Does ICT maturity catalyse economic development? Evidence from a panel data estimation approach in OECD countries

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Abstract

To date, definitions of information and communication technology (ICT) development used in quantitative studies on the relationship between economic development and ICT are incomplete and often based on single indicators. Thus, this study investigates the link between ICT maturity and economic development in the Organisation of Economic Cooperation and Development (OECD) countries. A novel composite index of ICT maturity that includes previously neglected dimensions of ICT maturity, such as affordability and quality of internet connectivity, is utilised. The baseline estimations using the feasible generalised least squares indicate that ICT maturity is associated with an increase in economic development by 1%–3.8% in OECD countries. These findings have been cross-validated by applying the generalised method of moments estimation. Results imply that the holistic development of ICT, including infrastructure, skills, and affordability, can augment economic development.

Keywords: Economic development, panel data, ICT maturity, information and communication technology, OECD

1. Introduction

Many empirical studies have confirmed that information and communication technology (ICT) can play a significant role in the socio-economic development of a nation (Asongu & Le Roux, 2017; Ferrigno-Stack et al., 2003; Obijiofor, 2009). Consequently, the governments of developed and developing countries have greatly invested in the development and diffusion of ICTs. Undoubtedly, ICT is a major catalyst for economic development. However, the nexus between ICT and economic development has been the subject of much debate. Some researchers are optimistic about the role of ICT in development (Palvia et al., 2018), whereas others suggest that ICT alone will not lead to economic development unless accompanied by social changes and other complementary factors (Morales–Gómez & Melesse, 1998). Thus, the literature is inconclusive on whether ICT is a significant driver of economic development. Importantly, some scholars have argued that the definitions used to measure ICT maturity in the literature are not comprehensive (Baller et al., 2016; Sridhar & Sridhar, 2008). Therefore, the assessment of ICT's contribution to economic development might be flawed.

Most of the empirical studies considering the relationship between ICT and economic growth have concluded that a positive and significant relationship exists (Salahuddin & Alam, 2015; Salahuddin & Alam, 2016). However, the relationship between ICT and economic *development* is less clear. The concept of 'economic development' is broader than that of 'economic growth'. The latter is concerned with the quantitative expansion of an economy's output, whereas the former includes the qualitative aspects which tend to accompany growth in the narrower sense (Ranis, 2004). Economic development includes distributive issues of economic growth, that is, income inequality, the composition of social expenditure and measures of political well-being (Jingfeng & Zhao'an, 2018; Ranis, 2004; Srinivasan, 1994). Considering that ICT affects every area of life rather than simply the productive capacity of an economy, the relationship between ICT and economic development is an important area of study.

Existing studies explaining the nexus between economic development and ICT have used incomplete, partial or single indictor-based definitions of ICT development (Kundu & Sarangi, 2004; Lam & Shiu, 2010; Sridhar & Sridhar, 2008). Hence, this study aims to investigate the relationship between economic development and ICT maturity levels in the Organisation of Economic Cooperation and Development (OECD) countries using a holistic approach. Unlike the previous studies (Kundu & Sarangi, 2004; Lam & Shiu, 2010; Sridhar & Sridhar, 2008), the current study follows a comprehensive definition of the overall level of ICT maturity (Ali et al., 2020) to measure the effect of ICT on economic development. Ali et al. (2020) pointed out that the ICT maturity level is comprised of six dimensions of a country's ICT development, namely, access, use, skills, affordability, efficiency and quality. Such dimensions significantly explain the socioeconomic outcomes of a nation. The weightings of these subcomponents are systematically determined through structural equation modelling rather than being arbitrarily defined (for details, see the technical note in Appendix A).

The primary research question of this study is whether any significant relationship exists between economic development and the level of overall development of the ICT sector. To the best of the authors' knowledge, this study is the first attempt to explain the nexus between economic development and ICT maturity using a longitudinal dataset of OECD countries applying a standard panel data estimation framework. Therefore, this study provides several novel contributions to the existing literature. Firstly, this study employs a comprehensive composite index to measure the level of ICT maturity. Then, this index is used to capture the effects of ICT maturity on economic development by employing an advanced panel data estimation framework. In this regard, the study incorporates three new dimensions in measuring the overall ICT maturity level (viz. affordability, efficiency and quality). These dimensions are shown to significantly explain the overall maturity level of ICT alongside conventional considerations of ICT development including access, use and skills (Ali et al.,

2020). Single indicator- and other partial definition-based ICT development indices have several limitations including the following: subjective estimation; bias arising from the estimation of the weights of individual indicators and sub-indices; use of inappropriate quantitative models and faulty estimation arising from the exclusion of important dimensions including affordability, quality and efficiency aspects of ICT from the estimation models (Ali et al., 2020; Hair et al., 1995). Secondly, the panel data estimation techniques used in this study yield a reliable and accurate estimate than previous studies of the association between economic development, ICT maturity and other macro-economic and governance variables.

2. Review of literature

The nexus between economic performance and technological advancement is deeply rooted in established theories of economic growth and development. For example, Solow's growth model postulates that economic growth can be generated in an economy by accelerating technological change (Solow, 1957). Subsequently, the endogenous growth theory developed by Romer (1990) and the capability theory of Sen (1985) indicated that technological progress can significantly affect the economic development process. On this view, the well-being of a nation is ultimately determined by its capabilities. ICTs, specifically internet access, enhance human capabilities by assisting in communication and information acquisition. Following this approach, an extensive body of empirical study has investigated the effect of ICT on economic development (Asongu & Le Roux, 2017; Bankole et al., 2013; Palvia et al., 2018). In these studies, proxy variables, such as human development (Ashraf et al., 2015; Asongu & Le Roux, 2017; Budd & Ziegler, 2017; Walsham, 2017), quality of life (Chiao & Chiu, 2018; Kadijevich et al., 2016) and well-being (Ganju et al., 2015; Palvia et al., 2018), have been used to define economic development.

Focusing on different target populations, some studies have reported a positive correlation between ICT use and quality of life (Chiao & Chiu, 2018; Kadijevich et al., 2016). Studies

have also shown that at the national level, the economic well-being of a nation is dependent on its ICT infrastructure (Czernich et al., 2011; James, 2014; Nouinou et al., 2015). At the micro level, studies have examined the impact of ICT use on the quality of work and personal lives (De Wet et al., 2016; Gopinathan & Raman, 2016). These studies indicate that ICT has played a significant role in enhancing the quality of life by maintaining a balance between working life and the personal one.

Other studies exploring the nexus between ICT and human development have shown that ICT diffusion promotes inclusive human development (Asongu & Le Roux, 2017; Brown & Brown, 2008). Moreover, empirical research has found that ICT positively contributes to the development of indigenous communities (Ashraf et al., 2015; Madden et al., 2012). Community-based studies also reported that ICT can act as a catalyst to promote development at the community level by mitigating social constraints (Ashraf et al., 2017). A few studies have claimed that ICT can augment human development by enhancing health-related outcomes (Bankole et al., 2013; UN, 2010). However, Samoilenko and Osei-Bryson (2016) counter-intuitively revealed that the annual revenue in the telecommunications sector had no significant influence on human development.

Another group of studies attempt to relate ICT use with socio-economic and mental well-being. For example, Ganju et al. (2015) and Palvia et al. (2018) indicated that ICT use significantly improves a country's economic well-being by alleviating poverty, whereas Sims et al. (2017) noted a positive association between ICT use and mental well-being. Moreover, some studies demonstrated that ICT-based programmes improved the mental well-being of young people by not only facilitating entertainment and socialising activities but also providing access to mental health information and support (Ellis et al., 2012; Stephens-Reicher et al., 2011). Studies have also suggested that social media can be used as a potential source of data on health to implement

policies to enhance well-being. Expressed differently, social media can be used to disseminate public messaging and model population sentiment (Yeung, 2018).

In contrast to the findings of the aforementioned studies, a few studies have highlighted ICT's negative effects. For instance, Nimrod (2018) found that technostress has a negative influence on life satisfaction. In addition, Bekaroo et al. (2016) argued that the widespread adoption of ICT drained a substantial amount of energy and power, thereby leading to complex environmental problems with severe repercussions on people's quality of life. Morawczynski and Ngwenyama (2007) noted that ICT maturity alone cannot promote economic development; other factors are also important. For example, income growth has an indirect effect on human development as it promotes literacy and health outcomes by mobilising private and public resources (Ranis, 2004). Moreover, social expenditure on health and education are significant predictors of economic development (Ranis et al., 2000). Research has shown that the quality of the environment is a significant predictor of economic development (Jingfeng & Zhao'an, 2018; Shahiduzzaman & Alam, 2014; Shahiduzzaman & Alam, 2017). Existing research has also shown that the ideological stance of a country's ruling political party affects its overall economic development by inducing partisan cycles in society's savings, investment and capital stocks (Aidt et al., 2018; Potrafke, 2017). More specifically, accelerated investment attributed to economic conservatism initiated by right-wing parties seems to drive developed countries to the path of economic development (Aidt et al., 2018; Potrafke, 2017). Nevertheless, Srinivasan (1994) pointed out that measures of political well-being and income inequality are the major determinants of human development, which have been ignored in the theorisation of UNDP's Human Development Index (HDI). In this regard, income inequality addresses the distributional aspects of economic growth and also indicates whether economic development is inclusive. Moreover, several studies indicate that globalisation is positively correlated with economic development (Dreher, 2006; Pleninger & Sturm, 2020; Ulucak et al., 2020).

