

The AAA Index  
By John D. Mueller  
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**Abstract.** This paper describes the AAA Index (a new country index named after the scholastic philosophers, Aristotle, Aurelius Augustine and Thomas Aquinas), The AAA Index differs from existing country indices in at least three ways: First, the AAA Index avoids the many technical problems endemic to what Martin Ravallion has called “mashup indices,” by being based on the coherent, longstanding scholastic philosophy and economic theory. Second, while avoiding the redundancy which results from including existing market indices like GDP, by combining the Maddison Project, Barro-Lee and UN Population Division databases, the AAA Index can be used to project real GDP about two decades ahead. And third, with such techniques as analyzing microdata for all waves of the World Values Survey (WVS), the AAA Index illuminates the world-wide behavioral changes which have resulted from the decline in religious practice: reduced fertility, reduced altruism and a reduction in self-assessed happiness.<sup>1</sup>

**Keywords:** scholastic philosophy, scholastic economics, country indices, social futuring, AAA Index, history of economic thought.

**JEL Classification:** A13, B10, B11, B16, B21, C10, D19

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## The AAA Index

The “AAA Index” is an updated empirical application of scholastic moral philosophy and economic theory outlined The “AAA’s” are the three great ancient and medieval moral philosophers Aristotle, Aurelius Augustine and Thomas Aquinas. The first two provided the philosophical concepts, while Aquinas joined these elements into a systematic and comprehensive moral philosophy and economic theory.

Fig. A-1

**The AAA\* Index (AAAI):**  
a simple yet comprehensive national index  
of human flourishing

— <http://socialflourishing.com> <http://www.eppc.org>  
\*Aristotle & Augustine, combined by Aquinas (in De Regno), updated for the 21<sup>st</sup> century



I N D I C A T O R S	Human Quality/Social Unit					
	Rational		Domestic		Political	Created
	(1) Individual	(2) Marriage	(3) Business	(4) Non-profit	(5) Government	(6) Church
	% Adult tertiary education rate (ter: Barro-Lee data)	(Mantal) net reproduction rate (mnrr: UN, World Bank)	1 + net monetary reserves/GNI (netrespct: IMF, Wld Bk)	Civil society participation rate, % (civil: IDEA)	Voter turnout in national elections, % (vote: IDEA from Survey, ANES national sources)	(6) Rate of weekly worship, % (ww: World Values Survey, ANES)
	^ Sources of economic strength ^			^ Signs of social health ^		
	<b>Animal:</b>					(7) Population with improved water % (h2o: UN Aquastat)
	Water					
	Food				Indices of > sustainable self-sufficiency >	(8) Food security %: (food = 1 – (food imports / merchandise exports) : UN FAO)
	Energy					(9) Energy independence % (nrg: US DoE; memo: renewable)
	Formula: $aaaim = ter * mnrr * netrespct * [(civil + vote + ww)/3] * [(h2o + food + nrg)/3]$ ; $mnrr = nrr * iw$ (% births in wedlock)*; when unavailable, iw must be omitted from <i>aaai</i> .					

The AAA Index is theory-driven in its conception of human nature. Aristotle famously defined a human being as a “rational,”<sup>1</sup> “conjugal,”<sup>2</sup> “social”<sup>3</sup> and “political animal.”<sup>4</sup> But the Church Fathers made further distinctions which Aristotle had not, so that, in addition to the four cardinal moral virtues which Aristotle’s teacher Plato had adumbrated—prudence, temperance, fortitude and justice—Aquinas added the three theological virtues faith, hope and charity, so that, beyond an account which (like Aristotle’s) distinguished the “scope” of the virtues, Aquinas added differences in their ‘method,’ for example, between rational metaphysics and scripturally based revealed theology.

Moreover, where Aristotle had bisected moral philosophy into ethics and politics, Aquinas re-divided the field into three parts, based on the social unit described: the individual human person, the family household formed by marriage between a man and woman, and the political community, acting

jointly through a common government. Hence Aquinas distinguished individual, domestic and political “prudence,” a term he used interchangeably with “economy”: individual, domestic and political economy.

