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# The Impact of Labor Rights on Equity Returns:

## A Cross-Country Analysis

Robin Lieb

### ABSTRACT

There is ample evidence that financial market development leads to economic growth. If improving labor rights can be shown to positively influence equity markets, then that, in turn, will lead to economic growth. The finance literature has examined the impact of a broader metric, namely, the Economic Freedom Index, on equity returns worldwide and the evidence is mixed. This study focuses on one dimension of economic freedom: labor rights. Specifically, the study analyzes the impact of labor rights on national equity market indexes, using the Labor Rights Index developed by the Organization for Economic Co-operation and Development (OECD) and the Fraser Institute (FI). Using panel regression analysis for 49 countries (for the OECD Index) and 76 countries (for the FI Index) over the period 1985 through 2014, the study finds that changes in labor rights have a statistically significant positive impact on equity returns, after controlling for business-cycle effects and time fixed effects. The study also finds significant differences in the Labor-Rights-Equity Returns relationship between developed and less developed economies.

# The Labor Rights and the Impact on Equity Returns: A Cross-Country Analysis

## 1. Introduction:

While the recent phenomena of technology and globalization have led to homogenization and integration of certain factor and product markets, segmentation remains in labor markets. Multinational corporations, seeking low-cost high-return business environments, continue their quest for the ideal location for their manufacturing processes. Likewise, sophisticated institutional and retail investors seek to identify attractive locations globally for their investments. One source of variations in costs and returns is the labor market. Table 1 provides the Fraser Institute Labor Index values for a selected set of countries between 1970 and 2014. The change in the Index over the 44-year period ranges from -0.1 (Bolivia) to 4.85 (United States), confirming that there is a wide variation in the progression of the Index around the globe and, while some countries exhibit improving labor rights over time, others have stagnated.

Table 1: Absolute Change in the Fraser Market Regulation Index score between 1970 and 2014 for selected countries.

Country	1970	2014	Change
Argentina	3.63	5.72	2.09
Bolivia	4.7	4.6	-0.1
Canada	7.45	8.1	0.65
Indonesia	4.22	4.65	0.43
United Kingdom	6.64	8.8	2.16
United States	4.35	9.2	4.85

Source: Fraser Institute

There is ample evidence that financial market development leads to economic growth (see Levine, 1997). If improving labor rights can be shown to positively influence equity markets, then that, in turn, would lead to economic growth. The finance literature has examined the impact of a broader metric, namely, the Economic Freedom Index, on equity returns worldwide and the evidence is mixed (see Smimou, Kamal, and Karabegovic, 2010 and the studies reviewed within). This study focuses on one dimension of economic freedom: labor rights. Specifically, the study analyzes the impact of labor rights on national equity market indexes, using the Labor Rights Index developed by the Organization for Economic Cooperation and Development (OECD) as well as that developed by the Fraser Institute (FI). Using panel regression models for a cross-section of 49 countries (for the OECD Index) and 76 countries (for the FI Index) over the period 1985 through 2014, the study finds that changes in labor rights have a statistically significant positive impact on equity returns, after controlling for business-cycle effects and time effects.

To better understand the effect of labor rights on an educated investor's decision to invest, and on a multinational corporation's decision to invest, this paper addresses two specific issues. First, what role do labor rights play in determining stock market returns and second, is there a significant difference in that relationship in developed versus less developed countries?

The rest of the paper is organized as follows. Section II reviews previous research on the general relationship between economic freedom and equity returns and the relation between equity returns and various labor rights indexes.

## 2. Related Literature

Previous research in this area of finance has primarily focused on the broad relationship between economic freedom and equity returns. At the forefront, Gwartney and Lawson (2003) first defined economic freedom by creating a comprehensive economic freedom database, combining the Economic Freedom of the World Index with survey data on legal structures in different countries. Gwartney proceeded to use this index in further research (Gwartney et al, 2004) to examine the issue of cross-country differences in income levels and growth rates. The results of this study show that countries with institutions and policies more consistent with economic freedom both grow more rapidly and achieve higher income levels. Additionally, the research finds that changes in institutional quality influence the future growth of per capita GDP. In the following years, research in this area picked up. Stocker (2005) shows, with data from the Fraser Institute and market equity returns calculated using the Morgan Stanley Capital International (MSCI) equity index, that there is a significant direct relationship between the percentage increase in economic freedom and observed equity rates of return. Specifically, he found that a 1.0 percent increase in economic freedom is associated with a 2.7 percent increase in equity returns. Further, their study indicates that there is an inverse relationship between the beginning levels of economic freedom and observed equity returns. Less free countries have higher equity market returns. This correlation may be explained by the third observed relationship, which is an inverse relationship between the level of beginning freedom and the percentage increase in freedom. Simply put, less economically free countries are more likely to experience a greater increase in economic freedom than countries that have already achieved higher levels of economic freedom.

