# THE IMPACT OF ECONOMIC FREEDOM ON THE UNEMPLOYMENT RATE IN OECD NATIONS: AN EXPLORATORY STUDY ACCEPTING THE VALIDITY OF OKUN'S LAW

### 1. INTRODUCTION

In recent years, a variety of empirical studies have been conducted expressly to investigate the impact of economic freedom on economic growth. Typically, these studies find that there exists a statistically significant, positive impact of economic freedom, especially a measure of overall economic freedom, on the economic growth rate (Ali and Crain, 2001; Arora and Vamvakidis, 2006; Ashby et al., 2013; Belasen and Hafer, 2013; Bennett and Vedder, 2013; Cebula, 2013; Cebula and Mixon, 2014; Cebula et al., 2013; Clark and Lawson, 2008; Dawson, 2003; De Haan and Sturm, 2000; Gwartney et al., 2006; Hall et al., 2010; Heckelman and Stroup, 2000). This generalization is effectively predicated upon the argument that increased economic freedom, through incentives and other conditions such as enhanced property rights and increased labor market freedom, promotes entrepreneurship and other economic behaviors that elevate the percentage growth rate of real GDP. Based on Okun's Law (Okun, 1962), it would be logical to infer that this increased economic growth would lead to a reduction in the unemployment rate.

The present study focuses on a similar, yet different, potential impact of higher economic freedom levels, namely, lower unemployment rates. In particular, this study investigates the following hypothesis: that a *higher* level of economic freedom in an economy promotes a higher pace of economic activity and thereby yields a *lower* unemployment rate, *ceteris paribus*. The framework studied consists of a dataset for 29 of the 30 member nations of the OECD (Iceland is omitted from study due to data limitations) over the 2003 to 2007 period. The model in this exploratory study, which also includes each nation's overall tax burden and long term interest rate, as well as a measure of each nation's political stability, undertakes 2SLS estimations of pooled time-series/cross-section data and finds evidence that the unemployment rate among OECD nations for the pre-Great Global Recession study period is a decreasing function of the overall average level of economic freedom. A robustness test involving a redefinition of economic freedom and the adoption of a measure of regulatory quality further supports this conclusion, namely, that greater economic freedom reduces the unemployment rate.

#### 2. The initial eclectic specification

Given the emphasis in this study on economic freedom, in this eclectic framework, the fundamental hypothesis of this study is that the unemployment rate (*UNEMPRATE*) depends inversely upon the overall level of economic freedom (*FREEDOM*), ceteris paribus, as well as upon other variables (*OTHER*), as follows:

 $UNEMPRATE_{jt} = f$  (ECONFREEDOM9jt, OTHERjt-1),  $f_{UNEMPRATE_{jt}} < 0$  (1)

where  $UNEMPRATE_jt$  is the level of the average unemployment rate in nation j in year t; ECONFREEDOM9jt refers to the average value of the overall economic freedom measure (index) in nation j in year t; and OTHER refers to the values of three control variables in nation j in year t-1 to be included in the empirical estimates. The latter variables are considered in the following section of this study.

In this study, the *initial* economic freedom measure, *ECONFREEDOM9jt*, is the average value of nine of the ten economic freedom indices developed by The Heritage Foundation (2013); one of the economic freedom indices, the fiscal freedom index, is replaced by the ratio of all taxes to the level of GDP in each of the OECD nations. As a test of the robustness of the results obtained initially, in a subsequent section of this study, the measure of economic freedom is recalibrated so as to consist of eight of the ten economic freedoms, with the business freedom index replaced by a measure of regulatory quality.

To begin the analysis, freedom from excessive government size, GSF (Heritage Foundation, 2013, pp. 13-14), is an index that reflects the degree of freedom in an economy from the burden of excessive government in terms of expenditures. Government outlays compete with private agents and interfere with natural market processes, prices, and interest rates by over-stimulating commodity demand and diverting resources through de facto "crowding out" effects (Carlson and Spencer, 1975; Cebula, 1978; Abrams and Schmitz, 1978). This economic freedom index is designated here as EF1jt (EF1 for nation j in year t). The trade freedom index, TF, reflects the openness of an economic system to imports of commodities from other nations and the ability of citizens to interact freely as buyers and/or sellers in the global marketplace. Government interference with the free flow of such commerce (through taxation of imports and/or exports, bans, and/or quotas) has a negative impact on the ability of individuals and firms to pursue economic enterprises (Heritage Foundation, 2013, p. 13). This economic freedom index is designated here as EF2jt.