The “AAA Index,” like the Like the Social Futuring Center’s Social Futuring Index [SFI]), the AAA Index, might be called an exercise in “social futuring” — an effort not merely to *forecast*, but also actively to *shape*, future conditions to facilitate a nation’s human flourishing. Moreover, rather than merely comprising an index of empirical economic data, the “AAA Index” combines metaphysical with empirical, biological and historical categories. The AAA Index attempts to apply the most broadly applicable moral philosophy to the broadest share of human population living in the 21<sup>st</sup> century. The AAA Index is based on the combination of three databases: the Maddison Project Database which estimates national population and GDP per capita back to AD 1; the Barro-Lee database of educational attainment, back to 1820 and projected forward to 2040; and the data and demographic projections of the United Nations Population Division back to 1950 and projected forward to 2100.

A matrix of the indicators which comprise the index follows.

1. *Rational*. Rationality is measured by the share of the adult population with tertiary education—not because those with an advanced degree are more *rational* than other humans—the use of any human language is sufficient to establish rationality—but because data on tertiary education are also useful in projecting and forecasting national indices of real output.
2. *Conjugal*. That man is what Aristotle called a “conjugal” or sexual animal is reflected in the Net Marital Reproduction Rate (NMRR). The Net Reproduction Rate (NRR) is a composite estimating how many surviving daughters the average woman would bear if her experience matched that of women at all ages in the year for which the NRR is calculated. By counting only surviving daughters, the NRR adjusts the birth rate for mortality as well as fertility. This mortality adjustment makes the NRR more useful for many purposes than the more widely used Total Fertility Rate (TFR), because fertility tends to be higher when the mortality rate is higher. The “marital” reproduction rate adjusts the NRR to include only infants born within wedlock. Conceived in this way, the AAA Index avoids the contentious debate about “same-sex marriage,” since all such unions, as such, are sterile.
3. *Productive*. A third adjustment reflects an important aspect of social and economic development: the modern household specializes, like the ancient household, in the production and maintenance of human persons. But the ancient household also has two specialized modern offshoots: the for-profit business firm and the non-profit foundation. Unlike most other indices, the AAAI does not include such measures of market output as gross national or domestic product—though (as we will see) its components can be used to predict GNP or GDP. The third indicator is the share of national resources devoted to international monetary reserves which facilitate exchange of products among different countries. The reserve measure used in the AAAI is  $(1 + \text{net monetary reserves} / \text{gross national income})$  — “net” meaning official reserve assets minus official reserve liabilities. Ordinarily, the reserve component will be greater than 1. But when a national currency is used as an official international reserve, such “reserves” are actually debts of the reserve currency country. This can lead to the result that the reserve currency country’s net reserves are actually negative, which encourages the expansion of its domestic and foreign debt.

4. *Social (or civic).* A fourth adjustment reflects the fact that not only the modern business firm, but also the not-for-profit institution is a modern offshoot of the ancient household. While the modern business firm specializes in the production and maintenance of property, which Theodore Schultz called “nonhuman capital,” the non-profit institution specializes in the granting of gifts and performing acts of service to persons outside the modern household. The latter development is reflected in the Civil Society Participation Rate, as measured by IDEA (The International Institute for Democracy and Electoral Assistance).
5. *Political.* A further irreducible dimension of human nature is that man is what Aristotle called a *zoon politikon*, or “political animal.” This dimension is captured in the “AAA Index” by average voter turnout in national elections, as measured by IDEA (ultimately derived from national sources). Nearly all former communist or totalitarian countries have experienced sharp rises in their citizens’ participation in non-profit institutions, but also in political life, particularly voting for representative government. A couple of countries, including China and North Korea, are rated as having zero participation in political life. But since zero leads to undefined mathematical results in many cases, the “AAA Index” is aggregated from arithmetic rather than geometric averages. (The elaborate and widely cited Human Development Index [HDI] was originally based on arithmetic averages, but the formula was shifted to a geometric average, resulting in many practical anomalies.
6. *Spiritual.* The concept of creation *ex nihilo* is essentially philosophical, but simply did not exist in ancient pagan philosophy. Man’s understanding of his identity as not only a rational, conjugal and political, but also a created, and thus spiritual or religious animal, is reflected in the rate of weekly worship, as recorded by the World Values Survey (WVS). The weekly rate of religious worship has a strong correlation with measures of fertility, including the NRR and TFR. Paradoxically, differences among religions and religious denominations chiefly concern intangible and thus immeasurable realities, such as the existence and nature of God or the human soul. Yet as the strong empirical link between worship and fertility shows, some of the strongest differences in empirical behavior stem precisely from people’s different understandings about such intangible realities.
7. *Animal.* Since humans are *animals*, not disembodied intellects, it is necessary to include three basic physiological aspects which humans share with other higher animals, the need for water, food, and to exert or use energy. Therefore, the “AAA Index” reflects these three animal realities: (a) the percentage of a nation’s population with improved water, (b) a nation’s degree of food self-sufficiency, and (c) the degree of national self-sufficiency in (for sustainability, renewable) sources of energy. Water, food and energy self-sufficiency are important *strategic* consideration for any country, since all are prerequisites for national self-determination; but *renewable* energy self-sufficiency adds to these strategic considerations the long-run *sustainability* of any country’s policies. Renewable energy independence is presented as a memo item. This item indicates how far most countries remain from sustainable energy independence; yet the relative country rankings change surprisingly little whether the AAAI energy indicator refers to total or renewable energy independence.

