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Collaboration for the Public Good: An Inquiry into Federalism's Role in Economic Performance

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COLLABORATION FOR THE PUBLIC GOOD
AN INQUIRY INTO FEDERALISM'S ROLE IN ECONOMIC PERFORMANCE

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MASTER'S THESIS

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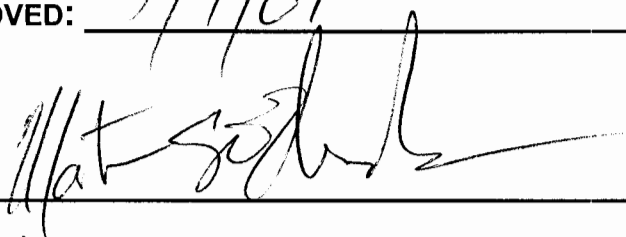
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Abstract

From at least one theoretical perspective, the purpose of government is to provide public goods and services. The term “public good” has a very specific meaning in economics, but it can be broadly interpreted to include practically everything modern governments provide and do. The question of what form of government is the best one has been the topic of everything from books to wars, but an answer remains largely empirically elusive. While carefully skirting that particular question, this study hypothesizes that the system of governance – how a government governs rather than what government does the governing – is more important to considerations such as human capital accumulation and economic growth, and more specifically, it hypothesizes explicitly that the more federal a federation is, then the more positive the results with regard to these phenomena.

After developing an index rooted in the literature, this study examined fifteen countries from every region of the world nearly equally divided between developed and developing countries for their respective ‘level of federalism’. After rigorous analysis of levels of federalism and human development, this study found evidence of a possible positive correlation between federalism and human capital accumulation. This phenomenon is explained qualitatively in the literature as a result of local specialization in public good provision. With regard to economic growth, however, this study made little progress in showing any connection between it and federalism. A number of possible rationales are offered and the study then concludes by showing the way forward.

Acknowledgements

A scientific study is not unlike a work of art when one considers that both are purely the product of human effort, expressions of the complementary resources of reason and creativity. And while a single author or artist is usually the name that appears below the title, no scholar or artist would dare claim that he or she accomplished the feat without the support of a wider community. The *Mona Lisa* was as much a product of the wider Italian Renaissance as it was an expression of Leonardo's genius; *The Wealth of Nations* had as much to do with the free-thinking world of late 18th century Edinburgh as it did with Adam Smith's ability to synthesize the profit motive and common interest. This thesis, which cannot compare with the human creations already named, is no different: without the influence and assistance of a wider community, this study would not have come to pass.

First, I must thank my family – especially my fiancée, Erin Merrill – who tolerated my late night typing and reading and served as a constant sounding board. Her knowledge of statistics led me to some of my final breakthroughs in the empirical portion of this study and her willingness to put a pot of water on to boil for tea at a moment's notice got me through more than a few long work sessions. She was an invaluable asset and I'll spend the rest of my life expressing my gratitude to her.

Second, I thank my best friend and fellow native Floridian, Daniel Cox, a third year undergraduate student at the Whitehead School, for his invaluable assistance in developing the Federalism Index. I was able to use Dan as an additional set of eyes to improve the objectivity of the index – Dan even backed this up by replicating the federalism measures of a number of the cases. Dan's suggestions and frequent enough

visits during the data-gathering process made it more than just a project – he made it fun. For putting up with me during this long process and showing the true value of patience in any friendship, I cannot summon sufficient words to express my gratitude – except perhaps to say, “Look Dan, your name is in a copyrighted study.”

I extend my deepest appreciation to Dr. Jesse Russell for agreeing to review my work at its near 11th hour conclusion. And last but most certainly not least, I thank Dr. Martin Edwards for agreeing to take me on as his young ward for this past semester. His encouragement in the face of obstacles kept me focused on the important questions – like just what does federalism do, anyway? Professor Edwards proved a crucial ally during the entire research process and bent over backwards to help me at every stage, from suggesting literature to giving me access to World Bank data from twenty years ago to answering my e-mails on weekends (when no one should have to answer an e-mail). He rejoiced with me at my triumphs and grumbled with me during my setbacks. Every meeting we had left me feeling better about the things I'd previously been worried about. Every thesis writer should be so lucky as to have an advisor like Dr. Edwards.

One half of research is acknowledging the giants whose shoulders you stand on, but the other half is accepting responsibility for the imperfections that inevitably must exist in any human endeavor. To that end, any errors contained within the following pages are solely my own and are in no way to be attributed to the aforementioned individuals, none of whom deserve anything but praise. If this thesis has indeed succeeded in adding to human knowledge, then each of them enjoys a share of the credit.