Although the existing literature convincingly demonstrates the association between particular dimensions of ICT maturity and economic development, there is a lack of empirical investigation of this relationship using a comprehensive measure of the ICT maturity level at a cross-country setting. In particular, these studies have used either access to ICT infrastructure or use of ICT devices at the expense of other factors that we consider important (Asongu & Le Roux, 2017; Ganju et al., 2015; Palvia et al., 2018). To this end, the current study employs the modified ICT maturity level index (MIMLI) to investigate the ICT-development nexus based on the novel and comprehensive ICT development measurement index computation method formulated by Ali et al. (2020). MIMLI incorporates new dimensions of ICT development including affordability, efficiency and quality alongside conventional considerations of access, use and skills. Recent empirical evidence has shown that the exiting ICT development indices including ICT development index (IDI) are not a comprehensive measurement of ICT maturity as IDI ignores significant factors, such as the quality, affordability and institutional efficiency of the telecommunication services (Baller et al., 2016; Raghupathi & Wu, 2011; Sridhar & Sridhar, 2008). This study fills the gap in the literature by applying a highly comprehensive composite index of ICT maturity to the question of whether ICT maturity promotes economic development. To do so, the study deploys a standard panel data estimation approach using a balanced longitudinal dataset of OECD countries.

3. Data, variables and estimation strategy

3.1. Data and variables

This study incorporated several control variables to explore the association between economic development and ICT maturity level. The selection of the variables was based on the existing literature (see Section 2 and Table 1 for details). The data were collected from several international databases, including Cornell University (2017); Döring and Manow (2019); Gygli et al. (2019); ITU (2016); UNDP (2017); UNU-WIDER (2017); World Bank (2017, 2018).

These datasets contained 35 cross-sectional units which represent 35 OECD countries. The datasets span throughout 2006–2015; thus, the panel data contain 10 years of data for 35 countries. The total number of observations is 350, and the panel dataset is strongly balanced.

[Table 1 about here]

Table 1 provides the definitions of the variables included in the models along with the corresponding summary statistics. In this study, the dependent variable is economic development, the explanatory variable is ICT maturity level and remaining variables are control variables (for details, see Section 3.2 on model specification). The main variable of interest— the MIMLI is computed following the study of Ali et al. (2020). This study uses the MIMLI score estimated through the formative measurement model for using the PLS-SEM for the period 2006–2015. The index building mechanism is thoroughly discussed in details in Appendix A as an Online Supplement to this article. This index is an extension of the IDI (ITU, 2009) and modified IDI (Gerpott & Ahmadi, 2015). The index consists of six sub-indices: access, use, skills, affordability, efficiency and quality (a detailed description of the variables used in constructing the index is in Appendix Tables A1 and A2).

Here, Scales are defined as follows: HDI, 0 to 1; Gini index, 0 to 1; MIMLI, 1 to 10; OverGovtIdeol, 1 to 10; and Globalisation, 1 to 100. Except the Gini index, a higher score indicates better performance in all indices. GDPG, PE, Forest and VoteShare are expressed in percentage form so as to exhibit less volatility. GovtEff is a multinominal categorical variable ranging from -2.5 to +2.5. Appendix Table B provides the summary statistics of the variables in the panel dimension. The descriptive statistics demonstrate that there are disparities in terms of the level of economic development and ICT maturity among OECD countries.

[Table 2 about here]

Table 2 reports the correlation matrix amongst the dependant, explanatory and control variables. Moreover, Table 2 shows that the correlation coefficient between economic

development and ICT maturity is very high (0.7747) and statistically significant. The correlation of economic development is positive and statistically significant with other explanatory variables including GDPG (0.0939), government expenditure (0.6686), government effectiveness (0.7855) and globalisation (0.6224). As expected, economic development is negatively correlated with income inequality (0.5561).

3.2. Model specification

This study deploys a set of panel data estimation models to investigate the association between economic development and the ICT maturity level. The selection of variables is determined by the following factors: (i) the theoretical foundations of the study rooted in endogenous growth theory (Romer, 1990) and capability theory (Sen, 1985); and (ii) the extensive body of literature outlined in Section 2. The estimation specification is as follows:

$$HDI_{it} = \alpha + \gamma\ MIMLI_i + \Lambda X_{it} + u_i + \eta_t + \varepsilon_{\ it} \ \dots \dots \dots \dots \dots \dots \dots \dots \ (1)$$

where *i* stands for a given country and *t* represents the year. HDI_{it} represents the value of the HDI of country *i* in year *t*. $MIMLI_i$ is the main variable of interest—the ICT maturity level. The model also controls for observed time-varying covariates X_{it}. GDPG, Gini, PE, Forest, GovtEff, VoteShare, OverGovtIdeol and Globalisation are the control variables. Three different equations are used to examine the influence of political well-being, policy stability and government ideology on the dependent variable. As outlined below, the first baseline estimation (Eq. 2.1) is conducted considering government effectiveness as political well-being. The second estimation (Eq. 2.2) is conducted using vote share of the government as a proxy for policy stability, whereas the third one (Eq. 2.3) uses the ideology of political parties as a proxy for overall government ideology (see Section 3.1 for details). u_i represents the individual fixed effect. η_t stands for the time effect, and ε_{it} is the error term. a, γ and the vector Λ are the

parameters to be estimated. The estimate γ represents the average effect of the ICT maturity level on human development, which is the most important parameter in the estimation.

$$HDI_{it} = \alpha + \gamma \text{ MIMLI}_i + \text{GDPG}_{it} + \text{Gini}_{it} + \text{PE}_{it} + \text{ Forest}_{it} + \text{GovtEff}_{it} + \text{Global}_{it} + u_i + \eta_t + \varepsilon_{it} \ldots (2.1)$$

$$HDI_{it} = \alpha + \gamma \text{ MIMLI}_i + \text{GDPG}_{it} + \text{Gini}_{it} + \text{PE}_{it} + \text{ Forest}_{it} + \text{VoteShare}_{it} + \text{Global}_{it} + u_i + \eta_t + \varepsilon_{it} \ (2.2)$$

$$HDI_{it} = \alpha + \gamma \text{ MIMLI}_i + \text{GDPG}_{it} + \text{Gini}_{it} + \text{PE}_{it} + \text{ Forest}_{it} + \text{OverGovtIdeol}_{it} + \text{Global}_{it} + u_i + \eta_t + \varepsilon_{it} \ldots\ldots\ldots (2.3)$$

3.3. Estimation methods

Two estimation techniques have been used to estimate the hypothesised models: (i) Panel feasible generalised least squares (FGLS) method is used to estimate the baseline model, and (ii) generalised method of moments (GMM) is applied to estimate the robustness of the baseline estimations.

3.3.1. Panel FGLS method

Generalised least squares (GLS) is commonly used to estimate the unknown parameters in a linear regression model where a certain degree of potential correlation exists amongst the residuals. In these cases, ordinary least squares (OLS)-based estimations will be statistically inefficient, which can lead to flawed inferences (Wooldridge, 2010). The FGLS method is prescribed where heteroscedasticity problem can potentially arise (Wooldridge, 2010). The procedure to run FGLS to correct for heteroscedasticity is as follows:

(i) Run the regression of the dependent variable (y) on explanatory variables (x_1, x_2, …, x_k) and obtain the regression residuals, $\hat{u}$.

(ii) Estimate $\log(\hat{u}^2)$ by firstly squaring the OLS regression residuals and then taking the natural log.

$$\log(\hat{u}^2) = \alpha_0 + \delta_1 x_1 + \delta_2 x_2 + \ldots\ldots + \delta_k x_k + e \ldots (3)$$

(iii) Run the regression of $\log(\hat{u}^2)$ on $x_1, x_2, \ldots\ldots x_k$ and obtain fitted values, $\hat{g}$.

(iv) Exponentiate the fitted values from the previous step and estimate the following:

$$\hat{h} = \exp(\widehat{g}) \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots . (4)$$

(v)   Finally, estimate the following equation

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots \dots + \beta_k x_k + u \dots \dots \dots \dots (5)$$

3.3.2. GMM

GMM estimation is used to check the robustness of the baseline estimations. This method necessitates that a particular number of moment conditions are to be specified for the regression model (Wooldridge, 2010). These moment conditions are dependent upon the model parameters and the data, so their expected values are zero at the parameters' true values. The GMM estimators are well established as consistent, asymptotically normal and efficient parameters (Wooldridge, 2010). A GMM estimation approach is appropriate here, because of the following: (i) the indicator of economic development is persistent as the correlation between the level of observations and the corresponding lagged values of 0.9977 is higher than the rule of thumb threshold of 0.800; (ii) the requirement that the number of countries (N = 35) should be higher than the number of years (T = 10) is met; (iii) the estimation technique takes endogeneity into account by controlling for time-invariant omitted variables and simultaneity; (iv) cross-country variations are automatically considered as the technique is consistent with the panel data analysis by definition and (v) small sample biases in the difference estimator are corrected by the system estimator (Bond et al., 2001). The specification used in this study is based on Roodman (2009a, 2009b) which is an extension of Arellano and Bover (1995). This extension checks for cross-sectional dependency and restricts instrument proliferation (Asongu & Nwachukwu, 2018; Tchamyou & Asongu, 2017; Tchamyou et al., 2019).

Identification, simultaneity and exclusion restrictions

The GMM specifications are validated with the following three fundamental issues which are considered to be vital: (i) identification, (ii) simultaneity and (iii) exclusion restrictions (Asongu & Acha-Anyi, 2019; Asongu & Nwachukwu, 2018; Tchamyou & Asongu, 2017; Tchamyou et al., 2019).

Asongu and Acha-Anyi (2019) defined identification as 'the choice of the dependent, endogenous explaining, and strictly exogenous variables' (p. 109). Following the findings of (Asongu & Nwachukwu, 2018; Tchamyou et al., 2019), all independent variables are considered potentially endogenous or predetermined indicators. Therefore, the *gmmstyle* is adopted for them. Moreover, only years are hypothesised as exogenous, and the procedure for considering ivstyle (years) is 'iv(years, eq[diff])' as the years becoming endogenous in first difference is not feasible (Roodman, 2009a).