The AAA Index, then, is comprehensive regarding all the irreducible dimensions of human nature as a rational, conjugal, political and spiritual animal, applied to nations in the 21<sup>st</sup> century, and maps these dimensions rather simply into corresponding single indicators (along with three indicators to represent the three basic requirements of human animation).

To state these considerations in the negative, any nation is failing to flourish when its people are irrational or uneducated, when its population is shrinking, when its families are falling apart, when its people ignore the Two Great Commandments to love God and neighbor, or when they are oppressed through either their country's own or foreign governments. While comprehensive, the AAA Index could never claim to be *exhaustive* in measuring human flourishing. But the AAA Index still does represent a comprehensive and valuable starting point, and one simple enough for a single researcher to calculate.

The formula for the AAAI is:

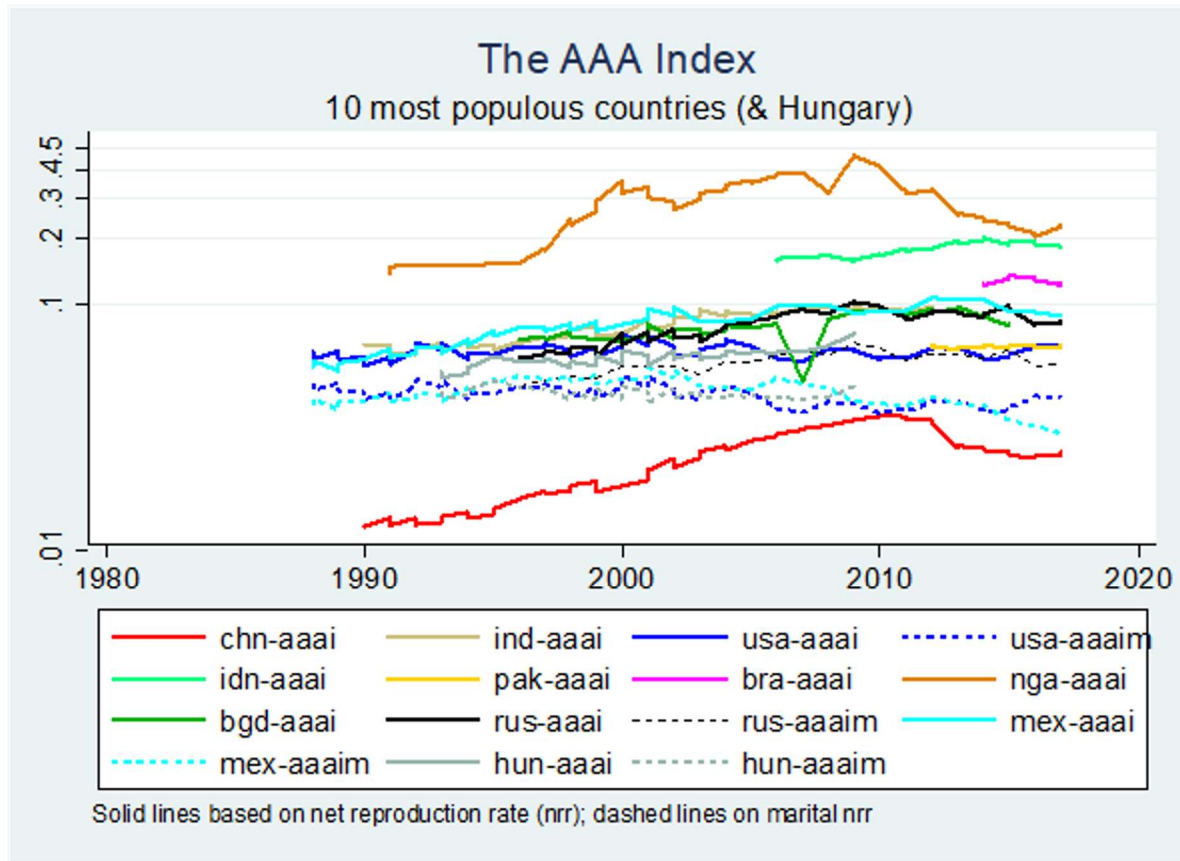
$$aaaim = ter * netrespct * mnrr * [(civil+vote+ww)/3] * [(h2o + food + nrg)/3]$$