*For
Erin, my greatest love;
Mom, my biggest fan;
Steve, my father;
and Dan, "the man".*

*This work is also dedicated in loving memory to
Clarence Patrick Buote (1914-1996),
who accomplished great things and who drives me to accomplish great things as well.
May perpetual light shine upon him; may he rest in peace.*

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Introduction: The Best System of Government

In a speech on the floor of the House of Commons in November 1947, Winston Churchill lamented that: "Many forms of Government have been tried, and will be tried in this world of sin and woe. No one pretends that democracy is perfect or all-wise. Indeed, it has been said that democracy is the worst form of government except all those other forms that have been tried from time to time." While admittedly some consensus seems to have congealed around the assertions of Sir Winston with regard to democracy in political theory, the literature remains without any sort of similar conclusion with regard to form of government and economic performance. It is reasonable to ask why there should be such a conclusion since economics could hardly be said to concern itself with political issues of a non-material nature. The basic rejoinder to this question is that governments dictate the conditions that either help or hamper market activity. If there is an optimum form of government from an economic point of view, the implications for development theory – not to mention a host of other fields – would be obvious.

This study does not pretend to approach answering such a far-reaching question, not least because other studies have tried and the results have been inconclusive at best. The broad question concerning the most economically-optimum government will never be answered by a single study, assuming it is ever answered, but just as other studies have done, this study seeks to contribute to the body of literature surrounding government's link with economically-beneficial outcomes (i.e. economic growth *inter alia*). The link lies at the very root of government's purpose, namely, to supply public goods and services. Public goods, which are theoretically understood to be non-rival

and non-excludable, are more broadly those goods and services that governments provide to their citizenry. When markets – or whatever mechanism – fail to satisfy an innate demand for a good that is by its very nature non-rival and/or non-excludable, it is up to governments to supply this good. An effective provision of public goods prevents market failure and, at least with the case of most public goods, enables the accumulation of human capital – and subsequently economic growth.¹

One of this study's underlying contentions is that government form (Parliamentary Democracy, Presidential Republic, Constitutional Monarchy, Military Junta, etc), while important, matters less than system (unitary, confederation, etc) for economic growth. Government system, which in this study is understood to describe the jurisdictional sources of sovereignty, is arguably more economically interesting than government form, which describes how government is organized. This approach diverges from much of the contemporary literature, which focuses almost exclusively on government form (i.e. democracy and economic growth). This literature is not ignored, however, and informs many of the assumptions in this present study, as will become clear.

Examining the specific system known as *federalism*, this study will attempt to show both theoretically and empirically a positive correlation between federal governments and human capital accumulation. As a system, federalism has the most theoretical potential when it comes to the basic economic aim of government: the provision of public goods. Federations, by definition, divide the provision of various public goods between the central government and sub-national governments, ensuring

¹ This definition of 'public good' is one that any standard text on economic development should echo, but is drawn here by this author from Todaro & Smith (2006) pp 484-486

that certain public goods, such as national defense or foreign representation, are provided in one-size-fits-all fashion while the more localized needs for public school systems, motor vehicle regulation, and the provision of law & order to note only a few of myriad examples are delivered in varying ways at the sub-national level.

While the logic might seem obvious, it is the hope that this study will be able to empirically connect the dots from federalism to public goods provision to economic growth – and more specifically, to show that the degree to which a country *is* a federation matters. A strongly federal country should have the strongest links between federalism and human capital accumulation. This study represents the combined efforts of a year of postulating and research, and while the specific claims of this study – the leap from separately claiming that strong federations are better at providing public goods than weaker federations and that public goods contribute to economic growth to completing the syllogism – have not been proposed as such before, the true implications or even violability of this claim is as yet imperfectly clear. While this study may not revolutionize political science or political economy as social sciences, the logical syllogism described by this study can be empirically examined. The vexing question of what precisely is the best form and system of government will not be directly answered – assuming that question is even answerable – but with any hope, what follows will help show that federalism – and a country’s respective degree of it – matters.

Answering the ‘Why’ of Federalism

As a system of government federalism is not new. It has existed in various forms down through the ages, primarily in feudal and post-feudal Europe as a means of

permitting the continued existence of minor states under the tutelage of a suzerain power. Such arrangements did not reflect the modern understanding of federalism as a system of equals united under a single banner, but the form of government had its beginning therein (Riker, 1968). The Swiss Confederation, a weaker form of federation, is said to have formed in 1291 and the federal charter signed then meets most of the requirements for what today would be called a federation (Ibid). A revival or perhaps a showcase of the concept occurred with the American Revolution and the founding of the American republic. Federalism as a governing system has existed for *at least* a millennium and one could make an argument that it has existed in some form for far longer, but such an argument is hardly necessary; the point is that the pedigree is well-established.

