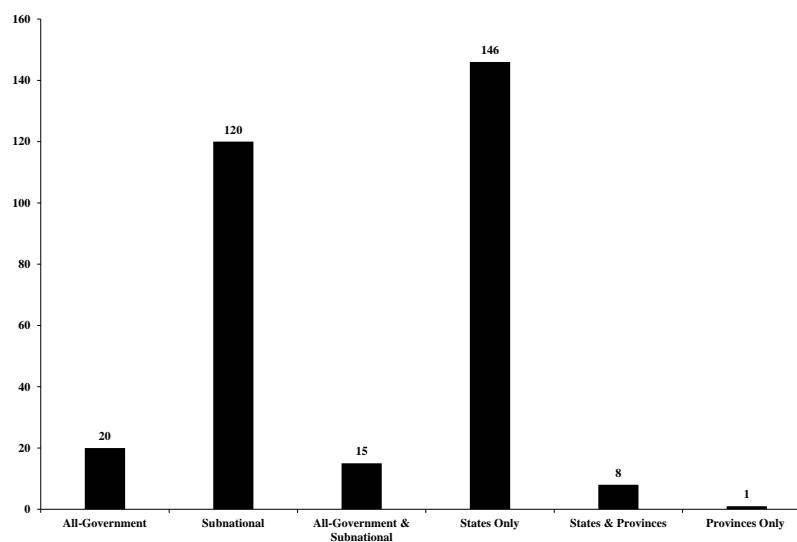
⁹For those interested in the coding, a table containing each empirical paper and its codes is available on each authors SSRN page.

Figure 5: Number of Articles Citing the EFNA Index by Citation Type



all-government index is meant to be used when making cross-country comparisons of individual jurisdictions. We coded each study according to which version of the EFNA it employed. Additionally, because the EFNA includes information for three countries – the United States, Canada, and, for the most recent three editions, Mexico – we coded each study according to whether it looked only at US states, or whether it included information for the Canadian provinces and/or Mexican states. Figure 6 contains information on whether the all-government or subnational index was used in the empirical study, as well as information on whether the study looked only at the US or included Canadian and/or Mexican data also. As you can see from this figure, though the all-government index is meant to be used when making cross-country jurisdictional comparisons, values from the all-government index are used in numerous papers that look only at the US states. This is often justified under the argument that the researcher wants to capture information on how federal regulations and expenditures affect the individual states of the US. Fifteen papers employ both the all-government and sub-national index; this is generally done for purposes of robustness-checking.

Figure 6: Index Used and Locations Examined



Next, we coded each paper according to whether the EFNA was found to be associated with a normatively good or bad outcome. Generally, the result was unambiguous. Things like increased economic growth, faster employment growth, and increased levels of net business formation are all examples of outcomes that were coded as “mostly good”; 103 of the empirical studies had outcomes that fell unambiguously into this category. Only one study in the set was coded as “mostly bad”, and in this case the effects were small. In the paper, only the tax and labor market components of the index were used, and they were employed as control variables in a study examining whether the presence of Confucius Institutes in a state were correlated with higher levels of trade with China in that state. In this case, it was found that states with less-free labor markets were more likely to trade with China than those states with freer labor markets.¹⁰ Finally, 51 studies could be coded neither as “mostly good” nor “mostly bad”, so were coded as “mixed or uncertain”. In some cases, the results were contradictory (with either some areas or components being positively related to the control variable and others negatively related to the control variable, or with alternative specifications returning divergent results), in others they were insignificant, and in some they were used in a panel of controls, making it impossible to determine the specific effect of the EFNA variable.

It should be noted at this point that we use the qualifier “mostly” before the good and bad designations to clarify that these empirical studies do not always fit 100% into one category or another. In many cases, authors employed multiple specifications, with the index, its areas and/or its components showing statistical significance in some specifications but not others. Further, it was sometimes the case that the index, an area and/or a component would show alternate signs in different specifications. If the economic freedom variables were positively correlated with a normatively “good” outcome (or negatively correlated with a normatively “bad” outcome) in more specifications than not, or if this was the situation in the authors’ preferred specifications, the variable was coded as “mostly good”. The same logic was used to classify a variable as “mostly bad”.

However, we should also note that when there was any uncertainty about whether a variable should be coded as “mostly good” or “mixed or uncertain”, the latter code was always used. Because some papers with marginally good results were coded as “mixed or uncertain”, it is likely that the number of papers that could be broadly classified as “mostly good” is somewhat understated. Still, 103 out of the 155 empirical papers were coded as “mostly good”, meaning about two-thirds of the papers that have employed the EFNA have found it to be correlated with a positive result. This is almost exactly what Hall and Lawson (2014) found when doing a similar analysis for the EFW index (134 out of 198, or 67.7% of their articles were coded as “mostly good”).