where *ter* = share of adult population with tertiary schooling, *mnrr* is the marital net reproduction rate [= *nrr*\**iw*, the net reproduction rate *nrr* times the share of births to married women *iw* ("in wedlock")], *netrespct* is (1 + net monetary reserves [official assets less official liabilities]) /GNI [=Gross National Income]), *civil* is IDEA's Civil Society Participation Rate, *ww* ("weekly worship") is the share of the adult population attending religious services at least weekly according to the World Values Survey, *vote* is the voter turnout in national elections recorded by IDEA, *h2o* is the share of the population with treated water according to the UN's Aquastat, *food* is the degree of food self-sufficiency in % = (1 – food imports / merchandise exports), and *nrg* = total energy production/consumption, according to the US Department of Energy. When data on the share of births in and out of wedlock are not available, so for such countries *aaai* is used as opposed to *aaaim* omitting *iw*.

The AAAI in effect distinguishes primary from secondary characteristics and indicators by giving proportional weight to the first three variables (which never register a zero value), while weighting the other six variables equally using arithmetic means. This combination is necessary to avoid mathematical anomalies that would result when the value for a variable is zero, since dividing by zero leads to undefined results.

The implicit maximum value of each AAAI variable is in most cases greater than or equal to 1. This would result, for example, if everyone reproduced him- or herself with children, obtained an advanced degree, if every nation maintained positive net monetary reserves, if all citizens voted, participated in civil society and worshiped regularly, and if each nation were self-sufficient in water, food and energy through some combination of domestic production and international trade. In this way, the AAAI thus aims to be both simple and transparent, while avoiding contentious claims.

Fig. A-2



The AAAI has been calculated for the 10 most populous countries (of which Brazil is sixth) plus the 36-member OECD. Since two of the largest 10 are OECD members, this leaves a net total of 44 countries. But five smaller OECD countries (Austria, Belgium, Denmark, Luxembourg and the United Kingdom), comprising just over 1 percent of world population, must be omitted due to missing data series. This leaves 39 countries for which complete data are available.