More recent research started examining the concept of economic freedom in different parts of the world like the Middle Eastern and North African (MENA) countries, greater Asia, and developed nations. Building on Stocker's research, Smimou, Kamal and Karabegrovic (2010) concluded, also using data from the Fraser Institute and equity index returns, that the correlation between percent changes of economic freedom and stock returns for countries in the MENA region is positive and statistically significant. The changes in economic freedom are also positively correlated with the GDP per capita. Similar studies have been conducted by Quazi (2007), with a scope focused on East Asia and Bengoa and Sanchez-Robles (2003), who built their research around Latin America. Both studies confirm the findings of Smimou, Kamal and Karabegrovic: economic freedom has a positive impact on stock market returns.

Gospel, Pendleton, and Vitols (2014) take a different approach by looking at the impact of new investment funds (NIF) on labor rights. The NIFs encompass private equity, hedge funds and sovereign wealth funds, which have attracted attention because of their fast growth. One key finding that emerges from their research is that the impact depends on the financial market regulation regime as well as on the labor relations regime. Strict labor legislation and union involvement in firm management can mitigate negative effects or induce private equity to pursue different strategies. The empirical evidence does show negative employment and wage effects for the Anglophone countries, where most of the NIF activity has occurred, but are less definitive in their evidence for the continental European countries.

Some studies, instead of looking at the rule of law protecting economic freedom in a certain country, used a broader measure of laws and institution. For example, Li (2002) found that institutional improvements, measured by a number of different measures of institutions, including the Fraser Institute's Economic Freedom of the World index and changes in financial

technology are the main causes of the expansion of global equity markets in recent years. Furthermore, Lawson and Roychoudhury (2008) found that firms located in US states with increasing economic freedom experience higher stock market returns. More recently, Billmeier and Massa (2009) examined the role of institutions (measured by the Heritage Foundation's Index of Economic Freedom), remittances, and natural resources on stock market development in 17 emerging markets in the Middle East and Central Asia from 1995 to 2005. They found that socially responsible institutions and remittances have a positive and significant impact on stock market development. Accordingly, these recent studies indicate that institutions matter for equity market development and performance. However, the specific impact of labor rights, enforced by various institutions, which have different features, were not fully examined. Hence further insights into labor rights, which is a major aspect of economic freedom, will enhance the understanding of cross-country differences and investment potential for global equity investors.

### **2.1. Positive Impact:**

While different areas around the world have been extensively covered, the aim of this paper is not trying to widen the scope of countries but to break away from economic freedom and focus on a narrower approach. Specifically, this study will focus on the impact of labor rights, which is a small component of most economic freedom indexes, on equity returns in different countries around the globe. No research has been done in this particular area, even though past papers imply various correlations. Barnett and Salomon (2006) for instance found a positive relationship between social responsibility and financial performance. Social screening, preferring companies that act responsibly, can lead to an increase in financial returns, implying

that socially responsible behavior of companies has a positive impact. Following the Barnett and Salomon study, Edmans, Alex, Lucius Li and Zhang (2014) take a similar approach by presenting research that gives stockholders and executives an idea for what influence employee satisfaction and labor market flexibility can have on stock returns. This is done by taking a list of the “Best Companies to Work For” in 14 countries and comparing it to Organization for Economic Co-operation and Development (OECD) and Fraser Institute data. They found that being listed as a Best Company to Work For is associated with superior returns only in countries with high labor market flexibility. These results are consistent with the idea that the recruitment, retention, and motivational benefits of employee satisfaction are most valuable in countries in which firms face fewer constraints on hiring and firing. These benefits are lower in countries with inflexible labor markets, leading to a downward shift in the marginal benefit of expenditure on employee welfare. Moreover, Edmans, Alex, Lucius Li and Zhang state that “in such countries, regulations already provide a floor for worker welfare, leading to a movement down the marginal benefit curve. Both forces reduce the marginal benefit of investing in worker satisfaction, and thus being listed as a Best Company may reflect an agency problem.” (2014) The study gives invaluable insight into what the results of this paper might look like. The “Best Companies to Work For” usually provide employees with special benefits, which would have a positive impact on labor rights.

