

# An Analysis on Economic Opportunity

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### Abstract

Economic opportunity can serve as another factor in growth and development. This paper identifies the extensity and intensity channels through which economic opportunity are created. Data on 24 variables for 184 world economies for the period 2000-2010 are collected for the empirical analysis. The methodology involves the use of principle component analysis in constructing three indices for the parametric and non-parametric regression analysis. In addition to the aggregate analysis, economies are divided into OECD and non-OECD economies so as to examine their different performance in economic opportunity. Extensity seems to be the more important channel to all economies, but for non-OECD economies, a higher performance in intensity can enrich the effect of extensity on economic opportunity.

Keywords: Economic opportunity, Extensity, Intensity, World economy.

*JEL* classifications: B4, C8, O1.

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## I Introduction

Land, labor and capital are the three production factors, though entrepreneurship has been included as another input factor. In transforming production factors to output, earlier studies using input-output analysis have given way to analysis on total factor productivity and efficiency (Miller and Blair, 2009; Solow, 1957; Douglas, 1976; Li and Liu, 2011). In addition to the debate and studies on endogenous growth, development studies have focused on regional differences, influence of socio-economic variables and distinction between domestic and external variables in growth and globalization, and an individual's function in the capability approach (Aghion and Howitt, 1998; Barro, 1999; 2000; Sen, 1992, 1993; Deininger and Squire, 1996; Bhagwati, 2004; Tamura, 2006; Li and Zhou, 2010; Zhou and Li, 2011; Li, 2012; Krishnakumar, 2007; Panzironi and Gelber, 2012).

The concept of "gaps" has been used to explain growth constraints in developing countries. Thirlwall (1978) pointed to the savings gap and foreign exchange gap in the "two gaps analysis", while Romer (1993) raised the "idea gap and object gap" in the access to ideas capable of generating economic values. Indeed, literatures on the numerous aspects of growth and development have included financial liberalization, capital flow, trade, regional success, human capital development, business cycles in development, fiscal applications, income distribution, distinction between long run and short run development through stages, and advancement in institutions, there are still unanswered questions and idea gaps in the existing knowledge on economic growth (Bekaert, et al., 2005; Grossman and Helpman, 1990; Lucas, 1990; Kenny and Williams, 2001; Acemoglu and Robinson, 2012; Galor, 2000; Easterly and Rebelo, 1993; King, et al., 1988; Temple, 1999; Young, 1994; Kejak, 2003; Kosempel, 2004).

One possible explanation gap could be in situations when economies with similar resource endowments, such as China and India, differ considerably in their growth and development. This paper hypothesizes that difference in economic opportunities can lead to difference in growth and development. The term, economic opportunity, has often been used as titles in numerous studies. For example, Demirgüç-Kunt and Levine (2008) considered the economic opportunities arising from financial restructuring and liberalization, and O'Neil (2012) considered the opportunity potentials of the BRIC countries, while Kim (2007) discussed economic opportunity through the eradication of racial discrimination. Despite its frequent usage, there is a lack of

literature that uses economic opportunity as a mechanic to growth and development (Lucas, 1988).

Conceptually, economic opportunity reflects the growth or development potentials as a result of some economic activities. However, the term economic opportunity is intuitive, invisible, intangible, non-quantifiable, immeasurable, but can be cumulative. Intuitively, economic opportunity shows a process that indicates the degree of effectiveness between an *ex-ante* economic situation, where production factors are available, and an *ex-post* economic situation, where opportunity outcomes are generated. Economic opportunity can be defined as a process, conduit or channel through which economic possibilities and chances are created from the extensive and intensive applications of production factors.

This paper will first consider the meaning of economic opportunity, discussing the two channels of extensity and intensity in the creation of economic opportunity. Economic opportunity is considered as a latent variable that could be predicted by observable variables. Before conducting an empirical analysis, Section III explains the proxy variables selected for economic opportunity, intensity channel and extensity channel. Data mainly from the World Bank and the Human Rights Index are used to identify a total of 24 variables for the sample of 184 world economies for the 11 years' period from 2000 to 2010. The empirical analysis will be conducted on the entire sample, as well as a division between the 34 advanced OECD economies and the remaining 150 developing non-OECD economies.

Section IV discusses the methodology that comprises of the principle component analysis to identify the weights of the 24 variables grouped under different categories. The weights are then used to calculate three indices for economic opportunity, extensity and intensity. Both parametric linear regression and non-parametric regression analyses are applied to the entire sample as well as the division between OECD and non-OECD economies. The empirical results are reported in Section V, while Section VI concludes the paper.

## II Understanding Economic Opportunity

One hypothesis is that economic opportunities can differ among economies even with similar endowment background, due probably to the difference in the utilization of resources and the environmental, and/or complementary conditions through which the resources are being

utilized. For example, a war-prone country would be less likely to generate economic opportunity as resources have been geared to military activities. On the contrary, a stable and disciplined economy that attracted foreign resources could generate multiple economic opportunities. Economic opportunity could be another source of scarcity in development, as its availability could impact on economic outcomes. Theoretically, economic opportunity depends on a collection of factors that could either lead to an expansion in the amount of available resources or an increase in the amount of economic activities given the available resource endowment. Furthermore, due to its cumulative nature, an “opportunity multiplier” could exist, as the emergence of one would give rise to more economic opportunities.

Economic opportunity can be regarded as a latent variable predictable by other observable variables in the multiple indicators multiple causes (MIMIC) model (Joreskog and Goldberger, 1975). For example, economic opportunity can typically be seen from the number of job advertisements and growth in employment and the rise in real wage can be a proxy of upward mobility as economic opportunity multiplies. To conduct an empirical analysis on economic opportunity using available world data and by taking an aggregate approach, one can construct two channels through which economic opportunities are created.

First, the extensity channel covers the width of resource availability. Typical proxy variables for the extensity channel can include domestic capital, foreign direct investment and official assistance from international organizations. The availability of resources is fundamental to the increase in economic opportunity, as more economic opportunities can be created with a larger supply of resources. Secondly, the intensity channel covers the depth through which economic opportunity can be generated from available resources. The intensity channel can include a number of factors classified into various categories. For example, the business environment would consider the easiness of setting up a business (for example, see Rana and Chai, 2013). The socio-economic factors would consider civic stability and religion influence, while infrastructural variables would include the extent of communication. The geographical contour would examine whether the country has a coast line or is land-locked. All these possibilities could impact on the economic opportunities independently from the availability of resources. There can be a variety of intensity proxies that can complement the availability of resources in promoting economic opportunity.

### III Data Compilation

The World Bank has made available a large number of world data. Such data as net migration, workers' remittance and compensation of employees, net business registered can be used as indicators for economic opportunity. The proxy variables for the extensity channel can include IBRD loans and IDA credits, firms using banks to finance investment and domestic credits. There can be a large number of proxies for the intensity channel that examine the complementary factors to economic opportunity. For example, patent applications, tax revenue, time required to start a business can provide good predictions. Extensity and intensity proxy variables are considered as two independent groups of factors that can influence the extent of economic opportunity in a certain period of time.

We category the variables from the World Bank data into a number of feasible groups, and select the most representative variable from that category. In education, for example, we can have expenditure on primary education, expenditure on secondary and total public expenditure on education. After conducting a correlation test among the variables, the latter was chosen as an indicator on education in the intensity channel. There is a dilemma in choosing the relevant proxy variables between the length of the time series and the spread of countries. Typically, fewer countries have longer time series data. Using the criterion that the variables must have at least 80 percent of the data points produces a total data set of 184 economies for the 11 years from 2000 to 2010 for empirical analysis. The chosen proxy variables for the empirical analysis can best be regarded as representatives. For the remaining missing values, we either take the average values for data in between years, or construct a trend value for the missing value at the beginning or the end in the sample period. Regression analysis is used to locate the missing values if there are only a few data points for a chosen variable. Lastly, the data for a neighboring economy with similar background is used if the entire data series is unavailable. For example, the Singapore data are used for the missing values of expenditure on health care and mortality rates for both economies of Hong Kong and Macao.

From the chosen data set, economic opportunity can be seen in the performance of industry, service and export, employment and communication in an economy. Industry and service output values are the end result and showed the *ex-post* outcome of economic opportunities. The size of employment obviously can directly reflect the magnitude of economic opportunity. Economic

opportunity can also be reflected in the amount of personal and business communications, as communication does correlate positively with economic opportunity. There are a total of nine proxies for economic opportunity, including the value added in industry and services (expressed as percentage of GDP), export of goods and services (expressed as percentage of GDP), export of high-technology products (as percentage of total manufactured exports). The employment proxy includes the employment to population ratio (15+ years of age) and the labor participation rate (percentage of population above 15 years of age). The data on air transport (registered carrier departures worldwide), internet users (per 100 people) and mobile and fixed-line telephone subscribers (per 100 people) are used to proxy communication.