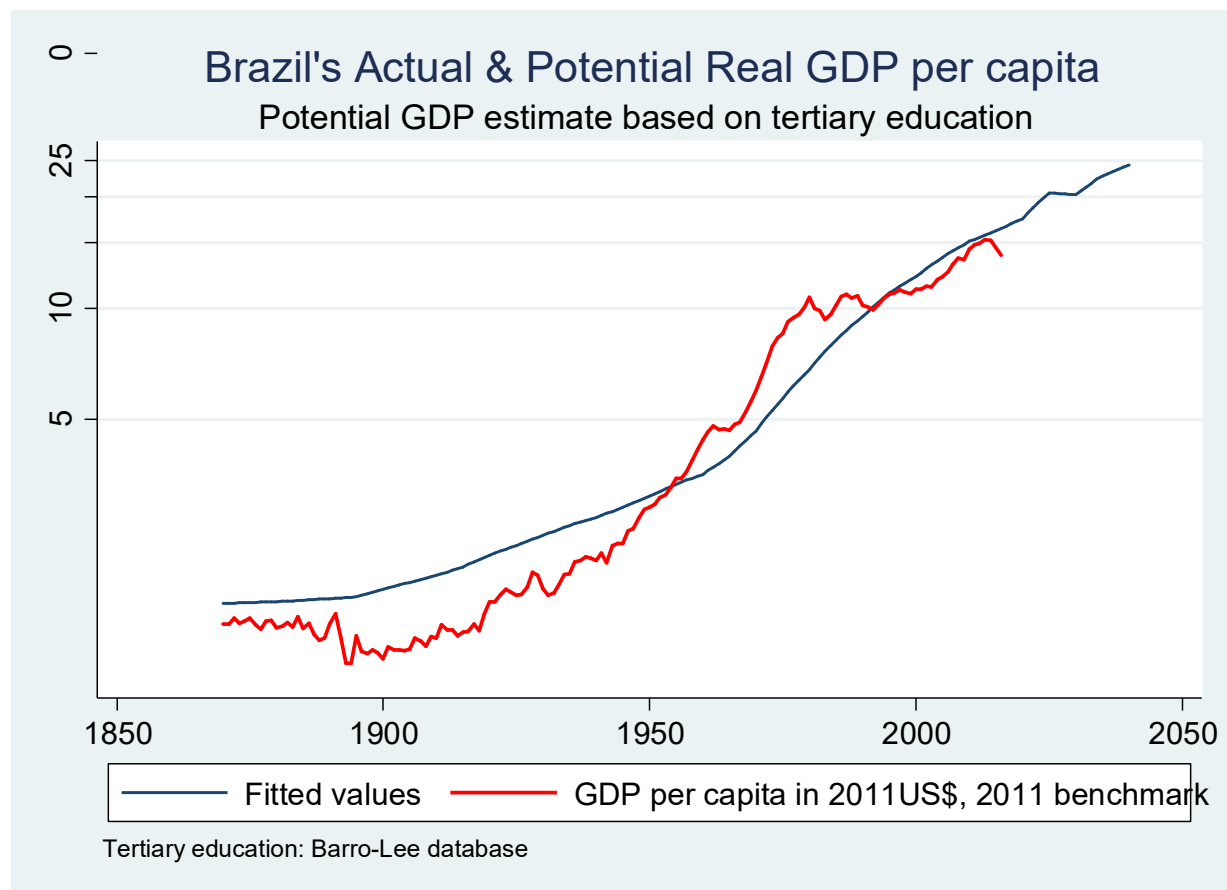
Certainly, many indicators affect the rankings, notably including the degree of energy independence and national differences in voting patterns. (Former communist countries have generally seen a sharp rise in both voting and civic participation since those countries' transitions, while IDEA scores China at zero for democratic voting.) Generally speaking, however, the most populous countries (except for China) rank significantly higher than the OECD countries because of higher fertility rates. For example, Nigeria, Indonesia, Brazil, India and Mexico are 5 of the top 8 in the AAAI ranking.

The scholastic moral philosophy relies heavily on the natural law—that is, what can be known by reasoning from common experience, regardless of cultural differences. As such, the AAAI might be called a thumbnail summary of human nature according to Western Civilization. Yet the results indicate that the AAAI is not Eurocentric, since it can be applied meaningfully also to countries as large and diverse as China, India, the United States, Indonesia, Pakistan, Brazil, Nigeria, and Bangladesh. Thus it is possible to maintain, for example, that China's ranking in last place and the relatively low ranking of the United States, are not due to any cultural bias in the construction of the AAAI, but transparent and reasonably objective judgments.

What lessons does the AAA Index have specifically for Brazil? Brazil ranks pretty well according to scholastic principles, ranking 5<sup>th</sup> of 39 countries, well above both the USA and China. (Those two countries' relatively low rankings are partly peculiar to themselves: The USA is the only major country with negative net monetary reserves, while China earns a zero from IDEA on national voting.)