Concerns over simultaneity are tackled by using the lagged value of regressors as instruments for the forward-differenced indicators. Hence, fixed effects (FE) that influence the measured relationships are eradicated utilising Helmet transformations that are performed following several scholarly studies (Love & Zicchino, 2006; Tchamyou et al., 2019). These kinds of transformations are composed of forwarding mean differencing of indicators—in contrast to subtracting preceding observations from present ones (Roodman, 2009a). This process permits orthogonal or parallel conditions between lagged regressors and forward-differenced indicators.

With regard to exclusion restrictions, in line with the identification procedure, the time-invariant variables affect economic development through the potential endogenous (or

endogenous) variables. Moreover, if and only if the null hypothesis corresponding to the difference-in-Hansen test (DHT) for instrument exogeneity is not rejected, then the underlying exclusion restriction assumption is regarded as valid. The results are reported in Section 4 (Table 4). The assumption with regard to exclusion restriction is not invalid as the null hypothesis of the DHT that is associated with instrumental variables (IV) (year, eq[diff]) is not rejected. The Sargan and Hansen overidentifying restrictions (OIRs) test suggests that the strictly exogenous variables affect economic development exclusively through the suspected endogenous variable channels (Asongu & Nwachukwu, 2018; Tchamyou et al., 2019).

4. Empirical findings

4.1. Main Results

The conventional OLS or panel data-based regression (e.g. fixed effect or random effect estimation) is not appropriate in this case as the regression coefficients would yield biased and inconsistent estimates due to heteroscedasticity and autocorrelation issues. To cope with this problem, FGLS is used to conduct baseline estimations (Romano & Wolf, 2017; Wooldridge, 2010).

Table 3 shows the estimation results based on the baseline models. The figures from columns 1 and 2, those in columns 3 and 4 and those in columns 5 and 6 indicate the regression coefficient estimates of Eqs. 2.1, 2.2 and 2.3, respectively. The ICT maturity variable is statistically significant and positive in all six cases. This result indicates that countries with high ICT maturity can demonstrate a high level of HDI. Specifically, the estimated parameters show that ICT development enhances economic development from 1% to 3.8%. As expected, the Gini index was found to have a significant negative effect on the HDI in most cases. The GDP growth, public expenditure on the social sector, environmental quality and globalisation are also found to have a positive effect on HDI in most cases. The governance indicators—

political well-being (GovtEff), political stability (VoteShare) and ideology of government are found to have a substantial positive effect on economic development.

[Table 3 about here]

4.2. Robustness checks

A series of further robustness checks was conducted to ascertain the stability of our results. Only the regression estimates using Eq. 2.3 have been reported in each case due to space constraints and to keep the paper simple.

4.2.1. GMM estimation

A GMM estimation of the proposed regression model was conducted to examine the robustness checks one step further. GMM, developed by Arellano (1991) and Arellano and Bover (1995), is widely used to check for potential endogeneity in a dynamic panel model. Difference and system GMM have been applied to estimate the impact of ICT maturity on economic development as outlined in Eq. 6.

$$HDI_{it} = \alpha + \gamma\ MIMLI) + \text{GDPG}_{it} + \text{Gini}_{it} + \text{PE}_{it} +\ \text{Forest}_{it} + \text{OverGovtIdeol}_{it} + \text{Globalisaton}_{it}$$
$$+\ \partial HDI_{it-1} + u_i + \eta_t + \varepsilon_{\ it}\ \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (6)$$

In Eq. 6, GDPG, Gini index and PE are assumed to be endogenous. Based on existing literature, the instruments used in the model are government expenditure, total export earnings, total investment and per capita income (Amirkhalkhali & Atul, 2019; Andrašić et al., 2018; Ghosh, 2019; Konstantakopoulou, 2017; Machova & Kotlan, 2013). Columns 1 and 2 in Table 4 report the GMM estimations using difference and system GMM, respectively. In both cases, the coefficient of ICT maturity is positive and statistically significant. This finding implies that the baseline estimates are corroborated by the findings in the dynamic panel models. The serial correlation test statistics—AR(1), AR(2) and the Hansen test statistic—are also reported to demonstrate the validity and reliability of the instruments. The *p*-value of the AR tests indicates

the presence of serial correlation in the second order but not in the first order. Simultaneously, the Sargan and Hansen OIR shows that the null hypothesis of the overall endogeneity of the instruments used in the estimation cannot be rejected. In sum, these results suggest that the instruments used in the model are valid and reliable.

4.2.2. 2008 Global Financial Crisis (GFC)
Any findings of the treatment effect cannot be exclusively attributed only to the second phase of ICT maturity unless other significant events did not simultaneously occur. A global event that affected economic development was the GFC which began in 2008. This crisis undoubtedly had a negative effect on innovation and research and development (R&D) in all countries, but specifically in OECD countries (OECD, 2012). The GFC may affect the innovation of OECD countries through various transmission channels. Firstly, demand for innovation goods is reduced because the economic downturn may have induced firms to spend less on innovation. Moreover, the increased competition amongst multinational companies to gain a market share may have reduced R&D expenditure during the GFC. Moreover, the reduced flow of liquidity in the financial system coupled with uncertainties associated with demand and finance might have led to a substantial decrease in innovation expenditure (OECD, 2012). OECD (2012) identified that the GFC created havoc for innovation expenditure and patent filing in eight OECD countries—Canada, Germany, USA, Sweden, The Netherlands, Japan, Luxemburg and the UK. The innovation expenditure and patent filings of these countries went below pre-crisis levels in 2009 and took a long time to recover. Excluding those eight countries, the baseline estimation was estimated again to control for the effect of the GFC ICT maturity (Table 4). In this case, column 3 reports the FE estimation with robust standard errors, and column 4 indicates the estimates using FGLS. In both cases, the main indicator of interest—ICT maturity level—is found to have a statistically significant and positive effect on

economic development. These findings corroborate the earlier claim using the baseline estimations.

[Table 4 about here]

In addition to above-mentioned robustness estimations, baseline estimations have been supplemented by corresponding OLS-based estimations (Table 4) incorporating fixed period (column 5) and fixed country effects (column 6). As expected, the inferences remain the same compared with the baseline and other robust estimations.

4.3. Diagnostic tests

Whether the assumptions of the OLS are violated before conducting the baseline estimations following Eqs. 2.1, 2.2 and 2.3 needs further research. Thus, a series of diagnostic tests was conducted after running the OLS regression using the variables of those aforementioned equations. Table 5 shows a summary of the diagnostic tests. Moreover, Table 5 shows that all models suffer from the presence of group-wise heteroskedasticity and autocorrelation problems, but they are free from the problem of multicollinearity. The variance inflation factor for the explanatory variables of Eq. 2.1 ranges from 1.16 to 3.37; for Eq. 2.2, between 1.11 and 2.33; for Eq. 2.3, between 1.07 and 2.33.

[Table 5 about here]

5. Discussion

As mentioned in the literature review, a significant association between ICT maturity and economic development has been found. However, those studies relied on partial definitions (Asongu & Le Roux, 2017; Bankole et al., 2013; Ganju et al., 2015; Nouinou et al., 2015; Palvia et al., 2018; UNDP, 2017). The current study explains the relationship between ICT maturity and economic development using a composite index of ICT maturity consisting of access, use, skills, affordability, efficiency and the quality dimensions of ICT. Using cluster

analysis based on a novel index, this study demonstrates that ICT maturity significantly catalyses economic development. The current research also differs from previous empirical work in the methodological approaches undertaken. This study employs a panel data estimation framework to investigate the influence of ICT maturity on economic development at the country level during the post-treatment period coupled with innovation efficiency. Although evidence demonstrates a causal nexus between innovation and ICT maturity, evidence on how ICT leads to economic development is limited (Arendt & Grabowski, 2017; Billon et al., 2016; Pradhan et al., 2017). The result of the regression estimations shows that ICT maturity has a significant positive effect on economic development.

A detailed picture of the association between economic development and ICT maturity would, of course, require analysis of the concrete relationship between ICT and development in particular countries. Although a full analysis of this sort is beyond the scope of this study, some descriptive statistics for particular countries are instructive insofar as they suggest areas for further research. ITU (2015) reported that the top three countries that have dynamically improved their position in terms of ICT development in recent times are Denmark, Iceland and the Republic of Korea. Our findings also suggest that throughout 2006–2015, the MIMLI in these three countries surged from 7.05 to 9.32, 7.01 to 9.07 and 7.12 to 9.39, respectively (Appendix Table B). Following the trend of their respective advancement in the ICT maturity level, during that period, the economic development (measured by HDI) in those three economies also rose from 0.90 to 0.93, 0.89 to 0.92 and 0.87 to 0.90, respectively (Appendix Table B). The correlation between economic development and ICT maturity for Denmark is the highest (0.9254) followed by Iceland (0.9085) and Republic of Korea (0.8282). Country-level case studies demystifying the ICT development in those three countries corroborated the argument that respective governments improved competition in the telecommunications sector by liberalising the market (ITU, 2015). Those countries augment their level of overall economic

development by actively promoting the use of ICTs, particularly the Internet across the entire population (ITU, 2015). Particularly, the Republic of Korea's remarkable ICT-led development in recent decades is viewed as an interesting success story. Relevant studies claimed that a major portion of the success can be explained by knowledge accumulation during its transformation into a network state (Larson & Park, 2014; Oh & Larson, 2011).