A free citizenry requires a steady and reliable currency as a medium of exchange and as a store of value. The monetary freedom index, MF, is an indicator of the degree of a nation's currency stability and market-determined prices. A high degree of monetary freedom is characterized by an independent central bank and policies promoting low inflation without the adoption of government-imposed price controls (Heritage Foundation, 2013, p. 14). This economic freedom index is designated here as EF3jt.

The investment freedom index, IF, is greater in a nation with fewer restrictions on foreign investment, fewer restrictions on capital inflows and outflows, and fewer restrictions interfering with the ability of capital to flow to its most efficient use (Heritage Foundation, 2013, p. 14). This economic freedom index is designated here as EF4jt.

The financial freedom index (FINF) is an indicator of the degree to which the financial sector of the economy is free from *excessive* banking and financial regulation (Heritage Foundation, 2013, p. 14). This economic freedom index is designated here as EF5jt.

Secure property rights provide citizens the confidence to engage in entrepreneurial activities. The ability to accumulate private property is the primary motivation in a market economy; a "rule of law" that protects property rights is critical to an efficient free market economy. The greater the protections afforded to property rights under the rule of law, the greater the property rights freedom index, *PRF* (Heritage Foundation, 2013, pp. 14-15). This economic freedom index is designated here as EF6jt.

Political corruption by public officials manifests itself in many forms, including bribery, extortion, embezzlement, and graft, and it enables certain public officials to steal or otherwise profit illegitimately from public funds. The freedom from corruption index, *CORRF*, indicates the degree to which an economy is free from such forms of corruption (Heritage Foundation, 2013, p. 15). This economic freedom index is designated here as *EF7jt*. The labor freedom index, LF, is a composite index that reflects freedom from government wage and price controls, and, thus, measures the ability of both workers and firms to interact freely without restrictions imposed by government. The greater the degree of labor freedom in an economy, the more efficient and productive its labor market will be (Heritage Foundation, 2013, p. 15). This economic freedom index is designated here as EF8jt.

The business freedom index, *BF*, reflects the individual's right and ability to freely conduct entrepreneurial activities. It is argued that burdensome and/or redundant regulations are the most common barriers to the free conduct of entrepreneurial endeavors, and indeed are a *de facto* kind of tax, one that makes it more costly for entrepreneurs to operate their enterprises (Heritage Foundation, 2013, p. 12). This economic freedom index is designated here as *EF9jt*.

Finally, the fiscal freedom index (Heritage Foundation, 2013) reflects the freedom of individuals and firms to keep and control their income and wealth for their own use/benefit. Fiscal freedom is a measure of freedom from the burden of government (from the *revenue* side): the lower this burden, the higher the value of the fiscal freedom index. Technically, fiscal freedom includes freedom from the tax burden, both in terms of the *top income tax rate* (on corporations and individuals, taken separately) and the overall amount of tax revenue as a percentage of a nation's GDP. The underlying idea is that higher taxation not only interferes with the ability of individuals and businesses to pursue their goals in the marketplace, it may also reduce the incentive to work, save, invest, or take risk. This economic freedom index is designated here as EF10jt.

In this section of the study, we replace the economic freedom measure *EF10jt*, which can be regarded as *focusing perhaps excessively* on the *top personal income tax rate* on individuals and the *top corporate income tax rate* (Cebula and Mixon, 2014), with arguably a simpler measure of the tax burden, namely, the overall level of all taxes in each OECD nation expressed as a percent of GDP. This variable, *TAXjt-1*, is discussed below in more detail. Accordingly, the overall economic freedom measure in this study is a slightly modified version of the overall Heritage Foundation index, namely:

$$ECONFREEDOM9jt = \sum_{n=1}^{9} EFnjt/9$$
(2)

Initially, in addition to the hypothesized impact of this average economic freedom measure on unemployment rates, this study hypothesizes impacts for two economic "control" variables and one political "control" variable. The control variables are the ratio of *all* government tax collections to the GDP in country j in year t-1, expressed as a percent (TAXjt-1); the nominal value of the *long term* rate of interest in country j in year t-1 (LONGINTjt-1); and POLSTABjt-1, which is an index measuring the degree of political stability in nation j in year t-1.