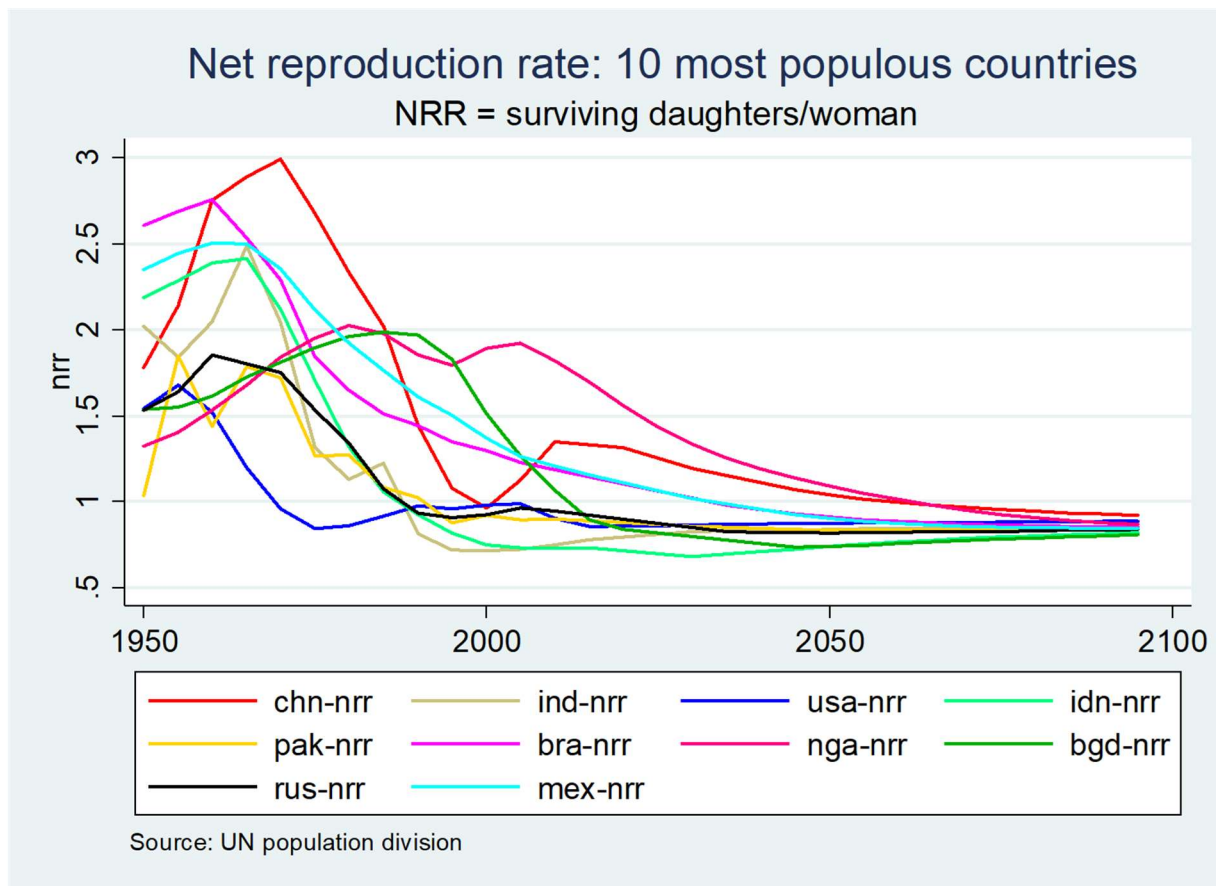
The first two AAAI indicators concern what economists call "human capital"—intangible human capital, such as education, and tangible human capital, such as our bodies. As with most other countries, a combination of these two indicators is a fairly good predictor of Brazil's potential real GDP (what could be produced if all workers were fully employed), which should continue to expand as long as Brazil's NRR remains above 1, indicating that the population is expanding, and as long as the share of the population with tertiary education continues to increase.

Fig. A-3



As I showed in Chapter 11, the most important single positive variable explaining fertility is the rate of religious practice. Paradoxically, it appears that only those who believe in a next life reproduce themselves in this one.