The current study has also shown that inequality is another factor that slows economic development by impeding the distributional efficiency. This finding is consistent with that of earlier empirical studies (Chiao & Chiu, 2018; Ganju et al., 2015; Ranis et al., 2000). In addition, the findings reported in earlier empirical investigations, government effectiveness, the vote share and ideology of the ruling political parties were also found to be significant predictors of economic development. This result implies that economically right-wing parties tend to promote economic development. In sum, these results imply that good governance and sound policy regulations arising from a strong government contribute positively towards economic development. These results must be treated with caution because they are primarily included in this study as control variables. However, they are broadly consistent with focussed works of political economists (Aidt et al., 2018; Karimi & Heshmati Daiari, 2018; Potrafke, 2017; Srinivasan, 1994). The current study also found that globalisation positively affects economic development. This finding is congruent with the findings of a couple of relevant studies which reported that globalisation has a positive relationship with human development in developed countries (Atif et al., 2012; Borjas & Ramey, 1994). As suggested by endogenous growth theory, this positive association between globalisation and economic development might be mediated through technological advancements. Theses advancements can be attributed to relaxation or removal of trade barriers as a part of pro-globalisation measures (Ulucak et al., 2020). However, several studies reported that globalisation has no significant positive effect on economic development (Haseeb et al., 2020; Ulucak et al., 2020). These

results can be explained by the low level of globalisation associated with trade barriers that prevail in developing economies. In line with these findings, several scholars argued that the direction of the association between economic development and globalisation varies between developed and emerging economies due to the differentiated economic condition (Atif et al., 2012; Haseeb et al., 2020).

6. Conclusion

This empirical study investigates whether economic development responds to ICT maturity in OECD countries. To do so, a series of baseline estimations is enumerated. The study reveals that ICT maturity enhances economic development by approximately 1%–3.8% in those countries. Among the control variables, GDP growth, government expenditure, environmental quality and governance and policy variables are found as significant predictors of economic development. These findings were supported by a series of robustness checks including GMM estimations.

The findings of this empirical work have practical implications. The results imply that the holistic development of ICT can augment economic development. In this regard, ICT laggards should seek to draw lessons from the successes of recent ICT success stories, such as Denmark, Iceland and the Republic of Korea. The success of these countries suggests that easing ICT use and enhancing ICT skills are crucial dimensions to ICT development. More generally, at the country level, policymakers should devise policies to enhance the affordability of ICT services. In this study, fiscal measures and regulatory reform are possible pathways to reduce barriers to entry and prevent anticompetitive behaviour.

On a cautionary note, the present investigation has some limitations. Firstly, the findings show a general association between ICT maturity and economic development in OECD countries. However, this finding does not provide the details of this relationship or the specific policies

which can be formulated to promote ICT maturity. A detailed country-level case study or qualitative comparative analysis designed to reveal the mechanisms through which ICT maturity promotes economic development would be helpful in this regard. Secondly, we have been unable to consider the effect of ICT diffusion on inclusive development in this study, although income inequality has been included as a control variable. This limitation is because the UNDP reports inequality-adjusted HDI only every 5 years rather than annually. The connection between ICT and socioeconomic disadvantage is of great importance. Further research at the micro level or targeted for particularly disadvantaged groups would be worthwhile insofar the effect of uneven ICT development and socioeconomic inequality could be revealed. Finally, this study was conducted before the COVID-19 pandemic and does not speak directly to the effects thereof. ICT maturity is unlikely to have a significant effect on the extent to which countries are able to withstand the severe disruptions to work practices and brick-and-mortar sales. Further study in this area will be valuable once post-outbreak economic data become available.

Declaration of competing interest

Acknowledgements

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Tables

Table 1: Description of the variables in the regression models (N=350).

Variable	Mean	Med	Min	Max	Std	Description	Reference
HDI	0.87	0.88	0.70	0.95	0.05	The Human Development Index is a composite measure of three key dimensions of human development, namely healthy and long life, knowledge and a decent standard of living	Asongu and Le Roux (2017), Aidt et al. (2018); Ranis (2004); Shahiduzzaman and Alam (2017)
GDPG	1.80	1.98	-14.72	25.56	3.66	Annual gross domestic product growth (%)	Ranis (2004)
Gini	31.39	30.95	22.50	52.40	6.14	Gini index on income inequality	Srinivasan (1994)
PE	11.76	11.58	5.54	18.27	2.42	Public expenditure in education and health (as % of GDP)	Ranis et al. (2000)
MIMLI	7.10	7.12	3.55	9.50	1.17	The Modified ICT Maturity Level Index score	Asongu and Le Roux (2017); Brown and Brown (2008); Nouinou et al. (2015)
GNIPC	37688.53	38760.00	7350.00	104860.00	20530.25	Annual gross national income per capita	Srinivasan (1994)
Forest	33.91	33.14	0.38	73.11	18.16	Forest area (% of total land area)	Shahiduzzaman and Alam (2014); Shahiduzzaman and Alam (2017)
GovtEff	1.31	1.46	0.09	2.35	0.53	The perceptions of the quality of public and civil services, the degree of its independence from political pressures, the quality of policy formulation and implementation	Srinivasan (1994)
VoteShare	34.95	35.30	15.36	67.84	9.47	Share of votes received by the political parties which formed the government	Srinivasan (1994)
OverGovtIdeol	5.79	6.44	2.50	8.66	1.81	Overall ideological stance of ruling political parties in a particular country for a particular period. Each party's overall ideology on a scale ranges between 0 (extreme left) and 10 (extreme right)	Aidt et al. (2018); Potrafke (2017)
Globalisation	82.13	82.54	63.04	91.31	5.81	KOF globalization index is a composite indicator consists of economic, social and political globalisation of a country. The index score ranges from 1 to 100. The higher the score higher the degree of globalisation	Pleninger and Sturm (2020); Ulucak et al. (2020)
GFCE	19.33	19.50	9.93	27.94	3.78	Government final consumption expenditure (as % of GDP)	Andrašić et al. (2018); Machova and Kotlan (2013)
Exp	50.20	41.23	10.65	222.70	32.39	Total export earnings (as % of GDP)	Amirkhalkhali and Atul (2019); Konstantakopoulou (2017)
Inv	23.00	22.69	9.82	41.54	4.53	Total public and private investment (as % of GDP)	Andrašić et al. (2018); Ghosh (2019)

Data sources: UNDP (2017), UNU-WIDER (2017), World Bank (2017; 2018), ITU (2016), Cornell University et al. (2018), Döring and Manow (2019) , and Gygli et al. (2019) .

Note: GDPG= GDP growth, Gini= Gini index, PE= Public expenditure on the social sector, Forest= Forest area, GovtEff = government effectiveness, Vote= Vote share of the elected government, and OverGovtIdeol= Overall ideology of the government. Med: Median; Max: Maximum; Min: Minimum; Std.: Standard Deviation.

Table 2: Correlation matrix.

Variable	HDI	GDPG	Gini	PE	FMIMLI	GNIPC	Forest	GovtEff	VoteShare	OverGovtIdeol	Globalisation	GFCE	Exp	Inv
HDI	1.0000													
GDPG	0.0939***	1.0000												
Gini	-0.5561***	0.1197*	1.0000											
PE	0.6686*	-0.2641*	-0.5420	1.0000										
FMIMLI	0.7747*	-0.1012**	-0.4635*	0.5710*	1.0000									
GNIPC	0.7808*	-0.0730	-0.4576*	0.6440*	0.5877*	1.0000								
Forest	0.0369	-0.0844	-0.1614**	-0.0627	0.0825	-0.0960***	1.0000							
GovtEff	0.7855*	-0.0333	-0.4397*	0.6877*	0.6004*	0.7670*	0.0395	1.0000						
VoteShare	-0.2020*	0.0426	0.4378*	-0.2536*	-0.2194*	-0.2052*	-0.0811	-0.2215*	1.0000					
OverGovtIdeol	0.0505	0.0496	0.1868*	-0.0418	0.0284*	-0.0092	-0.0813	0.0134	-0.0381	1.0000				
Globalisation	0.6224*	-0.1347**	-0.6303*	0.5765*	0.5030*	0.5838*	-0.0240	0.6026*	-0.2804*	-0.1549**	1.0000			
GFCE	0.3981*	-0.3048*	-0.6090*	0.7081*	0.3969*	0.2708*	-0.0584	0.3624*	-0.4317*	-0.0876	0.4510*	1.0000		
Exp	0.0859	0.1166**	-0.3914*	-0.0769	0.1451**	0.2060*	-0.0435	0.1066**	-0.2341*	-0.0137	0.3458*	-0.0075	1.0000	
Inv	-0.1823*	0.406*2	0.0134	-0.3144*	-0.2653*	-0.1510*	0.2595*	-0.0796	-0.0372	0.0348	-0.2298*	-0.2788*	-0.0790	1.0000

Note:*, ** and *** denote statistically significant at 1%, 5% and 10%, respectively.

Table 3: Estimation results of the baseline models.

Variables	Eq. 1		Eq. 2		Eq. 3	
	(1)	(2)	(3)	(4)	(5)	(6)
GDPG	0.0002*	0.0007***	0.0003*	-0.0001	0.0003**	-0.0001
	(0.0001)	(0.0004)	(0.0001)	(0.0004)	(0.0001)	(0.0004)
Gini	-0.0008*	-0.0005**	-0.0008**	-0.0002	-0.0008	0.0001
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
PE	0.0009	0.0004	0.0009	0.0024*	0.0008	0.0024*
	(0.0005)	(0.0007)	(0.0005)	(0.0007)	(0.0005)	(0.0007)
MIMLI	0.0088*	0.0300*	0.0088*	0.0378*	0.0086*	0.0386*
	(0.0006)	(0.0022)	(0.0006)	(0.0018)	(0.0006)	(0.0018)
Forest	-0.0030**	0.0001*	0.0032**	0.0003*	0.0033*	0.0003*
	(0.0012)	(0.0003)	(0.0012)	(0.0001)	(0.0011)	(0.0001)
GovtEff	0.0013	0.0234*				
	(0.0032)	(0.0039)				
VoteShare			0.0001	0.0002***		
			(0.0001)	(0.0001)		
OverGovtIdeol					0.0008*	0.0014**
					(0.0002)	(0.0006)
Globalisation	0.0016*	0.0004	0.0016*	0.0010*	0.0017*	0.0009*
	(0.0004)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Constant	0.6979*	0.6371	0.6935*	0.5327*	0.6792*	0.5428*
	(0.0337)	(0.0312)	(0.0340)	(0.0275)	(0.0336)	(0.0275)
Country FE	Yes	No	Yes	No	Yes	No
Time FE	No	Yes	No	Yes	No	Yes
Wald chi-squared	23825.76*	1654.22*	23882.43*	1481.66*	24617.28*	1491.74*
Number of groups	35	35	35	35	35	35
Time periods	10	10	10	10	10	10
Number of observations	350	350	350	350	350	350

Note: Figures in the parentheses represent standard error.*, ** and *** denote statistically significant at 1%, 5% and 10%, respectively.

