



# The effect of intelligence on financial development: A cross-country comparison



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## ABSTRACT

We assess the correlations between intelligence and financial development in 123 countries using data averages from 2000–2010. Cognitive human capital is measured in terms of IQ (Lynn and Vanhanen's IQ measures), cognitive ability (Rindermann's combination of psychometric and student assessment test measures) and cognitive skills (Hanushek's student assessment test measures), while financial development is appreciated both from financial intermediary and stock market development perspectives. Short-term financial measures are private and domestic credits whereas long-term financial indicators include: stock market capitalization, stock market value traded and turnover ratio. The following findings are established based on standardized correlations. (1) For the nexus with private credit, the positive correlations of IQ and cognitive ability are broadly similar, while that of cognitive skills is lower relative to cognitive ability. (2) The correlation between intelligence and other financial variables are broadly similar, but for the higher degree of association with stock market value traded. (3) The underlying findings are broadly confirmed in terms of sign of correlation, though the magnitude of correlation is higher (lower) with the addition of social capital or ethnic fractionalization (institutions or income). (4) When continents are excluded to control for extreme effects, baseline results are confirmed and the following on order of continental importance in financial development is established in increasing magnitude: Americas, Europe, Oceania, Africa and Asia.

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## 1. Introduction

Financial development remains fundamental to economic growth. Despite some country-specific (Muchai, 2013) doubts, recent meta-studies have confirmed this mainstream narrative (Asongu, Forthcoming). The findings are consistent with perspectives of, inter alia: policy evidence (Asongu, 2014a; Chapili, 2013), financial markets (Agbloyor, Abor, Adjasi, & Yawson, Forthcoming) and nexuses among saving and exports for long-run economic growth (Wang, Yun, & Lee, 2012).

While the relationship between finance and growth has been substantially investigated, as far as we know, literature on

the finance–KE (Knowledge Economy) nexus is scarce. Given the abundantly documented role of finance in economic growth, investigating the relationship between KE and finance is important since financial intermediation is indispensable for converting saving into long-term investment opportunities.

The nexus between financial development and human capital has not been the object of substantial research focus in theoretical and empirical literature. Arguments can be made to justify the relationship between the two variables. An important human capital enables access to better information, hence, a potential risk mitigating factor (Outreville, 1999). Human capital is also positively related to savings (De Gregorio, 1996; Bernheim, Garrett, & Maki, 1997). This could be explained by the fact that developed intelligence is associated with long-term horizon planning (Potrafke, 2012). It is within this framework that Jones and Podemaska (2010) have established a

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link between Intellectual Quotient (IQ) and savings (Jones and Podemska, 2010).

According to Ukenna, Ijeoma, Anionwu, and Olise (2010), skills and training can better predict human capital (HC) because they affect growth significantly. Human capital in the financial sector in forms of competent or skilled banking professionals could contribute to enhancing the stability of banks. Evidence on complementarity between HC and financial development is provided by Evans, Green, and Murinde (2002) who have concluded that the former is a crucial component in manpower development (or human resources) in the growth process. From a microeconomic study viewpoint, education has been established to be an essential component of village bank success in Thailand (Paulson, 2002).

The impact of traditional measurements (such as life expectancy, average schooling years in the primary, second and tertiary levels and life expectancy) have not resulted in a consensus due to issues in data measurement (Cohen & Soto, 2007; De la Fuente & Doménech, 2006). The marginal/negligible role played by output in these indicators of human capital has been criticized by Weede and Kämpf (2002) because of too much reliance on inputs. The criticism has motivated some authors to use evaluation tests of international standard, notably: the Program of International Student Assessment (PISA) and Trends in International Mathematics and Science Study (TIMSS) (Hanushek & Kimko, 2000; Hanushek & Woessmann, 2008, 2009).