## **2.2. Negative Impact:**

While multiple studies document the positive correlation between labor rights and equity returns, past research has also shown negative effects of economic freedom and labor rights on



equity returns. Studies imply that more regulation and protection can represent wasteful expenditure by management. Taylor (1911) argued that workers should be treated like any input – management’s goal is to extract maximum output from them while minimizing their cost. Under this view, labor rights are an indicator that employees are overpaid or underworked, both of which reduce firm value and shareholder return. Indeed, agency problems may lead to managers tolerating insufficient effort and/or excessive pay, at shareholders’ expense. Further, if labor markets are laid out to protect worker’s rights, it is harder to fire people. There is evidence that higher wages could potentially have a negative impact on stock prices (Bell & Machin, 2016). Building on those findings, Chen, Jason, Kacperczyk and Ortiz-Molina (2011) show the correlation between labor unions and cost of equity. The authors hypothesize a negative relation between unionization and operating flexibility. To test their hypothesis, they use the Mandelker and Rhee degree of operating leverage (MRDOL)<sup>1</sup>. Since an important aspect of operating flexibility is operating leverage, one would expect that unionization should increase operating leverage. The empirical results confirm their hypothesis: Unionization reduces operating flexibility, which decreases equity returns and their results indicate that unionization is positively associated with MRDOL.

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<sup>1</sup> Mandelker, G. N., & Rhee, S. G. (1984). The impact of the degrees of operating and financial leverage on systematic risk of common stock. *Journal of Financial and Quantitative Analysis*, 19(1), 45-57: In their study, the authors examine the relationship between the degree of operating leverage and degree of financial leverage on the systematic risk of common stock. This is used to come up with the Mandelker and Rhee degree of operating leverage.

### 2.3. Cross-country Differences:

Table 2: Summary statistics of MSCI Equity Returns with respect to the OECD Employment Protection Database and the Fraser Labor Market Regulations Index over the respective sample period.

Database	MSCI Equity Returns				
	Mean	Standard Deviation	Coefficient of Variation	Skewness	Kurtosis
OECD (1987-2013)	3.350	1.442	43.060	3.549	15.889
Fraser (1985-2014)	3.309	1.310	39.593	4.032	20.973

  

	Labor Rights Indexes				
	Mean	Standard Deviation	Coefficient of Variation	Skewness	Kurtosis
OECD (1987-2013)	2.081	0.857	41.185	-0.019	-0.209
Fraser (1985-2014)	6.257	1.443	23.065	-0.018	-0.764

With research confirming both negative and positive correlation on a more general level, it is necessary to further investigate the issue in regards to the impact on labor rights on equity returns. Previous research confirms the intuitive notion that labor rights worldwide are rather diverse. According to the OECD, an intergovernmental economic organization founded to stimulate economic progress and world trade, which has been collecting data since 1985, Canada, Ireland, the United Kingdom, and the United States consistently score high when it comes to protecting labor rights. On the other hand, countries on the bottom end of the scale vary greatly over time. Over the past 10 years, Venezuela, Turkey, Uruguay, and Panama all shared the last position in the OECD ranking at one point in time. With developed nations and third world countries differing to a great extent on the degree of labor rights, it is important to conduct a

Table 3: Correlation between MSCI Equity Returns and the OECD Employment Protection Database and the Fraser Labor Market Regulations Index over the respective sample period.

	1987-2013		1985-2014	
	OECD	MSCI	Fraser	MSCI
OECD	1		Fraser	1
MSCI	0.2445	1	MSCI	0.3211
				1

cross-country analysis. Table 2 shows the summary statistics for MSCI equity returns and labor rights scores. The OECD scores are out of 6, Fraser scores out of 10. Table 3 shows the correlation between equity returns and the OECD and Fraser indexes, which shows that a somewhat weak positive relationship exists between equity returns and labor rights.

### **3. Hypotheses Development:**

With past research covering economic freedom extensively, it is important to build on this research and further investigate what component of economic freedom causes the positive correlation. While there are distinct similarities between past research efforts, this study significantly differs from work done by Stocker (2005) or Smimou, Kamal and Karabegrovic (2010) in regards to sample size. By not focusing on a specific region and by increasing the time frame, the sample size for the independent and dependent variables are increased. At the same time, the study takes a narrower approach by focusing on labor rights, a small component of economic freedom.

