



# Does the intelligence of populations determine the wealth of nations?



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## ABSTRACT

Can the average intelligence quotient (IQ) of populations be considered the root cause of international development inequalities? Psychologists and some economic studies have proposed the existence of a link between intelligence quotient and economic development. The paper tests this hypothesis, using different measures of economic development for the year 1500. Consistent with Jared Diamond's (1997) hypothesis, the paper shows how the differences in the timing of agriculture transition and the histories of States, not population IQ differences, predict international development differences before the colonial era. The average IQ of populations appears to be endogenous, related to the diverse stages of nations' modernization, rather than being an exogenous cause of economic development.

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## 1. Introduction

The economic and social conditions of nations are dramatically unequal. In 2010, the GDP per capita (PPP) of the USA, one of the richest countries in the world, was about two hundred times greater than that of the poorest one, the Democratic Republic of the Congo. Infant mortality, literacy rates, life expectancy and a myriad of socio-economic indicators reveal that standards of living are incomparably different between rich and poor countries.

Why do such differences exist? Economists have indicated geographic, historical, institutional, and also cultural and genetic differences as fundamental causes of the diverse long run development patterns of nations.<sup>1</sup> In the field of psychology, however, a radically alternative hypothesis has been proposed. According to this hypothesis, the international social and economic disparities would be, to a large extent, explained by differences in intelligence quotients (IQs) between populations and races.<sup>2</sup>

The IQ-development hypothesis is far more widespread than a non-specialist reader might think. Illustrated in detail in two books by Richard Lynn and Tatu Vanhanen, *IQ & the Wealth of Nations* (2002) and *IQ & Global Inequality* (2006), this hypothesis constitutes, with variations, the object of a number of studies by psychologists and economists. According to these studies, the average IQ of populations explains the international differences in numerous social, institutional and economic outcomes: GDP per capita growth rates, education levels, health conditions, life expectancy, and also the incidence of corruption, the degree of democracy and the scientific and technological advancement of nations.<sup>3</sup>

Since, in the IQ-development hypothesis, differences in intelligence are, at least partly, determined by genes, the diverse social and economic conditions of populations are deeply rooted in human nature.

The IQ-development hypothesis has notable implications for development and social policies. Analogously to the suggestions in Herrnstein and Murray's (1994) book, *The Bell Curve*, that indicated the gap in Blacks-Whites IQ scores as caused by genetic differences, thus suggesting the impossibility of improving the conditions of Blacks through appropriate policies, the IQ-development

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<sup>1</sup> The literature on the fundamental causes of long-run growth is ample. For the role of institutions see, among others, Acemoglu et al. (2001), for geography Gallup et al. (1999), and for the genetic differences among populations Ashraf and Galor (2011a).

<sup>2</sup> It can be observed how the term "race", although widely used in social sciences, is in itself ambiguous when applied to humans (Sternberg et al., 2005; Hunt and Megyesi, 2008), since it has no genetic foundation (Barbujani, 2005).

<sup>3</sup> A comprehensive review of the national IQs correlates is offered by Lynn and Vanhanen (2012). For a criticism of the Lynn and Vanhanen methodological approach see, for example, Moreale and Levendis (2013).

hypothesis has a logical policy-discouraging implication: since the economic fate of a people is partly determined by genes, there is no possibility of improving the lives of the poor. As clearly stated by Lynn and Vanhanen (2006, p. 293): “The persistence of differences in intelligence between nations is inevitable, and so too will be the consequence: the persistence of national differences in wealth”.

Is intelligence really the root cause of economic development or does a more complex nexus between development and IQ exist? The Flynn effect, that is the massive IQ gains over time registered in 30 nations, suggests that social environment may exert a strong effect on average cognitive abilities as measured by IQ tests (Flynn, 1987, 2009). Several explanations of the Flynn effect have been proposed: improvement in nutrition, health conditions, education, and the diffusion of technology and scientific reasoning. Summarising the evidence on the determinants of the Flynn effect, Nisbett et al. (2012: 12) claimed: “it seems likely that the ultimate cause of IQ gains is the Industrial Revolution, which produced a need for increased intellectual skills that modern societies somehow rose to meet”. If environment is such a powerful force in determining IQ increases over short periods like a decade, we cannot exclude that current international IQ differences reflect, to some extent, nations' different paths of development. If so, the IQ of the population should not be considered an exogenous cause of economic development, but rather as endogenous to the same process.

This paper's objective is to test the IQ-development nexus. The main hypothesis is very simple. If, as postulated by theory of racial differences in intelligence, differences in the IQs of populations are the fundamental cause of international inequality in economic development, and if, in the ultimate analysis, IQs differences lie in genetic differences among races/populations, then the strong link currently found between IQ and development should also be measurable, to some extent, for the past. This hypothesis is tested by using several proxies of economic and technological development, available for a large sample of countries, for the year 1500 circa.