A total of six proxies for the extensity channel include the categories of domestic and foreign sources of capital. The categories in the extensity channel are straight forward as they include all the available channel of resources. The three data variables for domestic capital expressed as percentages of GDP include gross capital formation, domestic credit to private sector and market capitalization of listed companies. Domestic investment in the form of gross capital formation should give rise to employment opportunities. This effectively reflects the size of domestic investment. Domestic credit to the private sector reflects the amount of business opportunities through the banking sector. Economic opportunities arising from the stock market can be seen from market capitalization of listed companies. The three data variables for foreign capital expressed in US currency as percentage of GDP are the net inflow of portfolio equity, foreign direct investment and net official development assistance and official aid received.

The nine proxies for the intensity channel can be grouped under the categories of quality of living that consisted of carbon emissions (CO<sub>2</sub>, metric tons per capita) and inflation indicated by the Consumer Price Index. Environmental protection is a contemporary measure on the quality of life as pollution is regarded as a “social bad”. Inflation hurts the fixed income earners and reduces their purchasing power. Both carbon emission and inflation should impact on economic opportunity negatively. The education category consists on total public spending on education (percentage of GDP), while the health category can be seen from total health expenditure (percentage of GDP) and mortality rate (less than 5 years of age per 1,000 live births). Both education and health constitute an individual’s economic capability, which in turn allow the individual to be better equipped as opportunity arises. The reverse of the mortality rate data would show the “survival rate”. The human right category contains a total of four proxies of

electoral self-determination, freedom of religion, freedom of speech and independence of the judiciary. These proxies show the political, ethical and religion impact on economic opportunity. The data on human right are obtained from the Cingranelli-Richards (CIRI) Human Rights dataset.

Figure 1 summarizes the proxy variables in the MIMIC model. Economic opportunity as a latent variable would be predicted by a total of nine proxies grouped into four categories of industry and services values, export of goods and high-technology, employment and communication. Economic opportunity will be explained by the extensity and intensity channels, both of which are also latent variables. The extensity channel can be explained by two categories of domestic and foreign sources of capital that give a total of six proxies. The intensity channel can be explained by proxies grouped under four categories of quality of life, education, health and human rights, providing a total of nine proxies.

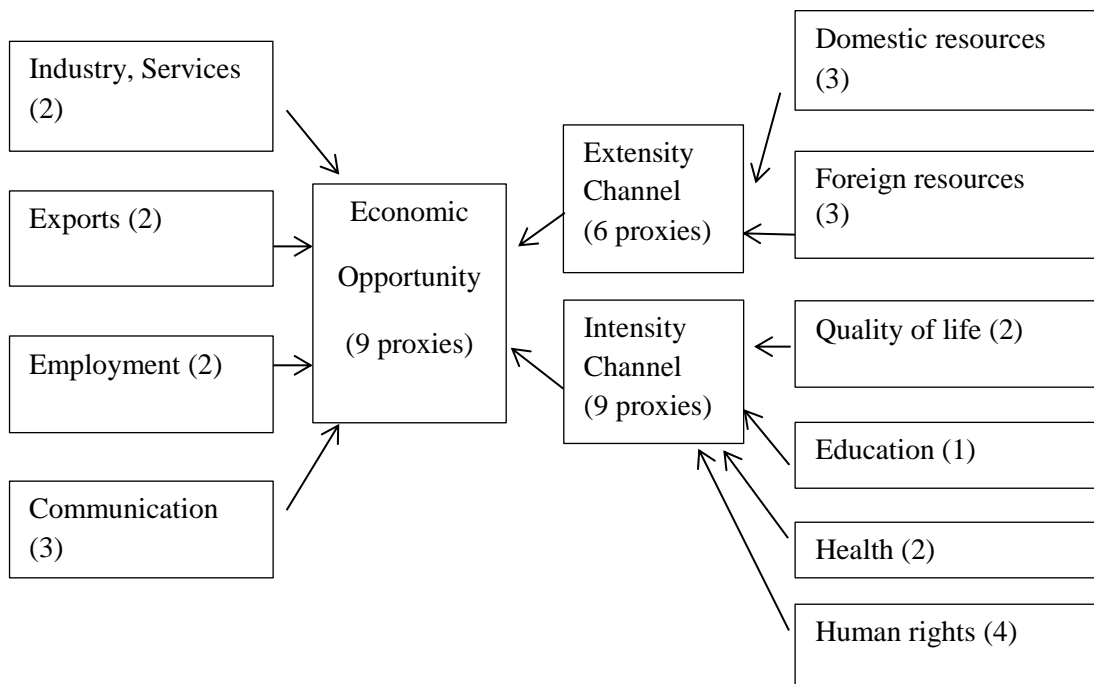


Figure 1 The MIMIC Model for Analyzing Economic Opportunity

#### IV Methodology

The selected variables show different scales. For example, a variable that ranges between 0 and 100 will outweigh a variable that ranges between 0 and 1. We first standardize the variables by transforming the data into comparable scales in the range [0, 1]. For each year and each variable, with the exception of carbon emissions, inflation and mortality rate, all data point are recalculated as  $(V - \text{Min}(V))/(\text{Max}(V) - \text{Min}(V))$ , where V represents the value of the variable in the original data set. For the variables of carbon emissions, inflation and mortality rate, the formula for standardization is  $(\text{Max}(V) - V)/(\text{Max}(V) - \text{Min}(V))$ . This method allows variables to have differing means and standard deviations but equal ranges. In this case, there is at least one observed value at the 0 and 1 endpoints.

The principle component analysis (PCA) is used initially to construct the three indices of economic opportunity, extensity and intensity. The PCA method carries various advantages. Firstly, the PCA weightings maximize the variance of the indices. Due to possible correlation among the chosen proxy variables, the PCA method can reduce the number of factors to capture the maximum variation. In addition, the method can commensurate on the different measurement units of the variables. Most importantly, the PCA selects the weights by the data itself (Rencher, 2002). The principal components are extracted from the correlation matrix of the variables, in a way that they accounted for the highest percentage of variation. The PCA is applied to the whole sample period to ensure consistence.

There is no unified methodology in constructing the weight of individual indicators, but weights usually have an important impact on the index value and on the resulting ranking. The factor analysis combined with PCA is applied to determine the weights for the proxy variables in constructing the three indices. Suppose that there are p variables  $x_1, \dots, x_p$  that serve as the indicators of all factors in the construction of the index and m underlying common factors  $f_1, \dots, f_m$ . The common factors are orthogonal to each other. We have the following basic model:

$$\begin{aligned}x_1 - \mu_1 &= \alpha_{11}f_1 + \alpha_{12}f_2 + \dots + \alpha_{1m}f_m + \varepsilon_1 \\x_2 - \mu_2 &= \alpha_{21}f_1 + \alpha_{22}f_2 + \dots + \alpha_{2m}f_m + \varepsilon_2 \\&\vdots \\x_p - \mu_p &= \alpha_{p1}f_1 + \alpha_{p2}f_2 + \dots + \alpha_{pm}f_m + \varepsilon_p,\end{aligned}$$



where each error term is accounted for the part of the variable that is not common with the other variables, the coefficients  $\alpha_{ij}$  are factor loadings, showing how each individual  $x_i$  depended on the common factors  $f_1, \dots, f_m$ . We follow Rencher (2002, Chapter 13) to assume the following:

$$\begin{aligned} E(f_j) &= 0, \text{Var}(f_j) = 1, \text{cov}(f_j, f_k) = 0, j \neq k; \\ E(\varepsilon_i) &= 0, \text{Var}(\varepsilon_i) = \psi_i, \text{cov}(\varepsilon_i, \varepsilon_j) = 0, i \neq j; \\ \text{cov}(\varepsilon_i, f_j) &= 0. \end{aligned}$$

From these assumptions, the first  $m$  principal components ( $m$  to be determined below) are considered as good candidates for the common factors  $f_1, \dots, f_m$ . We thus choose the first  $m$  principal components as the common factors; that is,  $f_1, \dots, f_m$  are the first  $m$  principal components of the correlation matrix of the  $p$  variables  $x_1, \dots, x_p$ . Without loss of generality, we use standardized variables  $x_1, \dots, x_p$ . Therefore  $\alpha_{ij} = \text{corr}(x_i, f_j)$ . The variance of  $x_i$  can be partitioned into a component due to the common factors  $f_1, \dots, f_m$ , namely,

$$\sigma_{ii} = \text{Var}(x_i) = (\alpha_{i1}^2 + \alpha_{i2}^2 + \dots + \alpha_{im}^2) + \psi_i \equiv h_i^2 + \psi_i,$$

where communality  $= h_i^2 = \alpha_{i1}^2 + \alpha_{i2}^2 + \dots + \alpha_{im}^2$ , and specific variance  $= \psi_i$ . They are also called the common variance and specific variance, respectively. The factor loadings (the correlation between  $x_i$  and the principal components)  $(\alpha_{i1}, \alpha_{i2}, \dots, \alpha_{im})$  and the communality  $h_i^2$  reflect the contribution of  $x_i$  to the principal components. The larger the communality  $h_i^2$  is, the more contribution the communality has to the variance of  $x_i$ , and the more information about  $x_i$  is reflected. A larger communality of variable  $x_i$  shows higher significant differences of the individual variable in the common factor. Therefore, the communality can be used as a gist to determine the weight for each of the individual factors. We summarize the procedure of the PCA into the following steps:

Step 1: Conduct PCA on the correlation matrix  $R$  of the sample of the variables  $x_1, \dots, x_p$  and select the first  $m$  principal components  $f_1, \dots, f_m$  with the cumulative proportion of the total variance greater than 85%, i.e.  $\sum_{i=1}^m \lambda_i / \sum_{i=1}^p \lambda_i \geq 85\%$ , where  $\lambda_1, \lambda_2 \dots \lambda_p$  are the  $p$  eigenvalues of  $R$  with  $\lambda_1 \geq \dots \geq \lambda_p$ .