The higher the overall tax burden in a nation, the lower the overall disposable income and hence the lower the aggregate level of purchases of goods and services. In turn, the latter implies a higher unemployment rate in the nation, *ceteris paribus*. Furthermore, the higher the long term rate of interest, the lower the present value of investment for firms, and hence the lower the rate of investment in new plant and equipment. Moreover, according to the conventional wisdom, consumption, particularly that of durable goods, is a decreasing function of the long term rate of interest, ceteris paribus. Thus, the higher the long term interest rate, the lower the pace of economic activity, and hence the higher the unemployment rate, ceteris paribus. Finally, POLSTABit-1, which is an index of political stability and the absence of violence in nation *j*. It is hypothesized that economic prosperity for an economy as a whole should be an increasing function of political stability, which by its very nature, promotes orderly or lower risk decision making and greater market efficiency (World Bank Institute, 2012, p. 9) and thereby should act to elevate the pace of economic activity and in turn to reduce the unemployment rate, ceteris paribus.

3. Initial 2sls estimation results using pooled time series/crosssection data

Based on the eclectic economic freedom-based model of investigating the determination of the unemployment rate in OECD nations described above, the following equation is to be estimated:

$$UNEMPRATE jt = f (ECONFREEDOM9 jt, TAX jt-1, LONGINTR jt-1, POLSTAB jt-1, TREND)$$
(3)

It should be observed that the dependent variable, UNEMPRATE<sub>it</sub>, and the economic freedom variable, ECONFREEDOM9*jt*, are contemporaneous. Thus, the possibility of simultaneity bias between these two variables arises. Accordingly, the model in equation (3) is estimated by 2SLS, with the instrumental variable being the two-period lag of the central government budget deficit, DEFYt-2. The variable DEFYt-2 was chosen as the instrument because it is highly correlated with the dependent variable and it is uncorrelated with the error term in the system. Observe the presence of the variable *TREND* in the model; this is a linear trend variable included in order to allow for trending of the data over the study period.

Data for the economic freedom variable in equation (3) were obtained from the Heritage Foundation (2013); data for the unemployment rate, tax, budget deficit, and interest rate variables were obtained from the OECD (2012); and data for the political stability variable were obtained from the World Bank Institute (2012). Descriptive statistics for each of the variables in the analysis are provided in Table 1<sup>1</sup>.

Variable	Mean	Standard Deviation
UNEMPRATEjt	6.663	3.273
ECONFREEDOM9jt	68.91	7.175
TAXjt-1	36.916	7.199
LONGINTRjt-1	4.804	2.239
POLSTABjt-1	0.7712	0.5334

TABLE 1 - Descriptive Statistics

Equation (3) is estimated in linear form, first adopting the Newey-West (1987) heteroskedasticity correction and then, as a modest test of robustness, using the White (1980) heteroskedasticity correction. These 2SLS results are provided in columns (a) and (b), respectively, of Table 2.

All of the estimated coefficients shown in column (a) of Table 2, except for the interest rate variable (LONGINTRjt-1), exhibit the expected signs. In addition, the coefficients on three of the four explanatory variables (ECONFREEDOM9jt, TAXjt-1, and POLSTABjt-1) are statistically significant at the 1% level, whereas the estimated coefficient on the interest rate variable, LONGINTRjt-1, fails to be statistically significant at the 10% level. Furthermore, the

<sup>&</sup>lt;sup>1</sup> A complete dataset for Iceland was unavailable, so that only 29 of the 30 member OECD nations could be studied.

*F*-statistic (3.76) is statistically significant at the 1% level, attesting to the overall strength of the model. Finally, the DW = 1.82, so that autocorrelation is not a serious concern.

Dependent Variable: UNEMPRATEjt					
	(a)	(b)	(c)	(d)	
Explanatory Variables					
Constant	20.57	20.57	20.3	20.3	
ECONFREEDOM9jt	-0.266**	-0.266**	-0.263**	-0.263**	
	(-7.57)	(-6.47)	(-6.49)	(-5.74)	
TAXjt-1	0.144**	0.144**	0.146**	0.146**	
	(3.38)	(3.42)	(3.15)	(3.40)	
LONGINTRjt-1	-0.126	-0.126	-0.119	-0.12	
	(-1.46)	(-1.32)	(-1.22)	(-1.08)	
POLSTABjt-1	-1.844**	-1.844*	-1.841**	-1.841*	
	(-2.86)	(-2.37)	(-2.82)	(-2.35)	
TREND	0.506	0.506	0.51	0.51	
	(1.27)	(1.51)	(1.27)	(1.49)	
<i>G8DUMMY</i>			-0.108	-0.108	
			(-0.20)	(-2.21)	
F	3.76**	3.76**	3.17**	3.17	
DW	1.82	1.82	1.81	1.81	
Rho	0.08	0.08	0.09	0.09	

 TABLE 2 - 2SLS Estimates, Pooled Time Series/Cross-Section Data,

 OECD Nations

Terms in parentheses are *t*-values. Estimations (a) and (c) adopt Newey and West (1987): correction; estimations (b) and (d) adopt White (1980) correction. **\*\*** Indicates statistically significant at 1% level, and **\***indicates statistically significant at 5% level.