Another current issue of the literature involving psychologists and Lynn and Vanhanen (2001, 2002, 2006) has used Intellectual Quotient (IQ) data compiled from many countries. The data which has been employed in many published studies (Lynn & Vanhanen, 2012a,b) is increasingly being used by a growing stream of economists, notably: Weede and Kämpf (2002), Jones and Schneider (2006), Ram (2007), Potrafke (2012), Kalonda-Kanyama and Kodila-Tedika (2012), Kodila-Tedika (2014), Rindermann, Falkenhayn, and Baumeister (2014a); Rindermann, Kodila-Tedika, and Christainsen (2014b), Kodila-Tedika and Mutascu (2014) and Kodila-Tedika and Bolito-Losembe (2014). The current data from Lynn, Hanushek and Vanhanen which is increasingly being improved has recently been updated by Rindermann (2007) and Meisenberg and Lynn (2011). The updated data which we use in the present study has been recently employed by Kalonda-Kanyama and Kodila-Tedika (2012) and Meisenberg and Lynn (2012).

By investigating the relationship between intelligence and financial development, the study contributes to existing literature by steering clear of the current finance-KE studies and introducing an intelligence component into the nexus. Moreover, it extends the finance-KE literature that has been essentially focused on the African continent to a broad sample of 123 countries. In essence, a close relationship between KE and finance has been confirmed by Asongu (2014b), especially with the instrumentality of Intellectual Property Rights (IPRs) (Asongu, 2013a).<sup>1</sup> Given the apparent linkage between IPRs, KE and IQ, it would be interesting to extend the existing literature by investigating the role of IQ in financial development. Moreover, Vanhanen (2013) has recently established a relationship between the Euro financial crisis and national IQs.

<sup>1</sup> The interested reader can find more literature on KE and financial sector competition in Asongu (2014c, 2015b).

The rest of the study is organised as follows. Section 2 discusses the data and methodology. The empirical analysis and discussion of results are covered in Section 3. Robustness checks are presented in Section 4. We conclude with Section 5.

## 2. Empirical strategies and data

### 2.1. Data

The study investigates cross-sectional average data between 2000–2010 from 123 countries. The intelligence data are sourced from Meisenberg and Lynn (2011). This is an update of previous versions found in Lynn and Vanhanen (2002, 2006). This dataset compiles hundreds of national IQ test averages during the 20th and 21st centuries using the best methods of practice. Average IQ measures both the nation's labour quality and general-purpose human capital (Hanushek & Kimko, 2000; Jones & Schneider, 2006).

The recent dataset has the appeal of including more nations as well as a composite indicator of intelligence in human capital form.

Three indicators of intelligence are taken into account: the measurement of IQ from Lynn & Vanhanen: an indicator for which missing values are completed with school achievement and a measure of human capital that is a composite indicator for school achievement and IQ. However, given that the measurement of the first is a sub-set of the second, we restrict the analysis exclusively to the second and third measures.

The dependent variables consist of proxies in financial intermediary or short-run financial development and stock market development or long-term financial development. The former is measured by private sector credit and domestic credit which are proxies of financial activity (Asongu, 2013b). It is important to note that domestic credit comprises of credit from both private and public sectors. The latter or stock market variable includes: stock market capitalization, stock market value traded and stock market turnover ratio. These variables from Ang and Kumar (2014) are consistent with the underlying stock market performance/development literature (Asongu, 2012a,b, 2013c).

The control variables include: credit rights, trade openness, financial openness, interactions between trade openness and financial openness, legal origins (British, French, German and Scandinavian), religions (Catholic, Muslim and Protestants), latitude and tropics. These variables which are from Ang and Kumar (2014) are defined in the appendix alongside information on their corresponding sources. We discuss the expected signs concurrently with the estimations in the results sections.

The definition of variables, summary statistics and correlation matrix are provided in the appendix.

### 2.2. Empirical specification

Consistent with Ang and Kumar (2014), the specification in Eq. (1) below investigates the effect of intelligence or human capital (HC) on financial development (FD) across 123 countries

$$FD_i = \alpha_1 + \alpha_2 HC_i + \alpha_3 X_i + \varepsilon_i \quad (1)$$

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