Step 2: For each  $x_i$  ( $i=1, 2, \dots, p$ ), calculate the correlation between  $x_i$  and each principal component  $f_j$ ,  $j=1, 2, \dots, m$ , namely,  $\alpha_i = (\alpha_{i1}, \alpha_{i2}, \dots, \alpha_{im})$ , and construct the communality

$$H_i \equiv h_i^2 = \alpha_{i1}^2 + \alpha_{i2}^2 + \dots + \alpha_{im}^2.$$

Step 3: Determine the weights  $w = (w_1, w_2, \dots, w_p)$  of indicators  $x_1, x_2 \dots x_p$  as follows:

$$w_i = \frac{H_i}{\sum_{j=1}^p H_j}$$

Finally, the Economic Opportunity Index, for example, is calculated as:  $EOI = \sum_{i=1}^p w_i x_i$ . These weights are used to calculate the value of the three indices for every country for each of the 11 years in the sample period.

The Economic Opportunity Index (EOI) will be the dependent variable, while both the Extensity Index (EXIND) and Intensity Index (ININD) will be the two independent variables in the regression analysis. The sample countries will be divided between the 34 advanced OECD economies and the 150 developing non-OECD economies. The regression is conducted using data on individual years such that the change in the impact of the independent variables can be considered. For the parametric analysis, the equation for the entire sample is:

$$EOI_{it} = \alpha_0 + \alpha_1 * EXIND_{it} + \alpha_2 * ININD_{it}, \quad (1)$$

with economy  $i$  and time  $t$ . A dummy variable is used to identify the OECD and non-OECD countries. We set the dummy variable  $OECD$  as 1 / 0 if it is an OECD / non-OECD economy.

The parametric equation becomes:

$$EOI_{it} = \alpha_0 + \alpha_1 * EXIND_{it} + \alpha_2 * ININD_{it} + \alpha_3 * OECD * EXIND_{it} + \alpha_4 * OECD * ININD_{it}. \quad (2)$$

Effectively,  $\alpha_3$  and  $\alpha_4$  show the difference of coefficients between non-OECD and OECD economies in extensity and intensity, respectively.

However, parametric models may be misspecified and lead to inconsistent and inefficient estimates and suboptimal test statistics. In nonparametric regression analysis, the predictor does not take a predetermined form but is constructed according to information derived from the data. We apply the following nonparametric model:

$$y_{it} = m(x_{it}) + v_i + u_{it}, \quad (3)$$

where  $y_{it}$  is the EOI index for economy  $i$  in year  $t$ ,  $m(x_{it})$  is an unspecified function,  $x_{it} = (ININD_{it}, EXIND_{it})$ .  $v_i$  is the unobserved country characteristics, fixed or random or no individual effects.  $u_{it}$  is the stochastic term with  $E[u_{it}|x_{it}] = 0$ .

Various specification tests are conducted before estimation. The first is the Li-Hsiao test for the individual effects in Equation (3) (see Corollary 3 in Li and Hsiao, 1998), which corresponds

to the parametric Breusch-Pagan test. The null hypothesis is  $H_0: v_i = 0$ , i.e.  $v_i + u_{it}$  is a white noise. The Li-Hsiao test statistic is asymptotically standard normal. The statistic for our sample is computed as 20.930997. Thus,  $H_0$  is rejected and the individual effects exist. Hence the second step is needed to test the null hypothesis of the random effects. We follow the  $J$ -test statistic in Henderson *et al.*(2008)

$$\hat{J} = \{nT(nT - 1)\}^{-1} \sum_{i=1}^n \sum_{t=1}^T \sum_{j=1}^n \sum_{s=1, (j,s) \neq (i,t)}^T \hat{u}_{it} \hat{u}_{js} K_h(x_{it} - x_{js}),$$

where  $\hat{u}_{it} = y_{it} - \hat{m}(x_{it})$  under the fixed effects assumption and  $K_h(v) = \prod_{s=1}^2 [h_s^{-1} k(v_s/h_s)]$ . The  $J$ -test statistic and its  $p$ -value are 0.0109 and 0.4960, respectively. So the null of random effects cannot be rejected. Hence, our empirical analysis is based on the estimation of the random effects model.

As in Ullah and Roy (1998), the nonparametric random-effects (RE) model shown in Equation (3) is estimated by local linear kernel method: the local nonparametric RE estimator of  $m$  and  $\beta$  (the partial derivatives of  $m(x_{it})$ ) can be obtained by minimizing

$$(y^* - Z^*(x)\delta(x))' K(x)(y^* - Z^*(x)\delta(x)) = \sum_{i=1}^n \sum_{t=1}^T (y_{it}^* - z_{it}^* \delta(x))^2 K\left(\frac{x_{it}-x}{h}\right),$$

where  $y^* = \Omega^{-1/2}y$ ,  $Z^*(x) = \Omega^{-1/2}Z(x)$ , and  $\Omega^{-1/2} = I_{nT} - (1 - \lambda^{1/2})DD'/T$ ;  $D = I_n \otimes \iota_T$ ,  $\iota_T$  is an  $T \times 1$  vector of unit elements.  $Z(x)$  is an  $nT \times (q + 1)$  matrix with  $it$ th element  $[1 \ x_{it} - x]$  and  $\delta(x) = [m(x) \ \beta(x)]'$  is a  $(q + 1) \times 1$  parameter vector,  $y_{it}^* = y_{it} - (1 - \lambda^{1/2})\bar{y}_i$ ,  $z_{it}^* = z_{it} - (1 - \lambda^{1/2})\bar{z}_i$ , and  $\lambda = \sigma_u^2/(\sigma_u^2 + T\sigma_v^2)$ . This amounts to doing the LS regression of  $\sqrt{K_{it}}y_{it}^*$  on  $\sqrt{K_{it}}z_{it}^* = [\sqrt{K_{it}}\lambda^{1/2} \ \sqrt{K_{it}}(x_{it}^* - x^*)]$  which gives our proposed estimator as

$$\tilde{\delta}_{RE}(x) = (Z^{*'}(x)K(x)Z^*(x))^{-1}Z^{*'}(x)K(x)y^*.$$

In our estimation, the kernels are chosen as the Gaussian function and the bandwidth is taken as  $h = c_0 \text{std}(x)(nT)^{-1/8}$ , where  $\text{std}(x)$  is the sample standard deviation of  $x$ .

By constructing the above nonparametric RE model, we can get the estimation of the two partial derivatives  $f_1$ (ININD, EXIND) and  $f_2$ (ININD, EXIND), which are the marginal effects of intensity index and extensity index on the growth of EO, respectively. To study the contingent growth effects, we equally partition  $[\min_{i,t}\{x_{it}\}, \max_{i,t}\{x_{it}\}]$  into 49 sub-intervals with 50 endpoints  $x_i$ , where  $x$  is ININD and EXIND. We are mainly interested in the following marginal effects:

$$\begin{aligned} & \hat{f}_1(\text{mean}(\text{ININD}), \text{EXIND}_i), \hat{f}_2(\text{mean}(\text{ININD}), \text{EXIND}_i) \\ & \hat{f}_1(\text{ININD}_i, \text{mean}(\text{EXIND})), \hat{f}_2(\text{ININD}_i, \text{mean}(\text{EXIND})), \end{aligned}$$

where  $i = 1, \dots, 50$ , and  $\text{mean}(x)$  is the sample mean of  $(x)$ . The estimates  $\hat{f}_1(\hat{f}_2)$  describe the contingent relationship between the marginal effects of Intensity Index (Extensity Index) and the changes in ININD and EXIND. The upper and lower bands of the bootstrap 95% pointwise confidence interval are also provided.

## V Parametric and Non-parametric Estimations

### Principle Component Analysis

Appendix Table A1 reports the result of the PCA that shows the weights of the different proxies used in calculating the three indices for economic opportunity, extensity and intensity. Among the nine proxies in economic opportunity, export of high-tech manufactures has the highest weight (19.36%), followed by air transport registered carrier departures (14.9%), value added in industry (12.6%) and exports of goods and services (10.27%). The weights of these four proxies sum to 60.13%. The four most important proxies in intensity are inflation (16.57%), health expenditure (16.42%) and public education spending (16.05), followed by carbon emission (14.41%), together they produce a total weight of 63.45% already. The weights for the six extensity proxies are more even. For the three foreign sources of capital, the weight amounted to 51.65%, while the three domestic sources of capital amounted to 48.35%.

### The Three Indices

Table 1 shows the mean and median values of the whole sample and the two subsamples of OECD and non-OECD economies. For the three indices, the mean and median values of OECD economies are higher than non-OECD economies, and the differences are statistically significant.