The link between IQ and development is analysed on the basis of Jared Diamond's hypothesis – and subsequent findings by Hibbs and Olsson (2004, 2005), and Chanda and Putterman (2007) – according to which some geographic and biogeographic conditions in the Early Holocene period (12,000+ years ago), that determined differences in the timing of the transition to agriculture and animal husbandry in the different regions of the world, had long-lasting effects on economic development. These conditions were more favourable in Eurasia, where agriculture began early. An early start in agricultural transition conferred an initial advantage to societies, in terms of social, political and economic organization. Since, in the course of history, social, cultural and technological developments are cumulative, the different timings of agricultural transition, and accompanying social changes, have been important determinants of later technological and economic development. From this viewpoint, not genetic differences among populations or races, but a different process, led to modern international inequality.

The remainder of the paper is as follows: Section 2 summarises the IQ-development hypothesis; Section 3 tests this hypothesis; Section 4 offers a discussion of the results.

## 2. Intelligence and economic development

### 2.1. The IQ-development hypothesis

That of intelligence is an elusive concept, with different possible definitions (Cianciolo and Sternberg, 2004; Flynn, 2009). In psychology, cognitive abilities are considered to have many correlated dimensions. Since Charles Spearman's seminal study (1904), this correlation has been interpreted as reflecting an underlying “general factor of intelligence” or *g factor*. Statistically, the *g factor*

is a latent variable that can be indirectly measured by the full-scale scores obtained on the standardized tests of cognitive ability or IQ (Dickens, 2008).

Lynn and Vanhanen (2002, 2006), presented data on IQ test scores for 113 nations, and estimated data for another 79 on the basis of the IQs of neighbouring countries. In almost all cases, IQ data derives from tests on cognitive ability constructed in the USA or Britain and administered in other countries. Mean national IQs were calculated in relation to the mean IQ of Britain, set at 100 with a standard deviation of 15. National IQ data have been updated by Lynn and Meisenberg (2010) and by Lynn (2012).

Lynn and Vanhanen (2006) showed how national IQs are significantly correlated to several socio-economic outcomes: income per capita ( $r=0.60$  for the sample of 192 nations), adult literacy rates (0.65), life expectancy (0.75), and institutional variables, such as the level of democracy (0.53). Several studies, all using the same IQ data, have indicated how IQs are strongly linked to practically all indicators of the socio-economic and institutional conditions of nations. Mean national IQs are correlated to infant mortality, educational levels, the prevalence of HIV, income distribution as measured by the Gini index (Kanazawa, 2006; Rushton and Templer, 2009; Rindermann, 2008), and with economic freedom and corruption (Meisenberg, 2012; Potrafke, 2012). Some economic studies indicate, furthermore, how the average IQ is a strong and robust explicative variable of GDP growth rates (Weede and Kämpf, 2002; Ram, 2007; Jones and Schneider, 2006; Jones, 2011) and also of total factor productivity growth (Jones, 2012).

It is easy to note that the existence of such correlations does not prove any causal link between IQ and development levels. In the literature, the IQ-development nexus is thus established on the basis of two main arguments: the first regards the large amount of evidence that, at an *individual level*, indicates a strong relationship between IQ and earnings; the second argument is extrapolated from correlations between national IQs and GDP per capita growth rates and levels.

At the *individual level*, the causal nexus between IQ and socio-economic status is quite simple to demonstrate: IQ scores measured in *childhood* correlate with several variables regarding the socio-economic conditions of individuals in *adulthood*. Intelligence quotient test scores correlate with income, employment status, life expectancy, health conditions and other socio-economic outcomes (Gottfredson and Deary, 2004; Irwing and Lynn, 2006; Zagorsky, 2007; Firkowska-Mankiewicz, 2011). Intelligence is, therefore, generally considered to be a powerful determinant of the economic success of individuals. The first argument consists, resultantly, in extending the evidence regarding individuals to *groups* and *populations*: if the smartest individuals have a greater chance of becoming rich then, analogously, the smartest populations, and also nations should, on average, be comparatively wealthier.

The second argument consists in relating current national IQs to historical data on GDP per capita levels and growth rates. Lynn and Vanhanen (2006) showed that IQs are correlated both with the growth rates of GDP per capita during the period 1500–2000 ( $r=0.70$ ), and with the income levels of 1500 (0.75). The data on GDP per capita used by the authors were taken from Maddison (2003). Since Maddison's estimates for 1500 cover only a very small sample of countries (21), the authors used regional GDP per capita to supplement missing observations; in this way, they obtained a sample of 109 nations for 1500 and 163 for the year 1820.

One main point in the previous scheme consists of the explanation of differences in national IQs. Since IQ variations in crystallized and fluid intelligence *between individuals* are in part (40% and 51% respectively) explained by genes (Davies et al., 2011), Lynn and Vanhanen (2006) assume that international differences in IQ *between populations* are partially genetic and, consistent with the theories on racial differences in intelligence by Rushton and Jensen

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