Hence, it can be hypothesized that changes in labor rights have no impact on equity returns ( $H_0$ ). Further evidence of this negative relationship is seen in Chen, Jason, Kacperczyk and Ortiz-Molina (2011) study which implies that unionization reduces operating flexibility, which decreases equity returns. Therefore, it is possible that labor rights negatively affect equity returns.

Alternatively, it can be hypothesized that if a country supports and enforces strict labor rights such as minimum wage laws, ‘paid time off’ (PTO), or maternity leave, changes in labor

rights could have an impact on equity returns ( $H_1$ ). Generally, studies have confirmed this relationship for broader research projects on economic freedom. Due to the similarities between the studies, it is arguable that labor rights positively affect equity returns.

The second hypothesis is concerned with an increase in labor rights. Based on the existing literature, it can be hypothesized that an increase in labor rights leads to an increase in equity returns ( $H_1$ ). The null hypothesis in this case would state that an increase in labor rights has no impact on equity returns ( $H_0$ ).

Lastly, it is important to consider how equity returns perform based on certain country criteria. Stocker (2005) indicates that there is an inverse relationship between the beginning level of economic freedom and observed equity returns which leads to less free countries having higher equity market returns. Table 4 depicts the country classifications made by MSCI splitting countries into developed, emerging, and frontier markets. For the purpose of this last hypothesis, due to data availability, emerging and frontier markets will be combined and referred to as less developed countries.

Table 4: MSCI Countries by Country Classification

Developed Markets			Less Developed Markets							
			Emerging Markets			Frontier Markets				
Americas	Europe & Middle East	Pacific	Americas	Europe, Middle East	Asia	Americas	Europe	Africa	Middle East	Asia
Canada	Austria	Australia	Brazil	Czech Rep.	China	Argentina	Bosnia	Botswana	Bahrain	Bangladesh
US	Belgium	Hong Kong	Chile	Egypt	India	Jamaica	Herzegovina	Ghana	Jordan	Sri Lanka
	Denmark	Japan	Colombia	Greece	Indonesia	Panama	Bulgaria	Kenya	Kuwait	Vietnam
	Finland	New Zealand	Mexico	Hungary	South Korea	Trinidad &	Croatia	Mauritius	Lebanon	
	France	Singapore	Peru	Poland	Malaysia	Tobago	Estonia	Morocco	Oman	
	Germany			Qatar	Pakistan		Lithuania	Nigeria	Palestine	
	Ireland			Russia	Philippines		Kazakhstan	Tunisia		
	Israel			Saudi Arabia	Taiwan		Romania	Zimbabwe		
	Italy			South Africa	Thailand		Serbia			
	Netherlands			Turkey			Slovenia			
	Norway			UAE			Ukraine			

Source: MSCI

Based on Stocker's assumption, it can be hypothesized that the impact of labor rights on equity returns is greater for less developed countries ( $H_1$ ). The null hypothesis in this case states that the impact of labor rights on equity returns is not influenced by the developmental level countries ( $H_0$ ).

#### **4. Data and Methodology:**

##### **4.1. Terminology:**

It is important to define certain terms that will be used throughout this analysis. While there is no internationally accepted definition of labor rights, Davies (2004) defines them as 'entitlements that relate specifically to the role of being a worker'. That description is fairly broad can include a right to work in a job freely chosen, a right to fair working conditions, which may encompass issues as diverse as a just wage or protection of privacy, a right to be protected from arbitrary and unjustified dismissal, a right to belong to and be represented by a trade union, as well as a right to strike. These rights are either exercised individually or with others collectively. Further, it is important to note that these rights may be based on different foundations, such as freedom, dignity or capability.

##### **4.2. Data Description:**

In order to measure the pressure that labor rights put on equity returns, it is important to consider several factors; i.e., the change of labor rights over time as well as the change in equity returns over the same period of time. Labor rights are measured using two different databases.

The first database is the ‘OECD Employment Protection Database’. The OECD database is covering 73 countries on a yearly basis between 1987-2013. Due to data availability, this number is decreased to 49. New countries are added every year, however, if a country was added to the database late, data for the respective country is only available going forward.