Table 1 The Mean and Median Values

	Whole sample [2,024]		OECD [374] (A)		Non-OECD [1,650] (B)		Test of Difference (A - B)	
	Mean	Median	Mean	Median	Mean	Median	t-test	Wilcoxon z-test
EO Index	0.265	0.252	0.346	0.345	0.247	0.242	<.0001***	<.0001***
IN Index	0.642	0.648	0.754	0.766	0.616	0.615	<.0001***	<.0001***
EX Index	0.176	0.162	0.199	0.183	0.170	0.156	<.0001***	<.0001***

Note: \*\*\* denotes significance at the 1% level. [ ] = number of observations.

Appendix Table A2 reports the 2010 ranking for the three indices, their change in ranking when compared to the 2000 ranking, and their average ranking in the sample period. The first observation is that there are quite a considerable number of economies which have moved up or down in the ranking between 2000 and 2010. There are only a handful of countries that have stayed constant in a similar position among the three indices. For example, East Timor, which ranks 178<sup>th</sup> in the Economic Opportunity Index, ranks 4<sup>th</sup> in both the Intensity Index and Extensity Index. When considering the top 20 in the 2010 ranking, there is no economy which has appeared in all three indices. China and Hong Kong that rank top ten in the Economic Opportunity Index and Extensity Index drop to below 100<sup>th</sup> in the Intensity Index. The U.S.A., that ranks 2<sup>nd</sup> in both Economic Opportunity Index and Intensity Index, falls to 47<sup>th</sup> in the Extensity Index. In short, there is diversity among the rankings of economies, suggesting that economies have performed differently in the three dimensions. Smaller world economies can also be ranked high in all the three indices. For many low ranking economies, which are mainly developing economies, a common feature is that their rankings have fallen considerably. One can conclude that there is diversity in the world among the three indices, and the top rankings may not be occupied only by advanced industrialized economies. Indeed, a number of smaller economies rank high in all three indices. Liberia that ranks second in the 2010 Extensity Index has jumped 180 positions from the 2000 ranking, suggesting considerable improvements in the extensity channel, though the average ranking is 17<sup>th</sup> in the sample period. Liberia ranks much lower in the other two indices, it has improved by 8 positions and 42 positions between 2000 and 2010, respectively, in the Economic Opportunity Index and the Intensity Index. Other than Liberia in the Extensity Index, the other few economies that moved up by over 100 positions between 2000 and 2010 are small economies which must have made improvements. Similarly, there are five economies which have fallen by over 100 positions in the Extensity Index. There are larger changes in ranking positions in Extensity Index than the other two indices.

### Parametric Estimates

Table 2 reports the parametric LS regression for the whole sample showing the coefficients for individual years and for the aggregate. The first observation is that all estimated coefficients are positive, suggesting that the chosen variables for both the extensity channel and intensity channels are useful in explaining economic opportunity. Secondly, the extensity channel is more

important to economic opportunity than the intensity channels, as the coefficients of the former are larger than the coefficients of the latter, with the exception of 2009. Despite the difference in values, the influence of both channels showed a declining trend as all their coefficients have gradually declined. The decline is obvious in 2008 and 2009 when the world economy suffered the financial crisis. On the contrary, the influence of intensity on economic opportunity is quite stable, and increments have been slight. This is not surprising as the proxy variables used in the intensity channel show mainly the long term stability of the economy rather than sudden changes. Lastly, the R-squared indicates the proportionate amount of variation in the economic opportunity explained by the independent variables in the linear regression model. The R-squared for the first few years in the sample period is larger than the latter years, implying that the explanatory variables are more powerful in the early years than in the latter years.

In the performance between OECD and non-OECD economies, columns (1) in Table 3 shows that most of the coefficients for extensity for non-OECD economies are significantly larger than zero, implying that extensity variables do have a positive impact on economic opportunity. However, column (2) shows that all coefficient estimates for intensity are not significantly different from zero. For non-OECD economies, the intensity channel is not as useful as the extensity channel in the creation of economic opportunity.

Columns (3) and (4) in Table 3, respectively, show the difference of coefficients between non-OECD and OECD economies in the impact of extensity and intensity channels on economic opportunity. For the OECD countries, we can see that most of the coefficients of OECD dummy for extensity in column (3) are not significantly different from zero, meaning that the difference between OECD and non-OECD countries is not significant and variables in the extensity channel also have a positive impact on the creation of economic opportunity in OECD countries. As for the coefficients of OECD dummy for intensity in column (4), about half of the estimated coefficients are all significantly larger than zero. We can conclude that intensity is also an important channel on the creation of economic opportunity in OECD countries.

The parametric analysis concludes that both extensity and intensity channels can have significant impact on economic opportunity for the advanced OECD economies. For non-OECD economies, economic opportunity can mainly be derived from extensity only. There can be different reasons. For developing and emerging economies, the various extensity variables show the different capital resources that could be channeled to the creation of economic opportunity.

However, one possible reason for the insignificance of intensity in non-OECD economies could be their low level of achievement in various intensity variables.

Table 2 Parametric Linear Estimation for Economic Opportunity

Year	Extensity Coefficients	Intensity Coefficients	R-squared
2000	0.694691***	0.084309*	0.254200
2001	0.555569***	0.139337***	0.224189
2002	0.418864***	0.116022**	0.156158
2003	0.451281***	0.147359***	0.181853
2004	0.279326***	0.123596***	0.099402
2005	0.282932***	0.135895***	0.098010
2006	0.180504*	0.127583**	0.061170
2007	0.203476**	0.127262**	0.077733
2008	0.142513	0.132405***	0.061870
2009	0.079411	0.168920***	0.080800
2010	0.210626**	0.123042***	0.077885
Aggregate	0.211596***	0.144338***	0.099342

Notes: \*, \*\* and \*\*\*, respectively denote significance at 10%, 5%, and 1% level.

Table 3 Parametric Linear Estimation for Economic Opportunity: OECD and Non-OECD

Year	Extensity Coefficients	Intensity Coefficients	OECD Dummy Extensity Coefficients	OECD Dummy Intensity Coefficients	R-squared
	(1)	(2)	(3)	(4)	
2000	0.605293***	-0.031660	-0.215621	0.182170**	0.378915
2001	0.450790***	0.029115	-0.042200	0.123676***	0.352711
2002	0.309643***	0.000162	0.168885	0.080675	0.304438
2003	0.341568***	0.015152	0.018124	0.113685**	0.323059
2004	0.195541**	-0.026750	0.209946	0.082527	0.288168
2005	0.138688	0.013806	0.224542	0.075945	0.277810
2006	0.063946	-0.008500	0.291188	0.061363	0.264398
2007	0.116023	-0.002890	0.245825	0.066329	0.263873
2008	0.178728*	-0.043910	-0.645329*	0.407390***	0.276168
2009	0.053539	0.028556	0.152648	0.084740*	0.248891
2010	0.174716*	-0.002920	0.019859	0.107485**	0.234266
Aggregate	0.152738***	0.005969	0.087209*	0.105758***	0.273489

Note: Notes: \*, \*\* and \*\*\*, respectively denote significance at 10%, 5%, and 1% level.

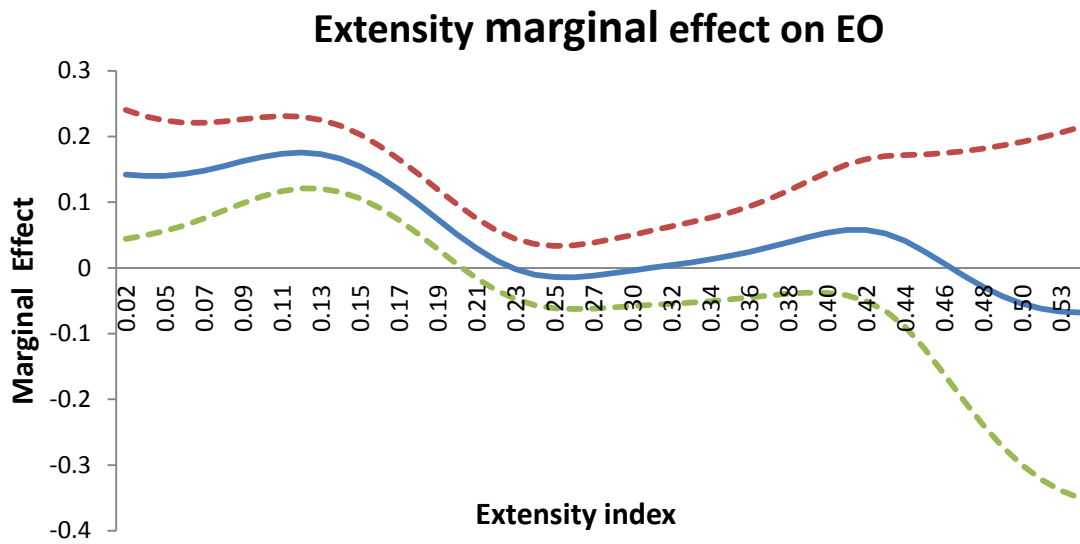
### Non-parametric Estimates

The non-parametric estimates can provide additional results for the two channels on economic opportunity. Figure 2 shows the contingent relationship between the marginal effects of the two indices on growth of economic opportunity. The extensity index varies from 0.0244 to 0.5358, while the mean value of intensity is 0.642. In Figure 2(a), the non-parametric estimate shows that at a low level, the marginal effect of the extensity index is positive and significant on economic opportunity, implying that economies with a low level of extensity index can obtain more economic opportunity by improving the performance of their extensity variables. However, the impact declines as the extensity index keeps rising, suggesting that when the intensity index is also at a relatively low level, improvements in the extensity variables would not help to gain more economic opportunity. In Figure 2(b), the marginal effect of intensity index is insignificant at most of the data points.