Fig. A-4

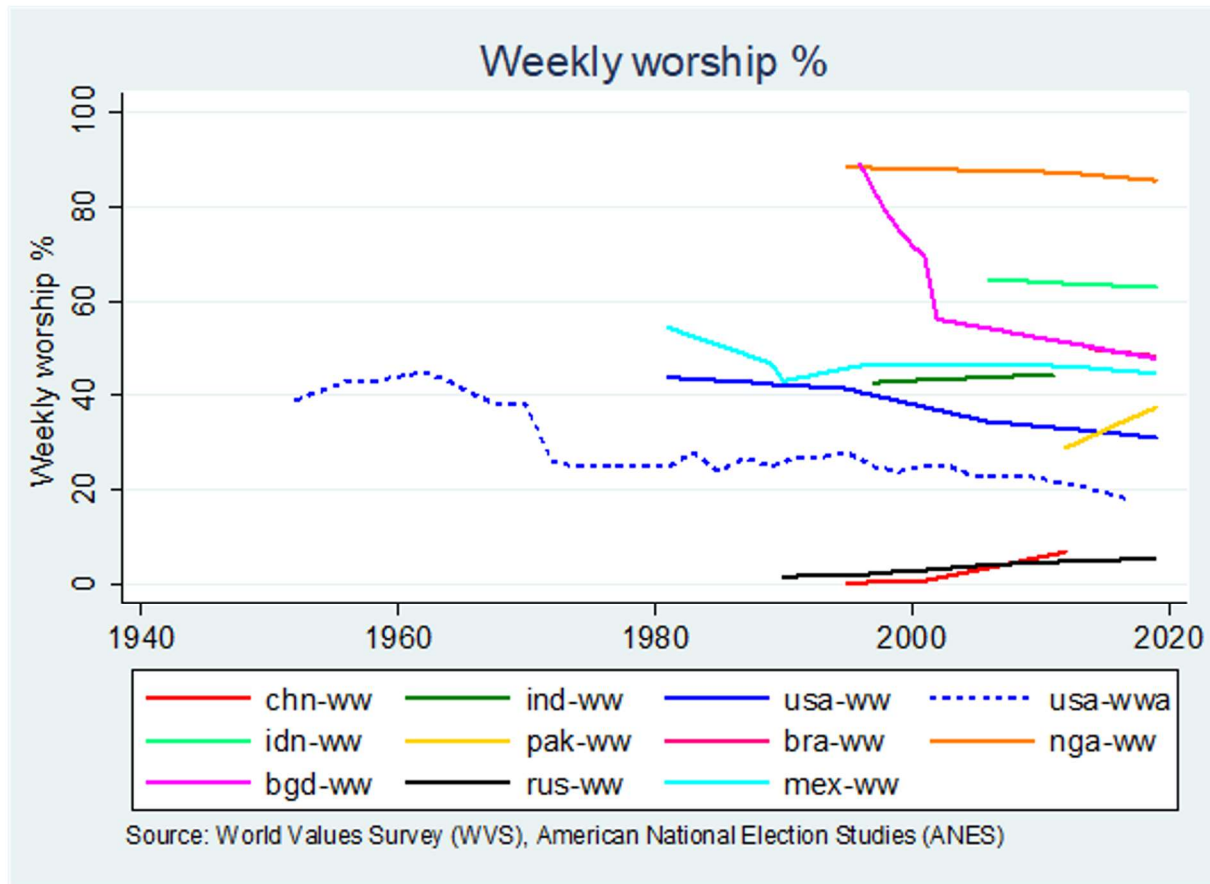


Therefore, the biggest challenge facing Brazil in coming decades is likely to be how to avoid the “demographic winter” which has caused fertility to decline in step with increasing secularization in most other industrialized countries, as reflected in the decline in religious practice. There is no denying that, at least in my lifetime, practice of the Catholic faith has declined. In retrospect, it seems that I was born in a golden age of religious observance. Yet I was five years old when Joseph Ratzinger, who became Pope Benedict XVI nearly half a century later, wrote that “The Church is no longer, as she once was, a Church composed of pagans who have become Christians, but a Church of pagans, who still call themselves Christians, but actually have become pagans.”

Yet a continued decline is not inevitable. As G.K. Chesterton once remarked, “Christendom has had a series of revolutions and in each one of them Christianity has died. Christianity has died many times and risen again; for it had a God who knew the way out of the grave.” Moreover, the rate of religious practice has actually increased in some countries, including India and Nigeria, as well as in former communist countries like Russia after its transition, and even in still-communist countries like China, where the church is still persecuted (albeit still at low levels).