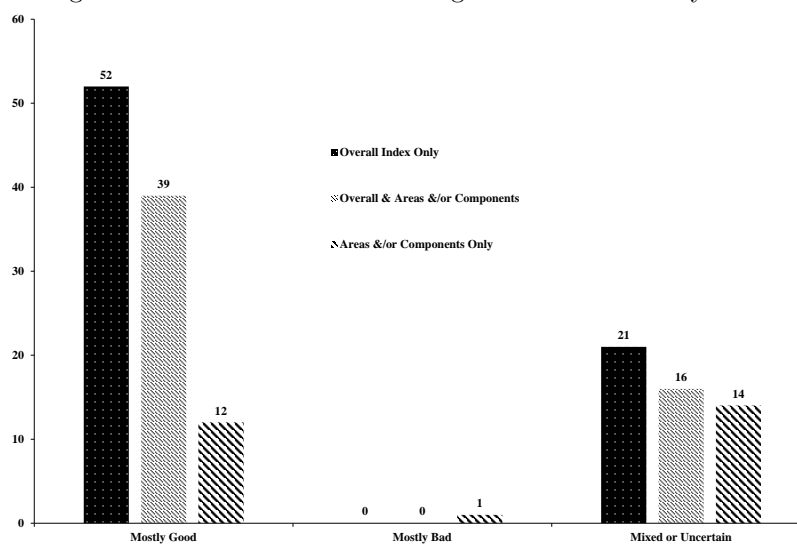
Figure 7 breaks down the number of articles citing the EFNA by both their results code and the portion of the EFNA that was used. Papers that used the entire index in their empirical studies were more than twice as likely to find a “mostly good” result than a “mixed or uncertain” result. Papers that used both the overall index and the areas and/or components of the index were also more than twice as likely to find a “mostly good” result than a “mixed or uncertain” result. Only those papers that used EFNA areas and/or components on their own were more likely to find a “mixed or uncertain” result than a “mostly good” result, though the spread in this case is not large.

It is worth noting that we refrained from passing judgement on the quality of any of these papers in undertaking this coding exercise. Certainly, some papers were more econometrically sophisticated than others; indeed, many of these papers contained econometric flaws of one form or another. In particular, when an author employed only some areas or subcomponents of the index, it was not always clear why they chose to leave other areas out of their analysis. Without adequate justification for leaving out some variables, it is likely the case that some of these studies are plagued by omitted variable bias. This comment is not meant to discredit any particular paper, but merely to note that we equally weighted all papers in this review.

We did, however, examine whether any of the three areas of the index were more likely to show statistically

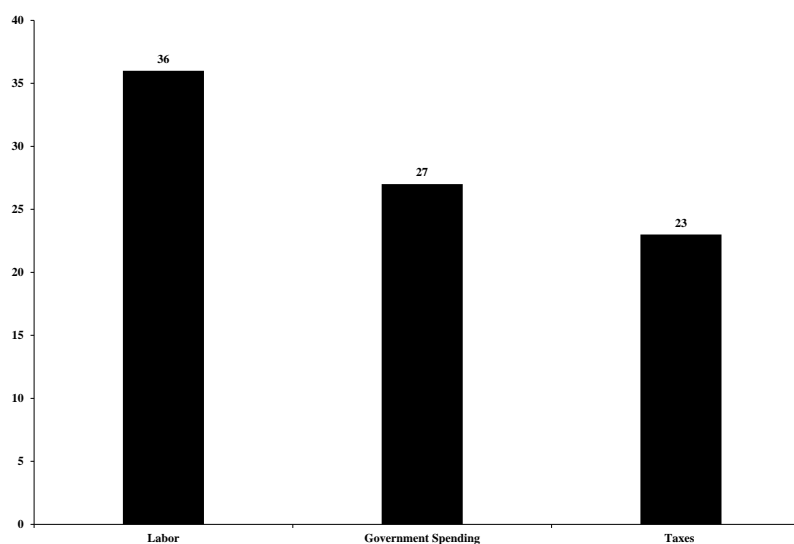
¹⁰That paper is Lien and Co (2013). They were, however, unable to reject their hypothesis that states with Confucius Institutes tended to see higher levels of trade with China. An anonymous reviewer pointed out to us that this paper could arguably have been coded as “mixed/uncertain”, or possibly even “mostly good”. It might be the case that states with higher levels of economic freedom also have lower internal costs of production, and therefore are able to produce more at home. This would also explain why states with higher levels of economic freedom experience less trade with China in this model. However, because the causal mechanism is unclear, we decided to keep the “mostly bad” coding, while acknowledging this possibility.