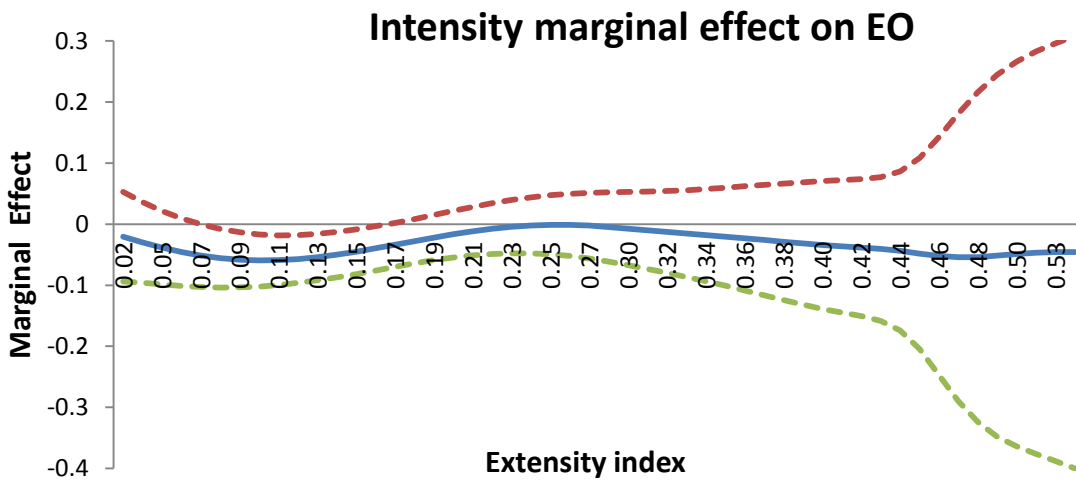
Figure 3 shows the contingent relationship between the marginal effects of two indices on growth of the intensity index. The scale of the intensity index ranges from 0.2174 to 0.9299, while the extensity index is kept at its mean value at 0.176. In Figure 3(a), the marginal effect of the extensity index on economic opportunity is insignificant when the intensity index is at its low level, but it becomes positive and significant as intensity index increases. The lesson is that when the intensity index is increasing and after it has reached a certain level, the marginal effect of extensity on economic opportunity becomes positive and significant. Furthermore, the increase in the marginal effect means that the intensity level can affect the impact of extensity on economic opportunity. The marginal effect of intensity on economic opportunity shown in Figure 3(b) is not significant at most of the data points.

The two observations suggest that the extensity index is more relevant than the intensity index to economic opportunity. Firstly, at low level of extensity, the increase in extensity can promote economic opportunity, but the impact is constrained by the intensity index. Secondly, an improvement in the intensity index does produce a positive marginal effect of extensity on economic opportunity.



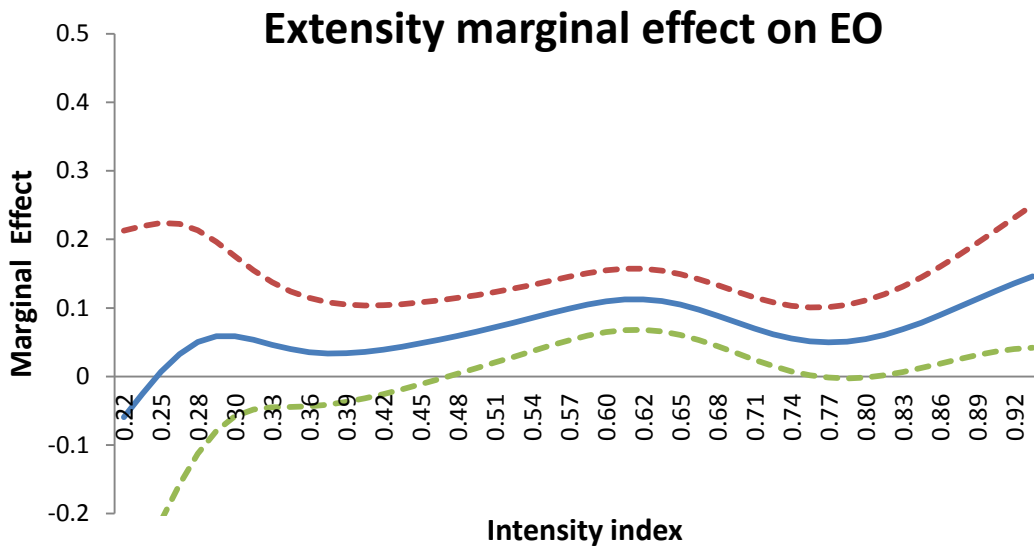


(a)

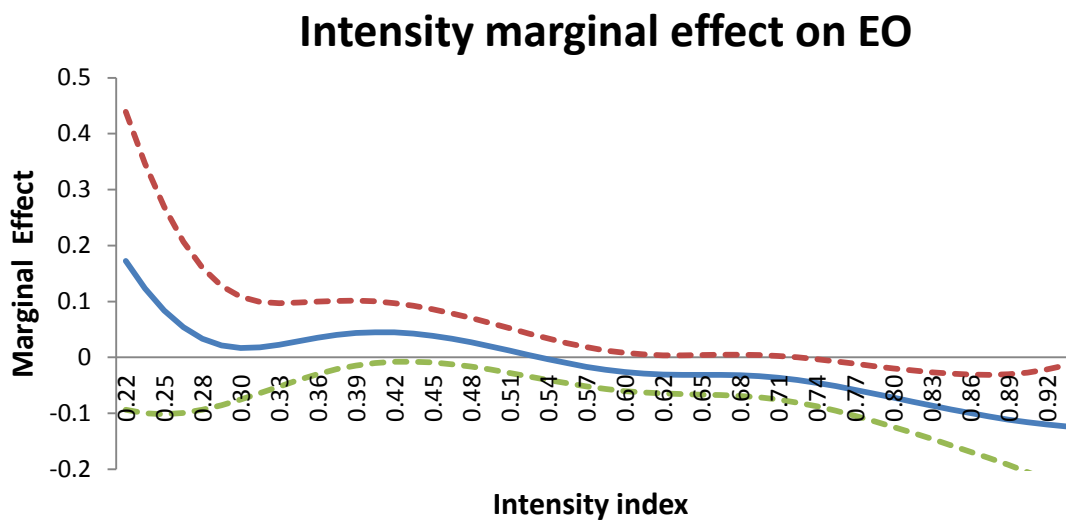


(b)

Figure 2 The Two Marginal Effects on Economic Opportunity with Changes in Extensity Index

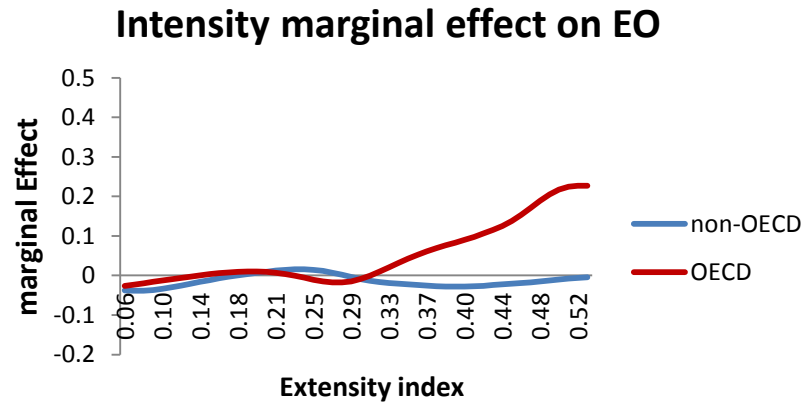


(a)

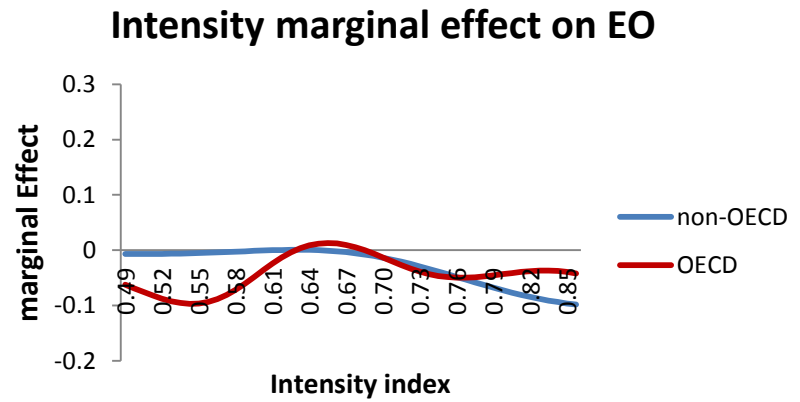


(b)