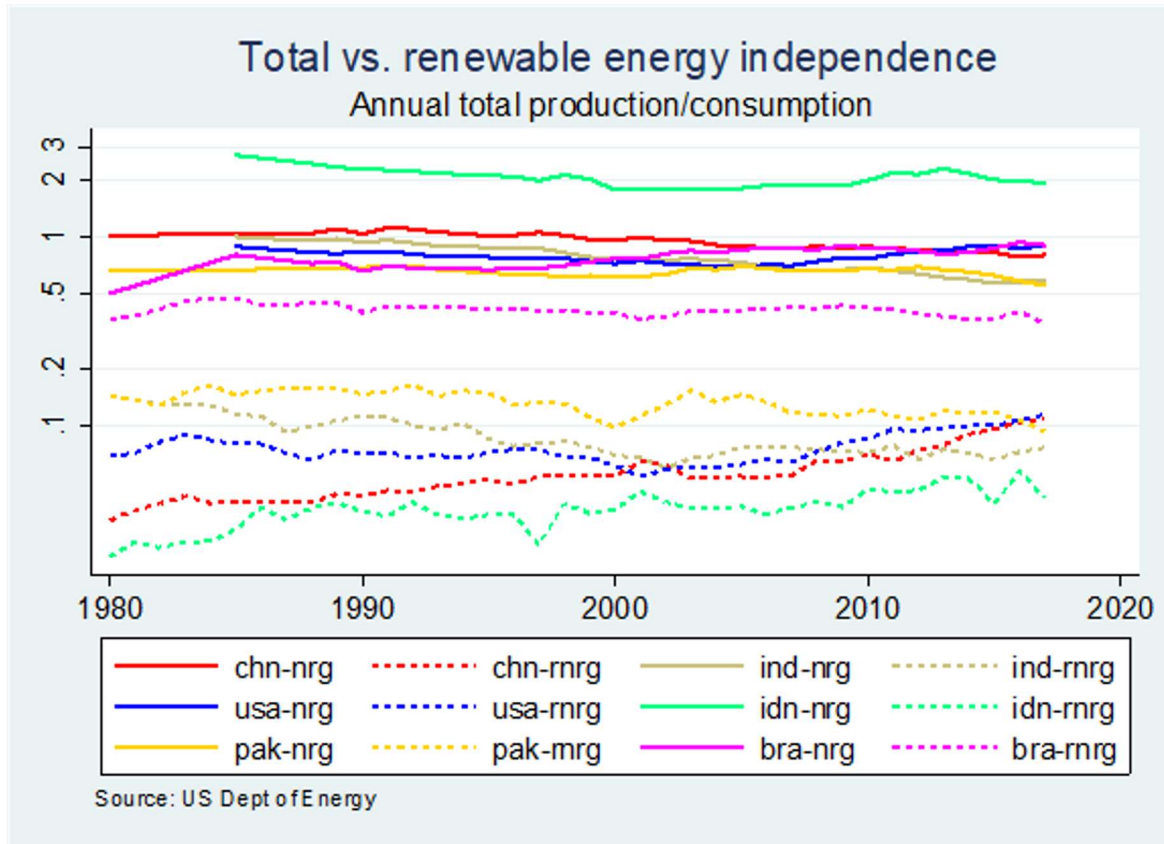
Fig. A-5



Finally, besides this challenge, Brazil faces a large opportunity because of its relative abundance of energy. Brazil seems uniquely situated with regard to its energy resources, not only conventional forms of energy, but especially in its renewable energy resources, which should become increasingly important.

With an increasing number of neo-scholastic economists, Brazil has the analytical tools to help the country's citizens flourish.

Fig. A-6



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<sup>1</sup> “Human beings’ „soul...[is] in itself [partly] possessed of reason, [and partly] capable of obeying reason” Aristotle, Politics, 1333a and men “naturally desire knowledge.”; Aristotle, Metaphysics, 980a.

<sup>2</sup> “Between man and wife a natural friendship seems to exist, for they are more inclined by nature to conjugal than political society. This is so because the home is older and more necessary than the state, and because generation is common to all animals.” Aristot. Nic. Eth. 8.12.7

<sup>3</sup> “Man is by nature a social being.” Aristotle, Nicomachean Ethics, 1097b.

<sup>4</sup> “Man is by nature a political animal.” Aristotle, Politics, 1253a.