The second database is the Fraser’s Institute ‘Economic Freedom of the World – 2016 Annual Report’ database. This database was used for general economic freedom research projects by prior scholars. Within the database, a ‘Labor Market Regulations’ category is available, covering 159 countries worldwide between 1985-2014. Due to data availability, this number is decreased to 76. The category is being extracted for the purpose of this study.

Equity returns on a yearly basis for the various countries covered in this study are available by MSCI via Thomas Reuters DataStream. Equity returns are measured by the annual returns of stock market indexes from 1985 to 2014 for Fraser Data and 1987-2013 for OECD data. The MSCI return indices are denominated in local currency. Due to non-uniform data availability, an unbalanced panel was used.

### **4.3. Methodology:**

The model used by Smimou, Kamal and Karabegrovic (2010) to observe the effects of economic freedom on equity returns builds the foundation for the model used to observe the impact labor rights on equity returns. A few adjustments to the model have to be made to account for the different data sources, time frame, and data format.

Effect of changes in labor rights on equity returns can be defined by equation 1:

$$1. R_t = \alpha + \beta\pi_t + \varepsilon_t,$$

where  $R_t$  denotes the dependent variable (equity returns),  $\alpha$  denotes the constant or intercept,  $\beta$  denoted the coefficient on changes in labor rights which is initially 0,  $\pi_t$  denotes the independent variable (change in labor rights), and  $\varepsilon_t$  is the random component of linear relationship. To reflect controls, the models is adjusted to show the impact of macroeconomic variables on the stock market in equation 2:

$$2. R_t = \alpha + \beta\pi_t + \xi M_t + \varepsilon_t,$$

where  $M_t$  denotes the variable containing macroeconomic controls. Lastly, to scale returns, the natural logarithm of  $R_t$  is taken. This logarithmic transformation is a monotonic transformation and taking the log of the returns results in scaling the coefficients monotonically. This results in equation 3:

$$3. \text{Log}(R_t) = \alpha + \beta\pi_t + \xi M_t + \varepsilon_t$$

Including all these variables, the model determines whether changes in labor rights provide additional information not captured by the business cycle fluctuations, and if not, then the coefficient on changes in labor rights,  $\beta$ , should equal zero. As noted by Smimou, Kamal and Karabegrovic (2010), it is important to control for as many relevant factors as possible to obtain robust results, reflected by  $M_t$ . Hence, this study will use macroeconomic variables from the World Development Indicators database, published by the World Bank, as control variables. The variables include Gross Domestic Product (GDP), Gross Domestic Product Growth, Gross Domestic Product per Capita, Number of Listed Domestic Companies, Population, and Population Growth.

Further, Stocker (2005) indicates that the macroeconomic analysis of security markets is usually completed under the assumption that stock markets reflect what is expected to happen in the economy, since the expected return of a firm and its cash flow are influenced by the aggregate state of the economic environment. Under that consideration, it is necessary expand the control variables by adding inflation and interest rate spreads (lending rate minus deposit rate), given the available data by the World Bank, to get further insights (see, Diermeier, 1990). According to scholars, it is necessary to examine the impact of labor rights on equity market returns by controlling for interest rate spreads and inflation, as these variables may have an explanatory role in determining the required return to derive the value of all investments in the marketplace (see Reilly et al., 2005; Fama, 1991a; Miller, 1976). Moreover, past research also shows that there is substantial evidence that macroeconomic variables related to business cycles can forecast stock market returns, making this adjustment necessary (see for example Chen et al., 1986; Keim and Stambaugh, 1986; Fama and French, 1989; Fama, 1991b). Lastly, the data was winsorized at the ten percent level to modify extreme outliers, as the data turned out to be highly volatile and includes country fixed effects. It should be noted that all the controls mentioned above have been used in previous studies related to similar topics and have been found to be reliable, particularly in less developed country studies.

## **5. Empirical Results and Discussion:**

Upon running the model, changes in the overall level of labor rights for the OECD and Fraser indexes covering all countries have a positive and a statistically significant impact on



equity market returns, including no control variables (Table 5, model 1 & Table 6, model 1, respectively).

Over the sample period of the OECD index, a 1% increase in the level of labor rights resulted in a 3.16% increase of stock market returns, statistically significant at the 1% level (Table 5, model 1). Using the Fraser index, a 1% increase in labor rights resulted in a 4.16% increase in equity returns, statistically significant at the 1% level (Table 6, model 1). The significance and the magnitude of the coefficient on the changes in labor rights do not change much for either index when macroeconomic variables are added indicating that the changes in labor rights explain a significant variation in stock market returns, independent of the business cycle variables.