Table 4: Robustness checks using GMM and truncated samples.

Variables	GMM		Excluding GFC affected countries		OLS	
	(1)	(2)	(3)	(4)	(5)	(6)
GDPG	0.0005*	0.0004*	0.0003***	0.0008**	0.0001	0.0003*
	(0.0001)	(0.0001)	(0.0002)	(0.0004)	(0.0001)	(0.0001)
Gini	-0.0004*	<0.0001	-0.0009***	-0.0009*	-0.0010*	-0.0008**
	(0.0001)	(<0.0001)	(0.0005)	(0.0003)	(0.0003)	(0.0003)
PE	0.0005	0.0001	0.0012	0.0040*	0.0011**	0.0008
	(0.0005)	(0.0001)	(0.0011)	(0.0009)	(0.0006)	(0.0006)
MIMLI	0.0016**	0.0001***	0.0091*	0.0224*	0.0036*	0.0086*
	(0.0006)	(0.0003)	(0.0014)	(0.0017)	(0.0013)	(0.0006)
Forest	0.0011	<0.0001	0.0031	-0.0003*	-0.0001	0.0034**
	(0.0007)	(<0.0001)	(0.0029)	(0.0001)	(0.0002)	(0.0012)
OverGovtIdeol	0.0001	-0.0001	0.0011**	-0.0018**	0.0008*	0.0008*
	(0.0002)	(0.0001)	(0.0004)	(0.0009)	(0.0002)	(0.0003)
Globalisation	-0.0002	<0.0001	0.0018**	0.0016*	0.0015*	0.0017*
	(0.0002)	(<0.0001)	(0.0009)	(0.0004)	(0.0003)	(0.0004)
Lagged HDI	0.8046*	0.9808*				
	(0.0375)	(0.0061)				
Constant	0.0224*	0.0220*	0.5603	0.5814	0.7296*	0.6792*
	(0.0059)	(0.0057*)	(0.1393)	(0.0370)	(0.0299)	(0.0358)
Time FE	Yes	Yes	Yes	Yes	Yes	No
Country FE	No	No	No	No	No	Yes
R-squared			0.7188		0.5746	0.9860
AR(1)	0.0010	0.0010				
AR(2)	0.8900	0.5370				
Sargan OIR	0.1240	0.1260				
Hansen OIR	1.0000	1.0000				
DHT for instruments						
(a) Instruments in levels H excluding group		1.0000				
Dif (null, H ¼ exogenous)		1.0000				
(b) IV (years, eq [diff]) H excluding group	1.0000	1.0000				
Dif(null, H ¼ exogenous)	0.6470	0.9460				
Fisher	6101.62*	9319.41*				
Wald chi-squared					1054.67*	21663.21*
Number of instruments	28	28				
No. of groups	35	35	27	27	35	35
Number of observations	350	350	270	270	350	350

Note: Figures in the parentheses represent standard error. *, ** and *** denote statistically significant at 1%, 5% and 10%, respectively. DHT: difference-in-Hansen test for exogeneity of instruments' subsets; Dif: difference; OIR: over-identifying restrictions test.

Table 5: Summary of the test for multicollinearity, heteroscedasticity and autocorrelation.

Equation	Mean variance inflation factor	Test for group wise heteroscedasticity[a]		Test for autocorrelation[b]	
		Test statistics	p-value	Test statistics	p-value
2.1	2.10	2516.05*	0.0000	120.15*	0.0000
2.2	1.76	1916.21*	0.0000	118.94*	0.0000
2.3	1.72	3835.75*	0.0000	118.48*	0.0000

Note: [a] Modified Wald test for group wise heteroscedasticity; [b] Wooldridge test for autocorrelation in panel data.
    *, ** and *** denote statistically significant at 1%, 5% and 10%, respectively.

Appendix A

Technical Note

In this study a novel index – Modified ICT Maturity Level Index (MIMLI) – has been employed which is based on the proposition that along with the three aspects of existing dimensions of ICT development indices (access, skill and use), three additional factors have the potential to explain the maturity or development of ICT (Table A1). These factors include affordability, the quality of the ICT services and the institutional efficiency of the telecommunications sector. The definition of the indicators used in the model and the justification of choosing these constructs are provided in Table A1 (For a profound understanding of the rationale of choosing included indicators, see Ali et al. (2019)). The MIMLI is an extension of IDI and mIDI. Each of the dimensions in the MIMLI is treated as a latent measurement or construct. MIMLI hypothesized GNI per capita as the ultimate outcome variable as it can cause variations in the maturity level of ICT (Lam & Shiu, 2010).

The estimation technique of the study is based on the Structural Equation Model. This alternative multivariate estimation technique was invented by Wright (1934). Here, the measurement model is formative which indicates that variations in the indicators cause changes in the respective constructs.

Table A1: A description of the variables in the conceptual model.

Construct/Indicator	Description	References
Access		
A1. Fixed-telephone subscriptions per 100 inhabitants	The ratio of total fixed-telephone subscriptions and the total population of a country, expressed in percentage form.	ITU (2009)
A2. Mobile-cellular telephone subscriptions per 100 inhabitants	The ratio of total mobile-cellular subscriptions and the total population of a country, expressed in percentage form.	ITU (2009)
A3. Logarithm of international Internet bandwidth (bit/s) per Internet user	Logarithm of international Internet bandwidth (bit/s) per Internet user is the converted value of international Internet bandwidth expressed in log form. International Internet bandwidth denotes the ability that backbone operators provide to carry Internet traffic measured in bits per second per Internet users.	ITU (2009)
A4. Percentage of households with a computer	Proportion of household with a computer, available at home for use by all members of the household at any time.	ITU (2009)

Construct/Indicator	Description	References
A5. Percentage of households with Internet access	Proportion of household with Internet access, available for use by all members of the household at any time.	ITU (2009)
Affordability		
AFF1.Per capita ICT spending	Total annual outlay paid as telephone and mobile-cellular services subscription fees per each person.	Baller et al. (2016)
AFF2.Per capita ICT investment	Total investment in the ICT sector made by the entities providing telecommunications networks or services per each person.	Baller et al. (2016)
Efficiency		
E1. Logarithm of telecom sector revenue	Revenue accumulated from telecommunications operators based on their retail fixed-telephone, mobile-cellular, Internet and data services.	Sridhar & Sridhar (2008)
E2. Staff per subscriber in telecom sector	Full-time equivalent employees per one customer in the telecommunications sector.	Raghupathi (2011)
Quality		
Q1.High-speed internet connection (% of total internet connections)	Share of fixed-broadband subscriptions with at least 2 Mbit/s speed to total fixed-broadband subscriptions.	Lyons et al. (2013)
Q2. Seamless mobile-cellular calls (% of total mobile-cellular calls)	Proportion of correctly established mobile-cellular incoming and outgoing calls that are not dropped or uninterrupted before their normal completion by the user.	Lyons et al. (2013)
Skills		
S1. Adult literacy rate	The percentage of population aged 15 years and above who can read and write with an understanding of a short, simple statement on his/her daily life.	ITU (2009)
S2. Secondary gross enrolment ratio	Ratio of the total enrolment in secondary level education and the eligible official school-age population corresponding to the same level of education, expressed as a percentage.	ITU (2009)
S3. Tertiary gross enrolment ratio	Ratio of the total enrolment in tertiary level education and the eligible official school-age population corresponding to the same level of education, expressed as a percentage.	ITU (2009)
Use		
U1. Percentage of individuals using the Internet	People who used the Internet from any location and for any purpose in the last three months, expressed as a percentage.	ITU (2009)
U2. Fixed (wired)-broadband Internet subscriptions per 100 inhabitants	Subscriptions to high-speed access to the public Internet, expressed as a percentage.	ITU (2009)
U3. Wireless-broadband Internet subscriptions per 100 inhabitants	Subscriptions to mobile cellular networks with access to the Internet through data communications at a speed of at least 256 kbit/s.	ITU (2009)

The regression weights for the 17 indicators, six sub-indices at the primary hierarchical level, and the MIMLI at the secondary hierarchical level predicting the GDP per capita were estimated. The statistical package used was SmartPLS (version 2.0, M3; Ringle et al., 2005). The results of the Structural Equation Model analysis are summarised in Table A2 (For details, see Ali et al. (2019)).

Table A2: Relative sub-index and overall contributions of the MIMLI indicators and sub-indices to the overall GNI per capita.[a]

Sub-index/Indicator	Formative measurement model	
	ECsub[b]	ECMIMLI[c]
Access sub-index	**100.0**	**33.1**
A1.	25.7	7.4
A2.	21.5	6.2
A3.	25.6	7.4
A4	27.1	7.8
A5.	14.4	4.2
Affordability sub-index	**100.0**	**9.8**
AFF1.	42.8	4.2
AFF2.	57.2	5.6
Efficiency sub-index	**100.0**	**6.9**
E1.	77.9	5.4
E2.	22.1	1.5
Quality sub-index	**100.0**	**8.6**
Q1.	77.6	6.7
Q2.	22.4	1.9
Skills sub-index	**100.0**	**15.6**
S1.	45.1	7.1
S2.	16.1	2.5
S3.	38.8	6.1
Use sub-index	**100.0**	**25.8**
U1.	36.9	9.5
U2.	27.9	7.2
U3.	35.2	9.1

Note: [a] All figures are expressed in percentage form. For an explanation of the 17 indicator abbreviations see Table 1.