Similarly, in column (b), three of the estimated coefficients exhibit the hypothesized signs (with the interest rate variable, LONGINTRjt-1, again being the exception), with two being statistically significant at the 1% level (ECONFREEDOM9jt and TAXjt-1) and one being statistically significant at the 5% level (POLSTABjt-1)<sup>2</sup>. The remaining coefficient (for LONGINTRjt-1) again fails to be statistically significant at the 10% level.

Based upon these two sets of findings, it can be inferred that, as hypothesized, the unemployment rate in OECD nations over the study period was an increasing function of TAXjt-1, the ratio of all taxes paid to the GDP level (expressed as a percent), and a decreasing function of *POLSTABjt-1*, the degree of political stability<sup>3</sup>. More importantly, however, in view of the objective of this study, the unemployment rate in OECD nations was a decreasing function of economic freedom (as defined) over the 2003-2007 study period. This is consistent with the fundamental linkage established by Okun (1962) insofar as the economic growth (rising real GDP) resulting from greater economic freedom in the OECD induced the observed decline in the unemployment rate in OECD nations.

#### 4. Modest robustness testing

As a further, albeit very modest, robustness test of the estimation results for the hypothesized impact of economic freedom on the unemployment rate, the model is next expanded to include a dummy variable, namely, *G8DUMMY*, which is a binary variable assuming a value of 1 for G8 nations and a value of 0 otherwise. Inclusion of this dummy variable is undertaken in order to test whether being a G8 nation has a significant impact on the unemployment rate, *ceteris paribus*.

Estimating equation (3) in linear form by 2SLS with this additional right-hand-side variable included in the model yields the results shown in columns (c) and (d) of Table 2. The results summarized in column (c) of Table 2 reflect adoption of the Newey-West (1987) heteroskedasticity correction, whereas the results in column (d) reflect adoption of the White (1980) correction. The

<sup>&</sup>lt;sup>2</sup> Statistical significance is actually at the 2% level in this case.

 $<sup>^{\</sup>rm 3}$  The unemployment rate again is unaffected by the nominal long term interest rate.

G8DUMMY fails to be statistically significant at the 10% level in both columns (c) and (d). The results in column (c) and (d) are entirely compatible with those in columns (a) and (b).

### 5. An additional robustness test

In this section of the study, we test the robustness of the findings found in Table 2 and discussed in Sections 3 and 4 above by further redefining the economic freedom variable. In particular, the economic freedom components of the variable ECONFREEDOM9jt include business freedom, which is designated here as EF9jt. In point of fact, this variable consists primarily of regulations imposed on businesses. As arguably a more useful measure of regulation, we adopt the variable REGQUALjt, an index of the overall quality of regulation in name j in year t (World Bank Institute, 2012, p. 9); a higher value for this variable implies better quality regulation. Accordingly, the economic freedom index is now described by the following:

$$ECONFREEDOM8jt = \sum_{n=1}^{8} EFnjt/8$$
(4)

Furthermore, the new equation to be estimated by 2SLS is given by:

$$UNEMPRATE jt = f (ECONFREEDOM8 jt, TAX jt-1, LONGINTR jt-1, POLSTAB jt-1, G8DUMMY, REGQUAL jt-1, TREND)$$
(5)

This specification includes all of the types of variables considered in columns (c) and (d) of Table 2, but with the new economic freedom measure (*ECONFREEDOM8jt*) substituted for the original economic freedom measure (*ECONFREEDOM9jt*). It also includes the regulatory quality variable.

The 2SLS estimate of the linear form of equation (5), adopting the White (1980) heteroskedasticity correction, is found in Table 3. In this estimate, the unemployment rate is a decreasing function, at the 1% statistical significance level, of economic freedom (as newly defined). This outcome is as hypothesized and entirely consistent with the results shown in Table 2. In addition, the unemployment rate is an increasing function of the tax burden (at the 1% level) and a decreasing function of the political stability index (at the 5% level). These results also are compatible with those in Table 2. Thus, the hypothesis that the unemployment rate is a decreasing function of economic freedom is upheld under this somewhat more rigorous robustness testing.