Using the Fraser index for instance, after taking all control variables including GDP growth, listed companies, population growth, inflation, and interest rate spreads into account, the coefficient on the changes in labor rights decreases to 3.95%, with it still being statistically significant at the 10% level (Table 6, model 10). This is similar for the OECD index, with the coefficient declining from 3.16% to 3.03% when including the relevant controls (Table 5, model 10).

The trend is confirmed for less developed countries as well, even though the coefficients were smaller in magnitude, overall and fewer macroeconomic variables were statistically significant. The results imply that, over the sample period of the OECD index covering less developed countries, a 1% increase in the level of labor rights resulted in a 1.95% increase of stock market returns, statistically significant at the 1% level (Table 7, model 1). Using the Fraser index, a 1% increase in labor rights resulted in a 5.61% increase in equity returns, statistically

significant at the 1% level (Table 8, model 1). Including macroeconomic control variables, the coefficient for the OECD index falls to 1.41%, significant at the 1% level, for Fraser, the coefficient decreases to 2.42%, significant at the 1% level (Table 7 model 10 & Table 8, model 10, respectively). Additionally, it is important to note that the explanatory power, adjusted  $R^2$ , increased in the models for less developed countries. One of the reasons for the big difference between coefficient in the models focusing on less developed countries may be the fact that sample size was decreased due to data availability and that the equity returns for the countries included in this smaller sample were highly volatile. The volatility in the stock markets of less developed countries may also stem from factors not included in the initial model. Despite winsorization, the volatile nature of the data may still have an impact on the results.

Lastly, the impact of labor rights on equity returns in developed countries using both indexes was insignificant. This may be explained by the fact that developed countries already have a high labor rights index and the index does not improve over the sample period. Further, minor changes in labor rights that could have increased equity returns, such as the increase of an already existing minimum wage, would not have increased the advanced countries' labor rights score in either database due to the way the index is constructed by the OECD and the Fraser Institute.

In sum, the empirical analysis finds that the first null hypothesis ( $H_0$ ) is rejected suggesting that a change in labor rights does indeed have a statistically significant impact on equity returns. Further, the results imply that the second hypothesis is strongly supported as well: an increase in labor rights leads to an increase in equity returns. Lastly, the hypothesis that the impact of labor rights on equity returns is different between developed and less developed

countries is supported as well with the finding that the impact is greater for less developed countries<sup>2</sup>.

It is important to mention that this study also has a few limitations, most of which are due to the lack of data availability. First, political risk within the individual countries is not being considered, as publicly available risk databases only go back until 1995, which does not cover the entire sample period. It may be argued that it is not necessary to control for political risk as labor rights itself already reflect a form of political risk. Second, the annual data used in this study does not allow conclusions to be drawn on the immediate impact on equity markets.

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<sup>2</sup> Robustness checks were conducted and no multicollinearity was detected.

Table 5: Regression results (OECD Labor Rights Index). Stock market returns and labor rights with and without set of control variables using (unbalanced) panel data over the sample period, 1987–2013.

<b>Dependent variable: annualized equity market returns</b>										
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>	<b>(6)</b>	<b>(7)</b>	<b>(8)</b>	<b>(9)</b>	<b>(10)</b>
<b>Constant</b>	0.0654 (0.0436)	0.0711 (0.0434)	0.0663 (0.0436)	0.0614 (0.0437)	0.1457*** (0.053)	0.0654 (0.0436)	0.0988** (0.0432)	0.0229 (0.0443)	0.06 (0.0616)	0.0584 (0.074)
Labor Rights	3.1637*** (0.0983)	1.9211*** (0.4367)	3.1776*** (0.1028)	3.4475*** (0.2317)	2.9431*** (0.1334)	3.1572*** (0.0994)	2.8576*** (0.1092)	3.1789*** (0.0972)	3.1553*** (0.1430)	3.03*** (0.1917)
GDP		0.1014*** (0.0347)								
GDP Growth			-0.006 (0.013)							-0.0306* (0.0178)
GDP per Capita				-0.0575 (0.0425)						
Listed Companies					0.0000** (0.000)					-0.0001** (0.0000)
Population						0.0000 (0.0000)				
Population Growth							0.3723*** (0.0615)			0.1737** (0.0882)
Inflation								0.0147*** (0.0035)		0.0112*** (0.0043)
Interest Rate Spread									0.0000 (0.0000)	0.0000 (0.0000)
Country/Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
n	751	751	751	751	696	751	750	751	549	507
Adjusted R	<b>0.0017</b>	<b>0.0116</b>	<b>0.0006</b>	<b>0.0028</b>	<b>0.0087</b>	<b>0.0006</b>	<b>0.0469</b>	<b>0.0236</b>	<b>0.0010</b>	<b>0.1321</b>

Notes: \*\*\*, \*\* and \* denote significance at 1%, 5%, and 10% respectively; and standard errors are in parentheses below estimated coefficients.