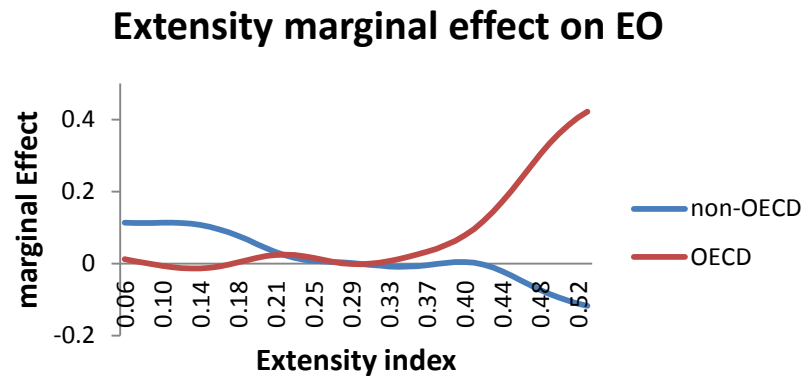
Figure 3 The Two Marginal Effects on Economic Opportunity with Changes in Intensity Index



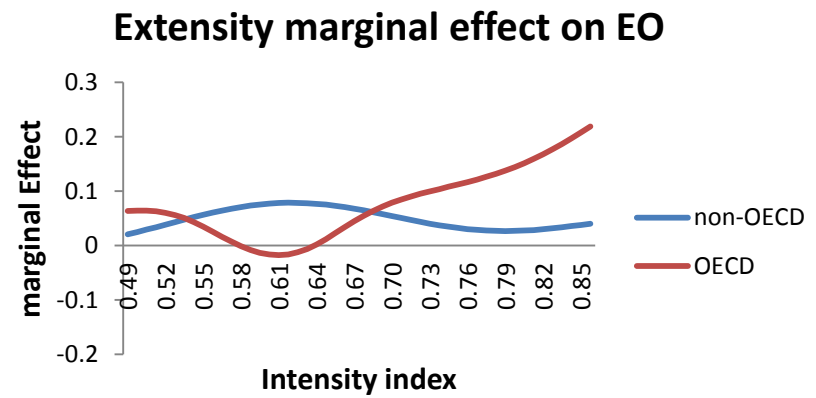
(a)



(c)



(b)



(d)

Figure 4 The Marginal Effects for OECD and Non-OECD Economies

The non-parametric regression estimates for the OECD and non-OECD economies are shown in Figure 4. For OECD economies, as shown in Figures 4(a) and 4(b), when the extensity index is high, the marginal effects of both intensity and extensity indices on growth of economic opportunity are positive. Similarly in Figure 4(d), when the intensity index is high, the marginal effect of extensity on economic opportunity is positive.

For Non-OECD countries, Figure 4(b) shows that when the extensity index is low, the marginal effects of extensity on economic opportunity is positive and significant, meaning that when a non-OECD economy has a low extensity index, infusing more capital resources will probably help the economy to generate more economic opportunities. But, then the effect becomes weak when the extensity index reaches a high level. This suggests that infusing more capital resources to a non-OECD economy would not have much impact on economic opportunity when the intensity index is at a relatively low level. In other words, the performance of the extensity on economic opportunity needs to have a strong support on the performance of the intensity index. This argument can be supported by Figure 4(d), which shows that for non-OECD economies, an increase in intensity index would produce a positive and significant extensity marginal effect on economic opportunity. Improved performance in the intensity index for non-OECD economies can increase the performance of extensity effect on economic opportunity.

## VI Conclusion

This paper attempts to fill a gap in development economics by analyzing the concept of economic opportunity, which can only be intuitive since it is invisible, non-measurable but can have a cumulative characteristic. As a latent variable, economic opportunity can be examined from a number of proxy variables. As an outcome of economic activity, economic opportunity is considered from a combined usage of economic resources (extensity) and socio-economic complements (intensity). While extensity measures the availability of production factors, intensity shows the extent to which economic opportunity could be generated when the complementary factors are taken into account. Each of the two channels can have independent impact on economic opportunity.

As a topic on its own, economic opportunity has hardly been studied theoretically and in empirical analysis. This paper provides both a conceptual and empirical analysis based on a collection of data consisted of 24 variables from 184 world economies for the period from 2000 to 2010. The empirical analysis also divides the country sample into OECD and non-OECD economies. The principle component analysis is applied to identify the weights of the variables so as to calculate the three indices. Both parametric and non-parametric regressions have been applied.

The empirical results show that both extensity and intensity variables can contribute positively to economic opportunity. The OECD show a stronger performance in both extensity and intensity variables. For non-OECD economies, their performance in extensity can be improved if they show improvements in intensity variables. The bottleneck in the generation of economic opportunity in non-OECD economies rests in their low intensity index. Their improvement in intensity would help extensity variables to promote economic opportunity. The findings in this paper are in line with other studies that advocated for the improvement of domestic factors to growth (for example, Li and Zhou, 2010).

The empirical findings can have further implications on economic development and growth, especially for non-OECD economies. For example, while the factors of production discussed in the extensity channel serve as the necessary condition, the complementary factors in the intensity channel serve as both the necessary and sufficient conditions to growth in economic opportunity. Various lessons can be suggested, for example, in the improvement in institutional factors and civic development so as to provide a healthier environment for intensity variables to perform. Stability and peace seem to be the more important economic scenarios through which economic opportunity can be nurtured, especially in economies constantly facing unrest and conflicts.

The economic opportunity index can further be expanded into the performance of individual economies on an annual basis in order to follow up the performance of individual world economy. One difference between the economic opportunity index and other existing indices is that economic opportunity index is futuristic, as the rankings of economies can indicate the potential capacities of individual economies. Investment activities would be directed to economies ranked high in the economic opportunity index. Similarly, governments can make use of the economic opportunity index for policy orientation.

Appendix

Appendix Table A1 The Weights Estimated from Principle Component Analysis

Economic Opportunity									
Factor Loading	Export of goods & services	Industry value added	Services value added	High-tech export	Employment to pop. ratio	Labor participation rate	Air transport	Internet users	Mobile & fixed line tel.
Comp 1	0.2188	-0.0836	0.4280	0.1999	-0.2639	-0.2944	0.1925	0.4938	0.5336
Comp 2	-0.0548	-0.2943	0.1816	0.2000	0.6207	0.5962	0.1967	0.1970	0.1384
Comp 3	0.4966	0.6344	-0.3924	0.3497	0.1505	0.1374	-0.0183	0.1564	0.0916
Comp 4	-0.4644	0.1964	-0.2311	0.1782	-0.0921	-0.0903	0.8018	-0.0270	-0.0199
Comp 5	0.0126	0.3089	-0.0109	-0.8566	0.1000	0.1524	0.1615	0.2637	0.2042
Com H	0.5133	0.6301	0.4237	0.9678	0.4960	0.4924	0.7450	0.3774	0.3544
Weights	10.27	12.60	8.47	19.36	9.92	9.85	14.90	7.55	7.09
Intensity Channel									
	CO2 emission	Inflation	Public spend education	Health expenditure	Mortality rate	Freedom of speech	Electoral self-determ.	Freedom of religion	Independence of judiciary
Comp 1	-0.0871	0.1193	0.2227	0.3436	0.2619	0.4629	0.4429	0.3550	0.4533
Comp 2	0.6715	-0.1618	0.0440	0.0968	-0.5798	0.0941	0.1700	0.3497	-0.1244
Comp 3	0.1868	0.6155	0.6110	0.3038	-0.0334	-0.1859	-0.1680	-0.2028	-0.1245
Comp 4	-0.0097	0.7486	-0.5861	-0.1396	-0.1033	0.0474	0.1249	0.2053	-0.0767
Comp 5	0.1349	0.1204	0.3926	-0.8632	0.1009	0.0842	0.0341	0.1667	0.1475
Comp 6	0.5941	-0.0038	-0.2013	-0.0303	0.4543	0.1387	0.2903	-0.5432	-0.0253
Com H	0.8646	0.9942	0.9630	0.9852	0.6331	0.2863	0.3543	0.6544	0.2647
Weights	14.41	16.57	16.05	16.42	10.55	4.77	5.91	10.91	4.41
Extensity Channel									
	Net inflow of portfolio equity	Foreign direct investment net inflows	Net official assistance & aid	Gross capital formation	Domestic credit to private sector	Market capitalization			
Comp 1	0.1538	0.3293	-0.4234	0.1432	0.6002	0.5550			
Comp 2	0.6676	0.5086	0.1038	0.3986	-0.2025	-0.2916			
Comp 3	0.1491	0.4011	0.5234	-0.7001	0.0780	0.2162			
Comp 4	-0.4214	0.1724	0.6127	0.5657	0.0231	0.3111			
Comp 5	0.5251	-0.6433	0.3850	0.1025	0.3778	0.0950			
Com H	0.6692	0.5577	0.8394	0.9895	0.4079	0.5366			
Weights	16.73	13.94	20.98	24.74	10.20	13.41			

Note: Com H = Commuality H. Weights are expressed in percentages.