[b] ECsub = explanatory contribution of the indicator to the respective sub-index of the MIMLI = absolute indicator weight divided by the sum of all absolute indicator weights of the respective sub-index. The original absolute indicator weights are reported in Table 5.

[c] ECMIMLI = explanatory contribution of the indicator to the MIMLI = product of the absolute indicator weight and the path coefficient running from the respective sub-index to the MIMLI construct (= MIMLI path connection), divided by the aggregate of all 11 MIMLI path coefficients.

Appendix Table B: Descriptive statistics in panel dimension.

Country	Descriptive statistics	HDI	GDPG	Gini	PE	MIMLI	GNIPC	Forest	GovtEff	VoteShare	OverGovtIdeol	Globalisation	GFCE	Exp	Inv
Australia	Mean	0.93	2.79	31.35	11.11	7.68	50493.00	16.21	1.69	38.48	4.23	80.96	17.72	20.38	27.79
	Median	0.93	2.59	31.35	11.23	7.74	48355.00	16.18	1.70	37.99	3.88	81.20	17.83	19.81	27.75
	Min	0.92	1.81	28.30	10.40	6.47	34170.00	16.04	1.56	33.38	3.88	79.79	17.16	19.43	26.74
	Max	0.94	3.75	33.30	11.68	9.10	65560.00	16.50	1.83	43.40	7.39	81.69	18.14	22.51	29.13
	Std.	0.01	0.70	1.26	0.49	0.85	11415.28	0.14	0.09	4.16	1.11	0.58	0.36	1.01	0.71
Austria	Mean	0.88	1.19	27.02	13.72	7.09	48303.00	46.77	1.68	29.73	3.73	88.63	19.57	51.58	23.60
	Median	0.88	1.26	27.30	13.88	7.15	49375.00	46.76	1.64	29.26	3.73	88.57	19.66	52.47	23.64
	Min	0.86	-3.80	25.30	12.96	5.96	41420.00	46.66	1.48	26.80	3.73	88.07	18.56	44.61	22.56
	Max	0.89	3.62	28.30	14.24	8.15	50750.00	46.88	1.87	35.30	3.73	89.44	20.44	53.54	24.48
	Std.	0.01	2.12	0.89	0.48	0.79	3058.04	0.08	0.14	3.14	0.00	0.43	0.57	2.64	0.65
Belgium	Mean	0.88	1.22	26.54	14.07	7.27	45660.00	22.47	1.56	18.10	6.48	90.05	23.44	78.77	23.47
	Median	0.89	1.38	26.35	14.35	7.14	46830.00	22.50	1.59	17.95	6.53	90.05	23.85	80.23	23.46
	Min	0.87	-2.25	25.90	12.80	6.10	40030.00	22.31	1.38	15.36	6.20	88.81	21.59	69.31	21.66
	Max	0.90	3.45	27.80	14.87	8.66	47920.00	22.57	1.75	20.26	7.01	91.11	24.49	82.62	25.73
	Std.	0.01	1.62	0.63	0.75	0.91	2519.29	0.09	0.12	1.46	0.24	0.57	1.05	4.15	1.16
Canada	Mean	0.91	1.67	31.92	12.42	7.29	46110.00	38.19	1.78	38.35	8.30	83.13	20.65	31.54	23.99
	Median	0.91	2.27	31.92	12.49	7.21	45935.00	38.19	1.77	38.59	8.66	83.10	20.89	31.07	24.05
	Min	0.89	-2.95	31.80	11.68	6.32	37780.00	38.17	1.75	36.27	5.06	81.83	19.30	28.44	22.02
	Max	0.92	3.14	32.10	13.25	8.76	52620.00	38.22	1.90	39.60	8.66	84.24	22.02	35.33	24.97
	Std.	0.01	1.80	0.10	0.54	0.71	4767.92	0.02	0.04	1.39	1.14	0.71	0.93	2.34	0.85
Chile	Mean	0.82	3.87	49.20	7.38	5.69	11852.00	22.39	1.20	48.21	3.75	77.70	11.79	37.19	23.60
	Median	0.82	4.48	49.20	7.59	5.50	11580.00	22.03	1.25	45.91	3.75	77.83	12.02	37.39	23.29
	Min	0.80	-1.56	46.00	5.54	4.52	7350.00	21.63	1.03	44.30	2.50	75.91	9.93	29.68	20.82
	Max	0.85	6.32	52.40	8.60	7.50	15360.00	23.85	1.28	55.73	5.00	78.41	13.18	45.07	26.82
	Std.	0.02	2.45	1.65	1.02	0.92	2869.88	0.82	0.09	5.24	1.32	0.75	1.06	5.08	2.26
Czech	Mean	0.86	2.11	25.01	10.20	6.74	18079.00	34.41	0.96	26.91	4.77	83.26	19.99	70.75	27.85
	Median	0.86	2.48	25.05	10.33	6.87	18720.00	34.41	0.93	22.08	3.05	83.02	19.98	68.86	27.04
	Min	0.85	-4.80	24.60	9.38	5.40	13930.00	34.29	0.88	20.45	3.05	81.63	19.22	58.68	24.67
	Max	0.88	6.85	25.30	10.75	8.46	19420.00	34.54	1.10	35.38	7.36	85.01	21.00	82.55	32.07
	Std.	0.01	3.48	0.24	0.47	0.98	1815.96	0.08	0.08	7.32	2.23	1.04	0.60	8.07	2.42

Denmark	Mean	0.92	0.70	26.28	17.17	8.12	60165.00	13.94	2.09	26.51	6.94	88.43	25.94	52.76	20.91
	Median	0.92	1.14	26.70	17.19	8.18	60805.00	13.90	2.10	26.31	7.29	88.40	25.90	54.00	19.83
	Min	0.90	-4.91	23.70	16.04	7.05	53540.00	13.28	1.82	25.66	3.80	87.81	24.20	47.13	18.08
	Max	0.93	3.91	27.70	18.27	9.32	63530.00	14.58	2.35	29.00	7.29	89.01	27.94	55.68	25.28
	Std.	0.01	2.29	1.23	0.89	0.81	3175.06	0.45	0.18	0.90	1.10	0.45	1.21	2.69	2.57
Estonia	Mean	0.85	1.85	32.78	9.92	6.94	15723.00	52.77	1.05	27.79	7.96	81.34	18.70	74.74	28.45
	Median	0.84	2.57	32.70	9.95	6.64	15470.00	52.70	1.05	27.80	7.90	81.40	18.75	76.84	27.00
	Min	0.83	-14.72	30.90	8.56	5.90	11500.00	52.65	0.95	24.60	7.90	78.34	15.76	60.80	20.71
	Max	0.87	10.27	35.60	11.17	8.76	18840.00	53.04	1.16	28.60	8.50	83.71	21.08	86.54	39.35
	Std.	0.01	7.25	1.53	0.77	1.00	2363.38	0.14	0.07	1.19	0.19	1.72	1.72	10.28	6.51
Finland	Mean	0.88	0.44	25.83	13.22	7.79	47994.00	73.05	2.11	21.98	6.38	86.42	23.38	39.83	22.68
	Median	0.88	0.36	25.90	13.26	7.83	48830.00	73.11	2.17	22.10	5.80	86.51	24.05	38.99	22.08
	Min	0.87	-8.27	25.20	11.71	6.49	42740.00	72.86	1.81	20.40	5.80	85.46	20.87	36.27	20.92
	Max	0.90	5.18	26.30	14.46	9.10	49920.00	73.11	2.24	24.70	7.25	87.50	24.74	45.08	25.50
	Std.	0.01	3.78	0.38	0.97	0.92	2261.73	0.09	0.14	1.60	0.75	0.65	1.48	3.16	1.74
France	Mean	0.88	0.88	29.17	14.13	7.37	42357.00	30.10	1.46	34.84	5.80	86.42	23.42	27.53	22.83
	Median	0.88	1.01	29.55	14.30	7.48	43200.00	30.10	1.45	36.42	7.50	86.44	23.78	27.59	22.76
	Min	0.87	-2.94	26.60	13.55	5.90	37960.00	29.17	1.34	29.35	3.25	84.78	22.27	24.07	21.30
	Max	0.90	2.37	30.50	14.56	8.77	44220.00	31.03	1.63	39.54	7.50	87.69	24.01	29.67	24.11
	Std.	0.01	1.59	1.25	0.39	0.94	2029.78	0.62	0.09	5.09	2.19	0.87	0.71	1.61	0.88
Germany	Mean	0.91	1.48	29.36	13.02	7.80	44652.00	32.71	1.61	31.41	5.47	87.38	18.73	43.65	19.76
	Median	0.91	1.84	29.50	13.21	7.51	45290.00	32.72	1.59	34.10	6.25	87.35	18.98	44.14	19.57
	Min	0.90	-5.62	26.80	12.08	6.78	38370.00	32.66	1.52	27.30	3.65	87.00	17.50	37.80	18.07
	Max	0.93	4.08	30.70	13.65	9.50	47710.00	32.75	1.74	34.20	6.25	87.88	19.56	46.87	21.08
	Std.	0.01	2.84	1.16	0.61	0.81	3095.57	0.03	0.08	3.54	1.26	0.31	0.71	2.73	0.91
Greece	Mean	0.86	-2.04	33.89	11.31	6.62	24978.00	30.40	0.49	38.61	5.68	80.37	21.15	25.68	17.44
	Median	0.86	-1.79	34.25	11.32	6.56	24740.00	30.40	0.53	41.84	6.74	80.23	20.62	24.45	16.08
	Min	0.85	-9.13	32.90	10.25	5.54	20270.00	29.34	0.26	29.66	2.89	78.46	20.16	18.98	9.82
	Max	0.87	5.65	34.50	12.05	8.83	29330.00	31.45	0.64	45.36	6.74	81.95	23.31	32.37	27.13
	Std.	0.00	4.68	0.60	0.52	0.99	2999.63	0.71	0.13	6.64	1.44	0.97	1.05	4.78	6.42
Hungary	Mean	0.82	0.89	27.21	9.89	6.28	12856.00	22.61	0.66	47.35	5.07	85.19	20.78	82.41	22.16
	Median	0.82	1.26	27.05	9.90	6.15	13095.00	22.63	0.67	44.87	6.54	85.04	20.71	83.74	21.44
	Min	0.81	-6.60	24.10	9.13	5.14	11300.00	22.27	0.50	43.20	2.87	84.16	19.67	73.98	19.45