Table 6: Regression results (Fraser Labor Market Regulations Index). Stock market returns and labor rights with and without set of control variables using (unbalanced) panel data over the sample period, 1985–2014.

<b>Dependent variable: annualized equity market returns</b>										
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>	<b>(6)</b>	<b>(7)</b>	<b>(8)</b>	<b>(9)</b>	<b>(10)</b>
<b>Constant</b>	-0.1329 (0.0282)	-0.1419*** (0.0289)	-0.1480*** (0.0285)	-0.1466*** (0.0285)	-0.1637*** (0.0315)	-0.1497*** (0.0285)	-0.1460*** (0.0293)	-0.1409*** (0.0286)	-0.100*** (0.0320)	-0.1312*** (0.0354)
Labor Rights	4.1633*** (0.1824)	3.8225*** (0.4812)	4.337*** (0.1905)	4.7048*** (0.2826)	4.3630*** (0.1996)	4.3238*** (0.1869)	4.2621*** (0.186)	4.2220*** (0.186)	3.6772*** (0.211)	3.945*** (0.232)
GDP		0.034 (0.0344)								
GDP Growth			-0.0269** (0.0111)							-0.027* (0.0145)
GDP per Capita				-0.0904** (0.043)						
Listed Companies					0.0000 (0.0000)					-0.00002 (0.00006)
Population						0.0000** (0.0000)				
Population Growth							0.0010 (0.0264)			0.0723** (0.037)
Inflation								0.0008** (0.0003)		-0.0295*** (0.007)
Interest Rate Spread									0.0461*** (0.0050)	0.061*** (0.0063)
Country/Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
n	1043	1026	1026	1026	920	1026	1025	1026	835	765
Adjusted R	<b>0.0199</b>	<b>0.0238</b>	<b>0.0284</b>	<b>0.0270</b>	<b>0.0265</b>	<b>0.0283</b>	<b>0.0229</b>	<b>0.0276</b>	<b>0.1092</b>	<b>0.1364</b>

Notes: \*\*\*, \*\* and \* denote significance at 1%, 5%, and 10% respectively; and standard errors are in parentheses below estimated coefficients.

Table 7: Regression results (OECD Labor Right Index for less developed countries). Stock market returns and labor rights with and without set of control variables using (unbalanced) panel data over the sample period, 1987–2013.

<b>Dependent variable: annualized equity market returns</b>										
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>	<b>(6)</b>	<b>(7)</b>	<b>(8)</b>	<b>(9)</b>	<b>(10)</b>
<b>Constant</b>	0.6514*** (0.2118)	0.6807*** (0.2112)	0.6939*** (0.2166)	0.5550*** (0.2083)	0.7203*** (0.2192)	0.7196*** (0.2170)	0.205365 (0.2441)	0.5596** (0.2214)	-0.021238 (0.3360)	-0.642 (0.4045)
Labor Rights	1.9548*** (0.5285)	3.8073*** (1.1327)	1.9553*** (0.5287)	3.7473*** (0.7316)	1.9827*** (0.5442)	1.8579*** (0.5320)	2.6335*** (0.5521)	2.0742*** (0.5344)	4.1955*** (0.8734)	1.4121*** (1.0025)
GDP		-0.1517* (0.0821)								
GDP Growth			-0.0295 (0.0311)							0.0177 (0.0511)
GDP per Capita				-0.3040*** (0.0881)						
Listed Companies					-0.0003** (0.0001)					-0.0001 (0.0002)
Population						0.0000 (0.0000)				
Population Growth							0.5775*** (0.1687)			0.46** (0.2294)
Inflation								0.0090 (0.0064)		0.0051 (0.0081)
Interest Rate Spread									-0.1501*** (0.0468)	-0.3104*** (0.0727)
Country/Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
n	207	207	207	207	197	207	207	207	136	126
Adjusted R	<b>0.0394</b>	<b>0.0506</b>	<b>0.0390</b>	<b>0.0879</b>	<b>0.0620</b>	<b>0.0437</b>	<b>0.0872</b>	<b>0.0437</b>	<b>0.0582</b>	<b>0.1906</b>

Notes: \*\*\*, \*\* and \* denote significance at 1%, 5%, and 10% respectively; and standard errors are in parentheses below estimated coefficients.