Figure 7: Number of Articles Citing the EFNA Index by Results



and economically significant results in those cases where a paper used the individual areas as opposed to just the overall index.¹¹ In 58 of the 80 papers that employed specific areas of the EFNA index as independent variables, whether by themselves or in conjunction with the overall index score, the specific area or areas driving the results could be discerned. We disregarded those papers that employed only one area or component of the index, since it would be unfair to say that the only included area was driving the results in this case. Figure 8 illustrates how many of those 58 papers contained results that were both statistically and economically significant for each of the three areas of the index. A strong relationship with the dependent variable was found for the labor market freedom area in 36 of the 80 papers, for the government spending area in 27 papers, and for the taxes area in 23 papers.

Figure 8: Areas Driving the Results

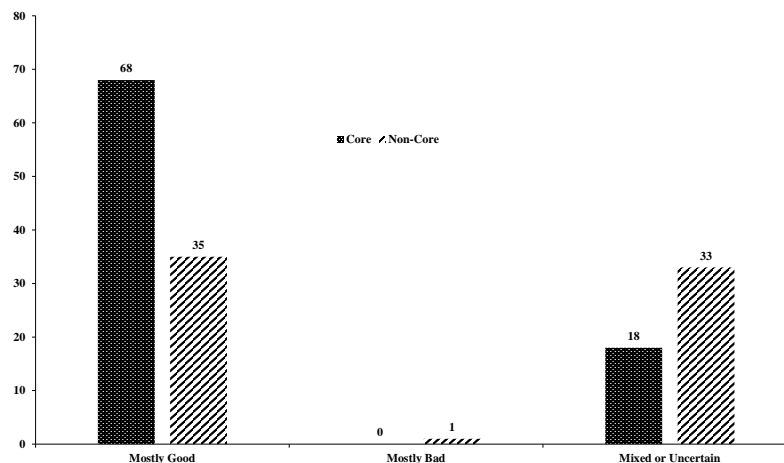


¹¹In regard to economic significance, we relied on the authors' own judgment. We did not attempt to assess the significance ourselves.

The final step in our analysis of the citations is to see whether there exists any ideological bias in publications citing the EFNA. That is, given that we found only one “mostly bad” result, might it be the case that either 1) journals are less likely to publish negative results with respect to EFNA-related research, or 2) researchers are less likely to submit research that finds a “mostly bad” outcome? Though it is difficult to tease out this bias definitively, we follow Hall and Lawson (2014) in examining whether papers that contain the words “economic freedom” in either the title or abstract are more likely to find “mostly good” results; we consider the EFNA to be a “core” variable of interest in these papers. Our assumption is that papers for which economic freedom is a core variable are more likely predisposed to find a positive outcome.

In 86 of the 155 empirical papers, the words “economic freedom” appeared in either the title or abstract. Interestingly, these core papers were more than three and a half times as likely to find that economic freedom was related to a “mostly good” outcome than a “mixed or uncertain” outcome. Non-core papers were about equally as likely to find a “mostly good” outcome as they were a “mixed or uncertain” outcome. There was only one paper in the set that could be described as finding a “mostly bad” outcome, and it was a non-core paper. Figure 9 examines this graphically.

Figure 9: Number of Articles Citing the EFNA Index by Core vs. Non-Core



4 Conclusion

Throughout this article, we focused mainly on quantitative descriptions of the literature that has employed the EFNA in an empirical study. We have made note in various places of how these measures compare to measures of articles citing the EFW. We have not, however, discussed any of the qualitative similarities between the EFNA and the EFW. While this is not the place for a full-fledged comparison, it is worth noting that many of the relationships that have been found to hold in the cross-country empirical analyses also have been found to hold when looking at the states and using the EFNA. Economic freedom at both the national and sub-national level has generally been found to be positively associated with a variety of measures of both the size of the economy and the growth of the economy. It has also been found to be positively related to numerous measures of entrepreneurial activity. The findings on income inequality have been less conclusive, but they have generally supported the idea that greater economic freedom is associated with *less*, not more, inequality.

Overall, having examined, to the best of our knowledge, every paper that has used the EFNA in an empirical study through the end of 2016, it seems to be the case that economic freedom is correlated with a variety of positive outcomes, with very few negative tradeoffs. This confirms the similar findings in the literature employing the EFW on a variety of subjects, lending further credence to the idea that regions with greater economic freedom tend to have better outcomes.

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