	Max	0.84	4.23	33.30	10.97	7.64	13460.00	22.85	0.87	52.73	6.54	86.15	22.03	90.21	25.68
	Std.	0.01	3.18	2.66	0.48	0.81	716.62	0.19	0.10	4.68	1.90	0.56	0.90	5.76	2.15
Iceland	Mean	0.90	1.90	25.48	14.56	8.11	46817.00	0.43	1.63	30.62	6.13	73.85	24.05	48.50	20.39
	Median	0.90	1.96	24.85	14.55	8.18	47620.00	0.43	1.58	29.80	7.49	73.28	24.23	53.46	16.72
	Min	0.89	-6.94	22.70	14.02	7.12	36520.00	0.38	1.49	26.70	4.08	72.27	22.91	31.13	13.86
	Max	0.92	9.35	29.60	14.87	9.07	61940.00	0.49	1.89	36.60	7.49	76.19	24.79	56.97	36.01
	Std.	0.01	4.53	2.27	0.28	0.72	7806.96	0.04	0.16	3.80	1.76	1.59	0.66	9.69	7.55
Ireland	Mean	0.91	4.25	30.34	11.28	7.21	46904.00	10.57	1.49	38.82	6.26	84.29	17.20	99.39	22.30
	Median	0.91	2.39	30.17	11.30	7.07	46885.00	10.57	1.52	38.79	6.26	84.64	17.26	103.12	20.71
	Min	0.90	-4.63	28.80	9.99	5.93	41720.00	10.18	1.34	36.10	6.07	82.85	12.34	79.00	17.23
	Max	0.92	25.56	31.90	13.06	8.47	51630.00	10.95	1.60	41.56	6.44	85.20	20.14	124.64	31.88
	Std.	0.01	8.51	0.87	0.92	0.85	3454.36	0.26	0.09	2.87	0.20	0.84	2.13	14.85	4.93
Israel	Mean	0.89	3.77	37.39	10.30	6.99	37688.53	7.28	1.30	22.61	6.20	77.65	22.85	35.70	19.99
	Median	0.89	3.76	37.39	10.24	7.14	37688.53	7.19	1.28	22.50	6.00	76.97	22.73	35.49	20.09
	Min	0.87	1.38	36.70	9.99	6.04	37688.53	7.12	1.21	22.00	6.00	76.27	22.37	31.27	18.26
	Max	0.90	5.77	37.80	10.69	8.33	37688.53	7.62	1.39	23.40	6.68	80.37	23.92	40.80	21.24
	Std.	0.01	1.47	0.30	0.25	0.74	0.00	0.19	0.06	0.56	0.33	1.44	0.42	3.35	0.99
Italy	Mean	0.87	-0.42	32.13	11.24	6.59	35995.00	30.78	0.38	32.86	4.99	81.22	19.58	27.20	19.54
	Median	0.87	0.35	32.25	11.24	6.65	35910.00	30.78	0.40	34.32	5.23	81.23	19.49	27.22	19.93
	Min	0.86	-5.48	31.20	10.61	5.64	32970.00	29.96	0.20	25.55	2.50	79.96	18.84	22.48	16.96
	Max	0.89	2.01	32.80	11.79	7.99	37760.00	31.61	0.46	38.21	7.15	82.52	20.63	29.94	22.19
	Std.	0.01	2.37	0.47	0.32	0.73	1699.15	0.55	0.08	5.92	2.30	0.75	0.57	2.21	2.12
Japan	Mean	0.89	0.57	32.87	11.27	7.70	42711.00	68.46	1.56	36.32	7.29	75.00	19.40	15.89	23.21
	Median	0.89	1.32	32.87	11.39	7.89	41685.00	68.47	1.50	38.18	8.03	74.50	19.74	15.89	23.54
	Min	0.88	-5.42	32.11	9.93	6.14	38740.00	68.43	1.42	27.60	5.57	72.36	17.95	12.52	21.30
	Max	0.90	4.19	33.60	12.19	9.06	49480.00	68.48	1.81	42.41	8.03	78.42	20.25	17.64	24.75
	Std.	0.01	2.53	0.35	0.89	1.02	4288.13	0.02	0.14	5.72	1.19	1.72	0.95	1.68	1.31
Korea, Rep.	Mean	0.88	3.57	31.06	8.13	8.31	23437.00	63.95	1.14	39.72	6.60	76.94	14.66	48.49	31.00
	Median	0.89	3.12	31.06	8.34	8.47	22670.00	63.95	1.15	38.27	7.00	77.42	14.74	49.69	31.51
	Min	0.87	0.71	30.60	7.11	7.17	19950.00	63.44	1.01	37.37	5.00	72.39	13.82	37.17	28.47
	Max	0.90	6.50	31.40	8.72	9.39	27250.00	64.50	1.25	42.80	7.00	79.19	15.17	56.34	33.02
	Std.	0.01	1.71	0.26	0.54	0.74	2524.82	0.37	0.09	2.67	0.84	2.08	0.47	6.46	1.88
Latvia	Mean	0.82	1.77	36.11	9.41	6.38	13219.00	53.75	0.75	24.12	5.34	74.25	18.06	51.44	27.82

	Median	0.82	2.71	35.60	9.24	6.37	13605.00	53.91	0.70	23.00	5.20	73.90	17.77	55.74	24.80
	Min	0.81	-14.40	34.40	8.82	5.32	8880.00	53.19	0.48	19.56	3.00	72.06	17.21	38.45	19.32
	Max	0.83	11.89	38.90	10.53	7.56	15310.00	53.97	1.09	31.90	7.75	76.50	19.84	61.31	41.54
	Std.	0.01	7.60	1.39	0.57	0.79	1961.65	0.28	0.19	4.72	2.47	1.58	0.83	10.01	7.84
Luxembourg	Mean	0.89	2.72	28.19	10.39	7.82	77297.00	33.47	1.67	36.06	6.45	87.03	16.60	187.08	18.71
	Median	0.89	3.26	28.20	10.38	7.66	75475.00	33.47	1.66	35.81	6.45	87.39	16.70	184.67	18.93
	Min	0.88	-4.36	27.20	9.91	6.70	71410.00	33.47	1.57	33.68	6.45	83.85	15.22	164.07	16.21
	Max	0.90	8.35	29.20	11.14	9.31	88240.00	33.47	1.75	38.04	6.45	87.80	17.46	222.70	20.69
	Std.	0.01	3.77	0.64	0.40	0.83	5725.11	0.00	0.06	1.91	0.00	1.16	0.77	17.11	1.19
Mexico	Mean	0.75	2.43	46.50	8.00	4.57	9406.00	34.20	0.22	36.77	8.00	66.85	11.59	30.35	22.78
	Median	0.75	2.93	46.50	8.10	4.50	9440.00	34.18	0.19	36.68	8.00	66.83	11.75	30.57	22.90
	Min	0.73	-4.70	45.00	7.32	3.55	8370.00	33.97	0.09	35.89	8.00	63.04	10.52	27.28	21.60
	Max	0.76	5.11	48.70	8.57	5.84	10190.00	34.45	0.35	37.30	8.00	72.26	12.46	35.12	24.44
	Std.	0.01	2.84	1.00	0.43	0.81	599.97	0.16	0.08	0.55	0.00	2.61	0.70	2.68	0.89
Netherlands	Mean	0.91	1.06	26.45	14.24	7.96	51376.00	11.04	1.79	45.06	6.27	78.25	19.00	29.37	21.97
	Median	0.92	1.54	26.40	14.50	7.99	52395.00	11.07	1.79	26.51	7.35	89.24	25.97	74.66	20.47
	Min	0.90	-3.77	25.40	12.92	6.86	45850.00	10.86	1.70	20.49	5.94	87.72	23.28	63.15	18.23
	Max	0.92	3.70	27.60	15.21	8.94	54120.00	11.16	1.83	26.58	7.35	91.31	26.48	83.43	22.35
	Std.	0.01	2.23	0.80	0.85	0.73	2611.57	0.10	0.05	2.55	0.73	1.07	1.29	7.04	1.45
New Zealand	Mean	0.90	1.95	35.75	15.14	7.34	33311.00	38.58	1.79	45.06	6.27	78.25	19.00	29.37	21.97
	Median	0.90	2.36	35.75	15.51	7.17	30965.00	38.55	1.81	44.93	6.72	78.29	18.96	29.05	22.31
	Min	0.89	-1.12	32.30	12.80	6.15	26390.00	38.55	1.59	41.10	4.48	77.36	18.25	27.86	19.66
	Max	0.92	3.40	38.30	16.71	8.83	41530.00	38.65	1.93	47.31	6.72	78.75	19.65	32.04	24.75
	Std.	0.01	1.52	1.89	1.38	0.91	5717.51	0.04	0.11	2.34	0.94	0.45	0.55	1.26	1.66
Norway	Mean	0.94	1.35	24.02	14.45	7.77	90430.00	33.14	1.88	33.21	3.37	85.55	20.75	41.02	26.36
	Median	0.94	1.51	23.60	14.52	7.82	89360.00	33.14	1.87	32.70	3.37	85.60	21.11	40.15	26.30
	Min	0.93	-1.69	22.50	13.37	6.88	69980.00	33.11	1.83	30.80	3.37	84.50	18.59	37.72	24.17
	Max	0.95	2.99	29.20	15.38	8.80	104860.00	33.16	2.02	35.40	3.37	86.63	23.39	45.89	28.07
	Std.	0.01	1.38	1.99	0.74	0.55	10888.52	0.02	0.06	2.04	0.00	0.57	1.60	2.72	1.34
Poland	Mean	0.83	3.90	31.41	9.62	6.37	12248.00	30.48	0.61	38.73	6.53	79.22	18.33	42.20	21.67
	Median	0.83	3.73	31.10	9.52	6.34	12865.00	30.50	0.63	39.18	6.24	78.73	18.14	41.31	21.15
	Min	0.81	1.39	30.60	9.28	5.22	8460.00	30.12	0.37	27.00	6.24	76.97	17.93	37.18	18.98
	Max	0.86	7.03	33.30	10.09	7.56	13680.00	30.81	0.83	41.51	7.70	81.51	19.12	49.52	25.21