Table 8: Regression results (Fraser Labor Market Regulations Index for less developed countries). Stock market returns and labor rights with and without set of control variables using (unbalanced) panel data over the sample period, 1985–2014.

<b>Dependent variable: annualized equity market returns</b>										
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>	<b>(6)</b>	<b>(7)</b>	<b>(8)</b>	<b>(9)</b>	<b>(10)</b>
<b>Constant</b>	-0.3747*** (0.0472)	-0.4444*** (0.0507)	-0.4106*** (0.0481)	-0.4278*** (0.0480)	-0.4317*** (0.0522)	-0.424*** (0.0483)	-0.4408*** (0.0507)	-0.4010*** (0.0484)	-0.3204*** (0.0542)	-0.4862*** (0.0633)
Labor Rights	5.6143*** (0.29)	7.3582*** (0.7328)	6.0178*** (0.3152)	6.9698*** (0.4280)	6.13*** (0.3336)	6.0337*** (0.3118)	5.9642*** (0.3112)	5.8033*** (0.3094)	4.9941*** (0.355)	2.4166*** (1.3101)
GDP		-0.1035** (0.0459)								
GDP Growth			-0.0333** (0.0152)							-0.0305 (0.0203)
GDP per Capita				-0.2028*** (0.0548)						
Listed Companies					-0.0002*** (0.0000)					-0.0007*** (0.0002)
Population						-0.0000*** (0.0000)				
Population Growth							0.0695** (0.0337)			0.1466*** (0.0476)
Inflation								0.0006 (0.0004)		-0.0334*** (0.0085)
Interest Rate Spread									0.0445*** (0.0060)	0.0556*** (0.0075)
Country/Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
n	653	636	636	636	566	636	635	636	524	471
Adjusted R	<b>0.0868</b>	<b>0.1058</b>	<b>0.1053</b>	<b>0.1176</b>	<b>0.1153</b>	<b>0.1102</b>	<b>0.1046</b>	<b>0.1016</b>	<b>0.1651</b>	<b>0.2307</b>

Notes: \*\*\*, \*\* and \* denote significance at 1%, 5%, and 10% respectively; and standard errors are in parentheses below estimated coefficients.

## **6. Conclusion:**

The purpose of this study was to conduct a cross-country analysis of the impact of labor rights on equity returns. Using a panel regression analysis for 49 countries (for the OECD Index) and 76 countries (for the FI Index) over the period 1985 through 2014, the empirical results show that changes in labor rights have a statistically significant positive impact on equity returns, with the impact being lower in magnitude but still statistically significant and positive in less developed countries.

This study, while examining one component of economic freedom, Labor Rights, contributes to the broader body of existing literature on the positive impact of economic freedom and is consistent with the evidence provided by previous research. Further, the findings in this study point to practical and policy implications that may be of interest to both federal governments and private investors. One practical implication is that investors can improve their returns if they hold stocks in countries which increased their degree of economic freedom, rather than countries that do not build on improving labor rights. This may also be relevant for institutional investors and mutual fund managers as part of their asset allocation strategy. Policy implications may matter to federal governments as the companies in a country appear to profit from the increase in labor rights. Finally, improvements in financial markets lead to economic growth, especially in less developed markets. The findings of this study also has implications for countries with a low labor rights score – equity market enhancement should be one more reason why they might want to take further steps to strengthen labor rights.

It is important to mention that this study has several limitations, most of which are due to the paucity of data. First, political risk within the individual countries is not being considered, as



publicly available risk databases only go back until 1995, which does not cover the entire sample period. It may be argued that it is not necessary to control for political risk as labor rights itself already reflect a form of political risk. Second, the annual data used in this study does not allow conclusions to be drawn on the immediate impact on equity markets. Third, lagged dependent variables could be used to trace the longer-term impact of labor reforms. Finally, the impact of labor rights on other stock market development metrics such as the size and liquidity of the market, could also be examined.

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