When examining the leading countries of the Developed World, a search for commonality is only natural – especially in light of persisting poverty throughout the world. What do the United States, Canada, and Australia all have in common besides their European origins? They are all federations to one degree or another. Each one of them – right on down to their states and provinces – is a federation, “an arrangement where individual states or countries retain considerable sovereignty, while at the same time important prerogatives are moved to a supranational entity” (Alesina et. al. 2001, pg 3). Naturally political organization does not explain all facets of the economic life of a given country, and this study does not presume anything of the sort. But the element inherent in any federation of permitting local control and specialization while simultaneously advancing common interests and goals has arguably rendered each of

these unions of smaller sovereignties able to compete with practically all comers in any theater of the world. Each federation is, as a whole, larger than the sum of its parts.

Examining the United States, some of the 50 United States would be considered middle-income Developing Countries if they were independent states, especially West Virginia and Arkansas, where per capita income falls in the low \$20,000s.² But instead of living like third world citizens, peoples in both states with few exceptions enjoy most if not all of the same amenities and standards of living as their fellow Americans; while it is true that deep problems exist in both of these states, the support they receive from the larger federal union offsets much of this. While inequalities certainly exist and persist between states of the United States, the free trade in resources and factors of production enjoyed by the residents of West Virginia and Arkansas with their 48 sister states has ensured continuous economic growth over the decades – a growth that would almost certainly have been impossible were each an independent, landlocked country with independent economic policies.

Tangible benefits abound in the fact that each has had countless income transfers over the decades from the larger federal government; West Virginia receives more money from the federal government than 38 other states and pays less into the common pot than all but two others.³ Every State benefits from the wealth of information and economic data that is available by virtue of the federal government's reporting and data collection capacity. With the ability to develop policies that apply to local conditions, each state government in the United States is able to nurture a unique economic, social, and political identity that is upheld and supported by the larger

² U.S. Department of Commerce, Bureau of Economic Analysis, Survey of Current Business, 2004.

³ US Census Bureau, *Consolidated Federal Funds Report*, 2004.

political fraternity. In tandem with this continued individual-level evolution, the central authority, the federal government, is able to advance common policies that serve to enhance the stability and security of the many states as a whole.

This relationship is of course only illustrative in the sense that federation has clearly, in a quantitative sense, benefited the poorer member States (like Arkansas and West Virginia) of the United States and qualitatively benefited the richer States (like California and New York) – federal union means larger markets and fewer local responsibilities than would be expected with political independence. But the relationship between constituent unit and central government within a federation varies across countries. As a system of governance, federalism can be present to a greater or lesser degree depending upon the country. William Riker (1968) published a landmark book, *Federalism: Origin, Operation, Significance*, the first of its kind in modern political science that attempted to define and address the causes and characteristics of federations and federalism (Volden, 2004).

As if to prove the nebulous character of the political system, a number of replies were subsequently published, each attempting to better qualify and quantify the concepts. Some definitions, including ones provided by Preston King (1982), were direct contradictions of some of Riker's conclusions, while still others attempted to synthesize previously competing ideas. As late as 2004, Craig Volden was revisiting "the federalism of William Riker" and critiquing it from a contemporary theoretical standpoint. Volden, like others – the author of this present study included – took umbrage with Riker's assertion that federalism relied upon a military/security condition to exist, that subunits would not remain cohesive unless some external threat held them all together.

How to define the system has therefore eluded much of the scholarly community. This present study, however, makes the adamant claim that federalism *can* be measured and defined and the literature ranging from Riker to the modern day has helped to inform the index used in this study to accomplish that very task, as will be discussed shortly in the research design.

Literature Review: Proponents and Detractors

Economic growth is not *necessarily* driven by government intervention in the economy – either directly by increasing aggregate demand with fiscal and monetary policy as proposed by John Maynard Keynes in 1936 or through the provision of public goods and services – and most studies would insist that economic growth is driven by what are largely private sector measures of openness to the international market or the ratio of investment to other parts of the state's GDP (Barro, 2003). While government tariff rates and regulations can influence each of these two phenomena, they are measured primarily by examining private sector activity. Obviously the government has a role to play in all of this and this author would not minimize Keynesian economics into merely a discussion of government-driven demand or 'how to achieve economic growth.' Rather, it is simply necessary for this study to establish as an early assumption that economic growth can be driven by something other than interventionist politics.