Appendix Table A2 The Three Indices

2010 Ranking	Economic Opportunity Index		Intensity Index		Extensity Index	
	Country	Change from 2000 (Average ranking)	Country	Change from 2000 (Average ranking)	Country	Change from 2000 (Average ranking)
1	Singapore	1 (1)	Kiribati	0 (1)	Luxembourg	0 (1)
2	U.S.A.	-1 (2)	U.S.A.	2 (2)	Liberia	180 (17)
3	Iceland	6 (3)	Costa Rica	21 (18)	Hong Kong	-1 (3)
4	Hong Kong	7 (8)	East Timor	76 (11)	East Timor	1 (2)
5	P. N. Guinea	42 (17)	Denmark	-3 (3)	China	9 (4)
6	Switzerland	1 (5)	Lesotho	22 (7)	Cape Verde	16 (7)
7	Korea, Rep.	3 (10)	Iceland	-4 (4)	Turkmenistan	56 (106)
8	Qatar	25 (25)	Belgium	36 (14)	Maldives	75 (36)
9	Netherlands	-4 (6)	New Zealand	1 (9)	Djibouti	142 (51)
10	China	22 (19)	Micronesia	-1 (6)	Bahrain	131 (49)
11	U. A. E.	26 (22)	Sweden	-6 (5)	Vietnam	43 (18)
12	Luxembourg	10 (20)	Austria	36 (35)	Saint Lucia	17 (11)
13	Canada	-5 (12)	Norway	24 (10)	Bhutan	-6 (5)
14	U. K.	1 (13)	Barbados	5 (17)	Mongolia	20 (23)
15	Macao	23 (33)	Slovenia	25 (23)	Solomon Is.	150 (77)
16	Malaysia	-13 (4)	Ireland	29 (36)	South Africa	14 (19)
17	Ireland	-11 (9)	Netherlands	3 (19)	Macao	-4 (6)
18	Equ. Guinea	1 (18)	Finland	-4 (13)	Switzerland	-15 (8)
19	Germany	6 (21)	Saint Lucia	-7 (12)	Qatar	104 (15)
20	Norway	-3 (16)	Chile	11 (43)	Algeria	88 (52)
21	Barbados	9 (23)	Portugal	-10 (8)	Belarus	91 (76)
22	Sweden	-8 (15)	Canada	-6 (22)	Australia	11 (22)
23	Denmark	-10 (11)	Belize	47 (38)	Morocco	53 (45)
24	Cyprus	33 (36)	Japan	9 (26)	Spain	3 (14)
25	Philippines	-13 (14)	Uruguay	-2 (24)	Congo, D.R.	159 (111)
26	Kazakhstan	40 (46)	Estonia	16 (42)	India	72 (43)
27	Malta	-23 (7)	Botswana	-20 (21)	Singapore	-21 (16)
28	New Zealand	-2 (30)	Dominica	15 (37)	Oman	147 (116)
29	France	6 (32)	Switzerland	-23 (16)	Korea, Rep.	8 (32)
30	Brunei	9 (35)	Australia	6 (34)	Chad	49 (47)
31	Bahrain	13 (39)	Malta	1 (15)	Cyprus	-5 (24)
32	Costa Rica	-11 (27)	Hungary	-10 (25)	Canada	7 (29)
33	Anti.&Bar.	13 (37)	Solomon Is.	-7 (31)	Nepal	49 (78)
34	Australia	-10 (29)	Grenada	1 (32)	Haiti	44 (57)
35	Thailand	-15 (26)	Samoa	24 (45)	Lebanon	56 (70)
36	Austria	-7 (31)	Bahamas	16 (53)	Tonga	41 (63)
37	Japan	-19 (28)	Anti.&Barbu.	41 (63)	Malaysia	-27 (34)
38	Vietnam	4 (41)	StVincent&G.	-30 (20)	Thailand	18 (44)
39	StKitts & Nev.	9 (42)	Cape Verde	-1 (29)	U.K.	-18 (35)
40	Estonia	-17 (34)	France	-13 (28)	SaoTome&P.	106 (25)
41	Czech Rep.	8 (38)	U.K.	23 (30)	St Kitts&Ne.	-33 (10)
42	Slovenia	18 (44)	Namibia	-29 (40)	Netherlands	-31 (33)

43	Saint Lucia	13 (48)	Czech Rep.	4 (61)	Denmark	-12 (38)
44	Belgium	-8 (40)	Cyprus	-14 (33)	Samoa	49 (93)
45	Israel	-11 (49)	Brazil	5 (49)	Chile	12 (58)
46	Finland	-30 (24)	Spain	-17 (46)	Micronesia	-6 (37)
47	Trin. & Toba.	20 (56)	Argentina	-6 (39)	USA	-35 (26)
48	Hungary	-3 (45)	Guatemala	23 (67)	Japan	-39 (21)
49	Bahamas	-9 (47)	StKitts&Ne.	12 (64)	Vanuatu	10 (81)
50	Brazil	0 (50)	Lithuania	3 (47)	Indonesia	70 (124)
51	Slovak Rep.	17 (57)	Poland	6 (44)	Sweden	11 (65)
52	Zimbabwe	33 (55)	Germany	-1 (51)	Kiribati	-10 (48)
53	Russia	6 (65)	Vanuatu	-32 (27)	Portugal	-30 (41)
54	Peru	35 (77)	Suriname	1 (57)	Panama	-2 (102)
55	Eritrea	19 (58)	Luxembourg	-1 (56)	Burundi	119 (53)
56	Venezuela	31 (79)	Mauritius	2 (50)	Armenia	58 (66)
57	StVincent&G.	33 (83)	P. N. Guinea	18 (54)	Romania	99 (127)
58	Azerbaijan	45 (84)	Greece	27 (87)	Ireland	-39 (27)
59	Spain	18 (63)	El Salvador	-3 (58)	Dominica	-9 (46)
60	Congo Rep.	-7 (66)	Moldova	38 (81)	Niger	103 (128)
61	Kuwait	-20 (53)	Korea, Rep.	12 (59)	Mauritius	7 (84)
62	Seychelles	7 (62)	Djibouti	26 (84)	Montenegro	44 (71)
63	Portugal	-12 (54)	Montenegro	-1 (55)	Grenada	-47 (12)
64	Grenada	-36 (52)	Bolivia	20 (72)	Suriname	114 (126)
65	Lithuania	19 (74)	South Africa	-16 (60)	Senegal	36 (91)
66	Uruguay	29 (86)	Italy	-49 (48)	Nicaragua	-38 (31)
67	Bolivia	-36 (68)	Trin. & Toba.	9 (74)	Mauritania	13 (28)
68	Tanzania	10 (75)	SaoTome&Pr.	-34 (41)	Tanzania	62 (96)
69	Uzbekistan	-6 (61)	Liberia	42 (100)	Iran	-2 (54)
70	Latvia	48 (76)	Jamaica	-3 (68)	Gambia	39 (69)
71	Mexico	-19 (59)	Tonga	3 (95)	Malawi	-24 (61)
72	Ecuador	-8 (73)	Bosnia H.	27 (94)	New Zealand	-17 (62)
73	Chad	81 (113)	Malawi	24 (91)	Norway	19 (97)
74	Dominica	-19 (60)	Paraguay	-59 (65)	Tunisia	-1 (113)
75	Panama	18 (91)	Burundi	67 (101)	Guyana	-39 (55)
76	Tajikistan	-49 (43)	Latvia	-37 (62)	Fiji	68 (137)
77	Angola	-34 (64)	Croatia	13 (73)	Lesotho	-62 (73)
78	Chile	26 (97)	Guyana	-60 (52)	U.A.E.	40 (129)
79	Rwanda	4 (51)	Panama	-33 (66)	Mozambique	-55 (59)
80	Oman	25 (120)	Dom.Rep.	12 (90)	France	-37 (79)
81	Croatia	17 (82)	Ghana	5 (86)	Kyrgyz Rep.	15 (132)
82	Indonesia	-24 (71)	Comoros	77 (119)	Bulgaria	71 (87)
83	Bhutan	19 (100)	Colombia	-18 (70)	Benin	27 (134)
84	Ukraine	28 (112)	Ecuador	28 (88)	Sri Lanka	0 (119)
85	Burma	-24 (69)	Sierra Leone	-25 (79)	Belgium	-39 (75)
86	Zambia	8 (99)	Albania	17 (83)	Austria	-38 (72)
87	Cambodia	-5 (81)	Haiti	-21 (71)	Botswana	-17 (98)
88	Belarus	3 (96)	Mongolia	-7 (96)	Nigeria	95 (163)
89	Poland	34 (108)	Serbia	71 (97)	Albania	-45 (74)
90	Madagascar	-25 (70)	Cuba	36 (106)	Colombia	82 (155)
91	Laos	-18 (90)	Senegal	3 (85)	Equ. Guinea	-87 (20)
92	Colombia	5 (101)	Ukraine	14 (98)	Croatia	43 (86)
93	Paraguay	18 (98)	Burkina Faso	25 (124)	Macedonia	11 (130)