	Std.	0.02	1.81	0.85	0.28	0.76	1718.59	0.23	0.16	4.35	0.62	1.31	0.38	4.54	1.95
Portugal	Mean	0.82	-0.11	35.04	11.72	6.56	21519.00	35.31	1.04	41.57	5.17	82.20	19.65	34.10	19.18
	Median	0.82	0.55	34.50	11.51	6.56	21300.00	35.30	1.02	40.31	5.17	82.23	19.81	32.71	19.69
	Min	0.80	-4.03	33.70	11.20	5.32	19330.00	34.74	0.87	37.73	4.05	80.76	18.12	27.08	14.63
	Max	0.84	2.49	37.70	12.74	7.88	22960.00	35.91	1.23	46.40	6.29	83.35	21.43	40.40	23.57
	Std.	0.02	2.26	1.30	0.53	0.82	1189.02	0.40	0.13	3.48	1.18	0.74	1.06	4.95	3.60
Slovak Republic	Mean	0.83	3.71	25.20	9.50	6.10	16785.00	40.30	0.84	36.38	3.38	82.09	18.71	84.34	24.42
	Median	0.83	3.33	25.05	9.60	6.15	17240.00	40.32	0.84	34.79	3.38	82.01	18.81	84.16	24.11
	Min	0.80	-5.42	23.70	8.71	4.81	12890.00	40.20	0.73	29.14	3.38	80.69	17.22	67.61	20.94
	Max	0.85	10.80	28.10	10.08	7.12	18140.00	40.35	0.88	44.41	3.38	83.16	20.16	93.82	28.84
	Std.	0.01	4.38	1.34	0.52	0.76	1642.23	0.05	0.05	7.25	0.00	0.66	0.89	8.47	3.25
Slovenia	Mean	0.88	1.14	23.82	11.97	6.76	23228.00	61.89	1.03	30.40	3.97	79.43	19.14	69.08	24.02
	Median	0.88	1.75	23.75	12.12	6.76	23415.00	61.92	1.01	29.77	3.30	79.47	19.06	68.99	21.98
	Min	0.87	-7.80	22.70	10.88	5.93	19950.00	61.76	0.94	28.51	3.06	76.96	17.29	57.24	18.71
	Max	0.89	6.94	25.00	12.49	7.85	24710.00	61.97	1.19	34.49	7.00	80.92	20.43	76.99	32.88
	Std.	0.01	4.26	0.67	0.51	0.56	1518.16	0.07	0.08	2.30	1.60	1.11	1.10	6.23	5.68
Spain	Mean	0.87	0.47	33.38	11.12	6.92	30327.00	36.24	1.03	41.59	5.67	83.54	19.36	28.16	24.08
	Median	0.87	0.57	33.60	11.06	6.81	29840.00	36.53	1.01	42.59	5.67	83.45	19.58	27.31	22.73
	Min	0.85	-3.57	31.90	10.16	5.75	27970.00	35.02	0.84	28.72	3.74	81.77	17.35	22.67	18.71
	Max	0.88	4.17	34.70	12.07	8.54	32770.00	36.82	1.17	44.36	7.60	85.23	20.52	32.94	31.34
	Std.	0.01	2.78	1.05	0.67	0.89	1699.57	0.62	0.12	4.65	2.03	1.05	1.13	3.79	4.95
Sweden	Mean	0.90	1.91	24.50	15.54	8.20	55566.00	68.69	1.93	32.55	3.44	89.38	25.41	46.43	23.25
	Median	0.90	2.63	24.60	15.25	8.16	55520.00	68.66	1.96	31.01	3.44	89.32	25.53	46.25	23.19
	Min	0.90	-5.18	23.40	13.46	7.55	48840.00	68.41	1.80	30.66	3.44	88.75	24.07	43.80	20.92
	Max	0.91	5.99	25.40	17.77	9.04	61030.00	68.92	2.05	35.20	3.44	90.44	26.33	49.81	24.61
	Std.	0.01	3.27	0.63	1.73	0.52	4006.68	0.22	0.09	2.29	0.00	0.61	0.80	1.87	1.13
Switzerland	Mean	0.93	1.93	29.79	12.01	7.74	75986.00	31.31	1.97	27.79	7.36	89.46	11.60	63.25	24.49
	Median	0.93	2.00	29.74	12.12	7.54	78280.00	31.30	1.97	27.80	7.36	89.05	11.73	63.31	24.32
	Min	0.91	-2.22	28.50	10.75	6.88	62580.00	30.89	1.82	26.56	7.36	87.93	10.91	56.49	22.55
	Max	0.94	4.11	31.10	12.80	9.28	88460.00	31.73	2.11	29.39	7.36	91.01	11.97	71.92	26.74
	Std.	0.01	1.80	0.80	0.68	0.73	10269.97	0.28	0.10	1.28	0.00	1.10	0.39	4.51	1.37
Turkey	Mean	0.74	5.24	43.02	8.19	4.97	10671.00	14.62	0.30	46.11	6.99	69.83	14.10	22.40	28.39
	Median	0.74	5.63	43.11	8.20	4.79	10830.00	14.62	0.30	46.66	6.99	70.33	13.98	22.42	28.82

	Min	0.70	-4.70	40.20	6.83	3.82	7820.00	13.99	0.12	34.28	6.99	65.89	13.01	20.45	23.02
	Max	0.77	11.11	44.90	8.99	6.68	12590.00	15.22	0.41	49.83	6.99	72.12	15.77	23.76	31.27
	Std.	0.03	4.45	1.25	0.57	0.85	1635.54	0.41	0.08	4.99	0.00	1.86	0.78	1.07	2.19
United Kingdom	Mean	0.90	1.22	32.28	12.95	7.78	43812.00	12.72	1.60	35.82	6.20	88.77	20.18	27.83	16.46
	Median	0.90	1.87	32.45	13.27	7.82	43730.00	12.68	1.60	36.10	7.43	88.91	19.99	27.80	16.67
	Min	0.89	-4.19	30.20	11.76	6.43	40620.00	12.52	1.50	35.20	4.36	87.86	19.17	24.86	14.43
	Max	0.91	3.05	33.90	13.75	9.01	48420.00	13.00	1.74	36.93	7.43	89.22	21.63	30.51	18.11
	Std.	0.01	2.12	1.03	0.73	0.92	2653.19	0.17	0.08	0.59	1.59	0.48	0.85	1.79	1.11
United States	Mean	0.91	1.46	38.26	13.01	7.59	51143.00	33.70	1.54	62.45	5.85	80.88	15.65	12.50	20.06
	Median	0.91	2.00	38.26	13.13	7.71	49895.00	33.76	1.53	61.71	7.50	80.87	15.51	12.51	19.97
	Min	0.90	-2.78	37.80	12.25	6.38	48050.00	33.35	1.46	53.16	3.00	80.12	14.41	10.65	17.51
	Max	0.92	2.86	38.90	13.66	8.87	56290.00	33.90	1.65	67.84	8.00	81.68	16.94	13.65	23.33
	Std.	0.01	1.74	0.39	0.49	0.82	3107.93	0.19	0.06	5.69	2.46	0.58	0.87	1.14	1.79

Note: Med: Median; Max: Maximum; Min: Minimum; Std.: Standard Deviatio

Appendix Table C: Cluster analysis of OECD countries on the basis of ICT price basket.

Cluster 1- Higher ICT price basket		Cluster 2 - Lower ICT price basket	
Country	**ICT price basket (2012)**	**Country**	**ICT price basket (2012)**
Australia	32.40	Austria	18.16
Canada	28.06	Belgium	23.41
Czech Republic	35.94	Chile	16.64
Hungary	32.17	Denmark	19.24
Ireland	26.17	Estonia	16.97
Italy	37.34	Finland	21.79
Japan	28.68	France	19.04
Mexico	26.07	Germany	23.61
New Zealand	30.94	Greece	21.11
Portugal	29.05	Iceland	9.55
Slovak Republic	28.96	Israel	18.33
Spain	28.87	Korea, Rep.	15.27
Turkey	26.36	Latvia	23.80
		Luxembourg	18.61
		Netherlands	22.97
		Norway	14.49
		Poland	22.63
		Slovenia	22.62
		Sweden	21.46
		Switzerland	20.26
		United Kingdom	18.11
		United States	22.98
Average ICT price basket	30.08	**Average ICT price basket**	19.59
No. of countries	13	**No. of countries**	22
% of total	37.14	**% of total**	62.86
Average MIMLI score	6.61	**Average MIMLI score**	7.38