## TABLE 3 - Additional 2SLS Estimate, Pooled Time Series/Cross-Section Data, OECD Nations

Dependent Variable: UNEMPRATEjt	
Explanatory Variables	
Constant	24.83
ECONFREEDOM8jt	-0.34**
	(-4.18)
TAXjt-1	0.19**
	(4.11)
LONGINTRjt-1	-0.12
	(-1.14)
POLSTABjt-1	-3.05*
	(-2.05)
REGOUALit-1	0 298
	(0.27)
	(0.27)
G8DUMMY	0.164
	(0.33)
TREND	0.455
	(1.49)
F	5.95**
DW	1.77
Rho	0.10

Terms in parentheses are *t*-values.

\*\* Indicates statistically significant at 1% level, and \* indicates statistically significant at the 5% level.

### 6. CONCLUSION

Based on the four estimates provided in Table 2 of this study as well as another estimate provided in Table 3 of this study, it can be inferred that, as hypothesized, the unemployment rate in OECD nations over the study period was an increasing function of TAXjt-1, the ratio of all taxes paid to the GDP level (expressed as a percent), while being a decreasing function of POLSTABjt-1, the degree of political stability. More important, however, in view of the objective of this study, the unemployment rate in OECD nations was a decreasing function of economic freedom over the 2003 to 2007 study period. Clearly, these conclusions implicitly depend upon the underlying tenet of the work by Okun (1962) linking the real GDP growth rate and the aggregate unemployment rate.

Naturally, these conclusions are only preliminary. More work, work that considers additional and more recent years (including and beyond the years of the Great Recession) and alternative variables (specifications), and, ultimately, data for the four new OECD nations joining in 2010 as well, is clearly needed. Furthermore, the preliminary nature of these findings is emphasized in terms of the fact that the study period covers only years prior to the Great Global Recession that began, effectively, around the end of the year 2007. Thus, although these results would appear to suggest a strong inverse relationship between unemployment rates and economic freedom, this relationship requires yet further scrutiny and formal investigation. Indeed, future research might consider using economic freedom data from alternative sources, such as those developed by Gwartney *et al.* (2013), to test for the robustness of the present findings.

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#### ABSTRACT

This exploratory study empirically investigates the hypothesis that the higher the degree of economic freedom in a nation, the lower the unemployment rate in that nation, *ceteris paribus*. This hypothesis is based on the idea that greater economic freedom leads to greater real GDP growth, which in turn reduces the unemployment rate. As such, it represents a *de facto* acceptance (in principle) of Okun's Law. The framework studied consists of a dataset for the member nations of the OECD (except Iceland) during the period 2003 to 2007, which precedes the Great Recession. The model in this exploratory study, which integrates a measure of the tax burden, a long term interest rate, and a measure of political stability, along with a measure of overall economic freedom, provides estimations finding that the unemployment rate is a decreasing function of the overall average level of economic freedom. Robustness testing, which involves narrowing the definition of the economic freedom measure and introducing a variable reflecting regulatory quality, leads to same conclusion, namely, that greater economic freedom reduces the unemployment rate.

Keywords: Unemployment Rate, Economic Freedom, Taxes as a Percent of GDP, Political Stability

JEL Classification: P10, P12, P14, R12, R50

## RIASSUNTO

## L'impatto della libertà economica sul tasso di disoccupazione nei paesi Ocse: uno studio esplorativo sulla base dell'accettazione della legge di Okun

Questo studio presenta una verifica empirica sull'ipotesi secondo cui, a parità di condizioni, maggiore è il livello di libertà economica in un paese, minore sarà il tasso di disoccupazione. Tale ipotesi si basa sull'idea che una maggiore libertà economica porti ad una maggior crescita del PIL reale, che a sua volta riduce il tasso di disoccupazione. Ciò rappresenta l'accettazione *de facto* della legge di Okun. Il modello si basa su un dataset per i paesi Ocse (esclusa l'Islanda) durante il periodo 2003-2007, cioè prima della grande crisi. Questo modello, che si basa su un indice di pressione fiscale, sul tasso di interesse a lungo termine e su un indicatore di stabilità politica, insieme a un indice della apertura economica generale, fornisce stime che evidenziano che il tasso di disoccupazione è una funzione decrescente del livello generale medio della libertà economica. I test di robustezza, che includono una definizione più ristretta di libertà economica e l'introduzione di una variabile che riflette la qualità dei controlli, porta alla stessa conclusione: una maggiore libertà economica riduce la disoccupazione.