94	Botswana	-32 (78)	Swaziland	43 (108)	Slovenia	-6 (82)
95	Bulgaria	38 (116)	Lebanon	-26 (103)	Kazakhstan	60 (80)
96	Burkina Faso	-26 (80)	Georgia	24 (102)	Saudi Arabia	36 (125)
97	Libya	37 (125)	Seychelles	-15 (89)	Italy	-26 (105)
98	Mozambique	-44 (67)	Israel	-26 (80)	Barbados	-1 (50)
99	Gabon	-7 (102)	Maldives	16 (122)	Seychelles	-14 (109)
100	SaoTome& Pr.	26 (123)	Benin	-17 (105)	Laos	21 (112)
101	Argentina	14 (104)	Slovak Rep.	-22 (78)	Afghanistan	76 (40)
102	Mauritius	-16 (85)	Philippines	-7 (93)	Russia	50 (138)
103	Burundi	6 (95)	Congo, Rep.	40 (123)	Ghana	-29 (115)
104	Uganda	-28 (72)	Togo	28 (115)	Bahamas	-38 (99)
105	Nepal	-33 (92)	Bulgaria	26 (92)	Peru	20 (152)
106	Malawi	7 (107)	Macedonia	-81 (76)	Libya	70 (170)
107	Montenegro	12 (110)	Gabon	21 (114)	Moldova	-18 (67)
108	Senegal	-33 (89)	Niger	6 (113)	Malta	-76 (94)
109	Serbia	-30 (103)	Honduras	-41 (75)	Finland	-92 (68)
110	Greece	-9 (106)	Peru	-19 (82)	Honduras	-61 (60)
111	Haiti	-31 (87)	Gambia	2 (107)	Mexico	2 (139)
112	Italy	-41 (93)	Bhutan	44 (128)	Latvia	4 (56)
113	Maldives	24 (129)	Tanzania	20 (137)	Israel	-41 (104)
114	Gambia	-15 (105)	Mali	-27 (99)	Ethiopia	-11 (83)
115	Guinea	5 (122)	Kenya	29 (121)	Bangladesh	0 (133)
116	Romania	-35 (119)	Mozambique	-11 (112)	Jordan	-75 (30)
117	Cape Verde	18 (127)	Cambodia	23 (109)	Estonia	-57 (42)
118	Dom. Rep.	-8 (115)	Guinea	47 (150)	StVincent&G	-60 (39)
119	Cuba	2 (111)	Singapore	5 (139)	Serbia	-12 (123)
120	Guyana	-6 (128)	Hong Kong	-10 (129)	Ecuador	13 (147)
121	Georgia	1 (88)	Macao	-14 (135)	Uganda	-19 (122)
122	Togo	-16 (114)	Guinea-Biss.	-22 (125)	Madagascar	32 (88)
123	Saudi Arabia	17 (133)	Romania	-6 (118)	Gabon	16 (146)
124	Sierra Leone	-17 (94)	Kyrgyz Rep.	26 (116)	Uzbekistan	47 (157)
125	Guatemala	-9 (117)	Zambia	-4 (120)	Namibia	3 (135)
126	Kyrgyz Rep.	-26 (132)	Mexico	-37 (104)	Germany	-88 (107)
127	Cameroon	-3 (131)	Uganda	34 (127)	Czech Rep.	-74 (103)
128	Suriname	28 (139)	Cote d'Ivoire	-1 (146)	Brazil	-2 (158)
129	Ethiopia	1 (118)	Fiji	-52 (77)	Burma	51 (180)
130	Belize	-5 (130)	Thailand	-28 (110)	P.N. Guinea	-55 (114)
131	Honduras	-23 (126)	Turkey	8 (145)	Poland	-32 (149)
132	Fiji	-1 (134)	Malaysia	-9 (138)	Rwanda	-42 (118)
133	El Salvador	-5 (135)	Nepal	2 (136)	Philippines	-11 (151)
134	Turkmenistan	-38 (124)	Nicaragua	-71 (69)	Sudan	14 (117)
135	Mongolia	18 (143)	Rwanda	33 (156)	Congo, Rep.	-6 (144)
136	Jamaica	-48 (109)	Armenia	-20 (132)	Tajikistan	26 (165)
137	Bangladesh	-5 (136)	Tunisia	-18 (134)	Bosnia H.	-76 (110)
138	Macedonia	19 (153)	Iraq	36 (160)	Burkina Faso	2 (143)
139	Cote d'Ivoire	-12 (121)	Jordan	-35 (111)	Sierra Leone	-22 (108)
140	Kenya	6 (146)	Cameroon	22 (144)	Greece	-95 (86)
141	Samoa	3 (140)	Bangladesh	-19 (131)	Slovak Rep.	-54 (120)
142	Tonga	19 (152)	Algeria	-17 (141)	Zambia	-78 (95)
143	Nicaragua	4 (145)	Vietnam	9 (153)	Mali	-74 (101)
144	Benin	-6 (142)	Mauritania	14 (155)	Ukraine	3 (140)

145	Albania	23 (161)	Indonesia	12 (152)	Kenya	-8 (159)
146	Ghana	-29 (137)	Angola	37 (169)	Iceland	-128 (9)
147	Micronesia	1 (144)	Venezuela	-38 (117)	Turkey	-20 (167)
148	Sudan	33 (179)	Bahrain	25 (164)	Jamaica	-113 (64)
149	Morocco	1 (155)	Azerbaijan	20 (158)	C. Afri. Rep.	18 (179)
150	Vanuatu	-21 (138)	Belarus	-4 (149)	Togo	-14 (161)
151	Armenia	-6 (159)	Egypt	-15 (143)	Belize	-86 (136)
152	Iran	26 (165)	Morocco	-11 (147)	Georgia	-58 (90)
153	Turkey	-10 (156)	India	-24 (130)	Antigua Bar.	-133 (13)
154	Congo, D. R.	-2 (147)	Sri Lanka	-46 (126)	Argentina	-16 (162)
155	Bosnia H.	21 (169)	Iran	9 (163)	Costa Rica	3 (150)
156	Nigeria	19 (167)	Laos	24 (176)	Egypt	-51 (142)
157	Lebanon	16 (171)	Yemen	-12 (148)	Guinea	-26 (164)
158	C. Afri. Rep.	-19 (151)	Oman	-7 (154)	Lithuania	-9 (141)
159	Tunisia	8 (166)	Tajikistan	-6 (162)	Kuwait	5 (131)
160	Lesotho	-24 (141)	Equa. Guinea	19 (180)	Cambodia	-36 (153)
161	Djibouti	-2 (163)	Burma	15 (179)	Hungary	-80 (121)
162	Sri Lanka	-2 (160)	Sudan	9 (170)	Paraguay	-19 (173)
163	Solomon Is.	-5 (157)	Uzbekistan	4 (168)	Bolivia	-68 (160)
164	India	-15 (148)	China	-1 (165)	Venezuela	-45 (154)
165	Namibia	-3 (149)	Russia	-31 (151)	Syria	4 (156)
166	Swaziland	-24 (150)	Chad	0 (177)	Brunei	-80 (148)
167	Moldova	-26 (154)	Syria	-66 (142)	Iraq	6 (100)
168	Guinea-Bissau	-13 (158)	Libya	2 (167)	Uruguay	0 (175)
169	Egypt	10 (173)	Saudi Arabia	-20 (159)	Cameroon	-9 (168)
170	South Africa	-19 (162)	C. Afri. Rep.	-40 (161)	Comoros	-4 (178)
171	Kiribati	-2 (168)	Afghanistan	6 (172)	Dom. Rep.	-60 (171)
172	Niger	-9 (164)	Madagascar	-76 (133)	Azerbaijan	-30 (92)
173	Jordan	-8 (172)	Congo, DR	11 (174)	Pakistan	-14 (166)
174	Liberia	8 (176)	Ethiopia	-81 (140)	Cote d'Ivoire	5 (183)
175	Algeria	-3 (174)	Kazakhstan	0 (175)	El Salvador	-41 (174)
176	Pakistan	4 (177)	Brunei	-28 (173)	Guatemala	-26 (169)
177	Mauritania	0 (181)	Turkmenistan	1 (181)	Trin. & Toba.	-77 (145)
178	East Timor	-14 (170)	Kuwait	-40 (166)	Zimbabwe	-21 (176)
179	Yemen	-5 (178)	Eritrea	-32 (171)	Angola	-9 (182)
180	Syria	-10 (175)	Nigeria	-25 (157)	Yemen	-35 (177)
181	Mali	-10 (180)	Pakistan	-9 (178)	Swaziland	-20 (181)
182	Comoros	1 (183)	U. A. E.	-1 (182)	Cuba	-1 (184)
183	Afghanistan	1 (184)	Qatar	-1 (183)	Guinea-Biss.	-132 (172)
184	Iraq	-18 (182)	Zimbabwe	-30 (184)	Eritrea	-159 (89)

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