This is hardly revolutionary as a statement of fact, or else how would economic growth have occurred before the Keynesian revolution at all? This is necessary to establish, however, for Barro and scholars like him remain focused on variables such as a state's level of democracy, the presence of the rule of law, and the government's consumption ratio in the economy (Ibid). The public sector's relationship to economic

growth has clearly been tested, but this study is prepared to contend that these studies have focused on symptoms, or at best co-causes, rather than on a more precise potential cause. Or if not cause, then at least potentially necessary foundation: namely, *government system*.

Endogenous growth theory arose in the 1980s in response to the perceived failure of exogenous, or neo-liberal, growth theory to produce a realistic model of long term economic growth. Scholars of the ilk of Robert Lucas (1988) took the supposed over-simplification of the exogenous model's treatment of technological growth as a "constant curve" and transformed it into a deeper analysis of endogenous factors, among these being R&D investment, innovation rates, and human capital. While the endogenous growth theory itself has come under critical fire since its inception in the late 1980s, its willingness to look to internal factors within a given state to increase the quantity of complexity in any discussion of economic growth, is perhaps, at least in this study's opinion, the true contribution of the theory to modern scholarship.

Economic growth is necessarily a dependent variable with a plethora of potential independent causes (or at least correlations) and social scientists have spent the better part of the last century trying to nail down precisely what these deeper causes are. The implications for mankind are obvious: if scholarship can produce an accurate model that is widely-applicable, then development theory can stop grasping from one consensus to another. This present study, while mindful of these implications, does not pretend to even attempt to produce such a model. Instead, the focus is upon the seemingly proven link between human capital as a contributor to economic growth (Agiomirgianakis et. al., 2002) and where and how one can expect to find better than normal rates of human

capital accumulation. The syllogism this implies is two-fold, one logically arising from the given scholarship and the other producing the overarching thesis of this study: where one finds high levels of human capital, one will find economic growth; and in those places where one finds high levels of human capital, one should almost certainly find a specific form of public goods provision that contributes to those high levels of human capital (i.e. a specific form of government).

As stated in the introduction, federalism allows for the more efficient provision of public goods, leading in turn to higher levels of human capital (Brueckner, 2005). The link between human capital and economic growth, perhaps a logical given, was painstakingly examined by Robert Lucas, Jr. (1988) and can be reasonably accepted as a given. Other scholars – Agiomirgianakis and company (2002), for example – built further upon Lucas's work and more deeply confirmed the linkage. Brueckner, the scholar that echoed the thesis developed by others that federalism can be linked with public goods, was also quick to point to federalism's drawbacks, however, with regard to the provision of public goods. These drawbacks range from scale economies due to smaller jurisdiction sizes to inter-jurisdictional tax competition when government revenue comes from taxation of a mobile tax base to failure to account for public good spillovers, the latter being first suggested by W.E. Oates in his work *Fiscal Federalism* in 1972 (Oates, 1972). But the proposed link between the system and public good provision has been studied extensively in recent years, with Oates (1993), perhaps in a change of heart, leading the way by proposing that the better targeting of growth-enhancing infrastructure under the federal system contributes to better economic growth.

Infrastructure investment and physical capital aside, the link between federalism and economic growth is not hypothesized to be a direct one. Certainly federations have existed that have failed to achieve the desired aim of all governments to provide public goods (Franck et. al., 1968). While not speaking specifically about federalism's link to human capital or otherwise, a 1994 piece critiqued the growing regime-centric growth literature by stating "...politics does matter, but 'regimes' do not capture the relevant differences. Postwar economic miracles include countries that had parliaments, parties, unions, and competitive elections, as well as countries ran by military dictatorships..." (Przewoski & Limongi, 1993). A year earlier, Levine & Renelt established that most of the correlations that had been previously observed between growth and various policy and institutional indicators were "fragile" at best, especially those variables most commonly associated with the public sector, while investment and trade as percentages of GDP held (Levine & Renelt, 1992). A 1994 study conducted by John Helliwell poked a large hole in the theory that democracy is linked to economic growth by systematically showing that no correlation, positive or negative, exists between the two concepts – though his results did show a positive correlation between human capital accumulation and growth (Helliwell, 1994).

Given these various findings, any reader approaching this present study must have a healthy degree of skepticism, even while keeping in mind that federalism's link with human capital accumulation and human capital's link with growth has been independently established previously. It is the aim of this study to show that degree of federalism matters, building from the literature that shows federalism is intrinsically linked with higher rates of human capital (Brueckner, 2005), that human capital is linked

to economic growth (Agiomirgianakis et. al, 2002). This study will then complete the syllogism and show that higher degrees of federalism are linked with higher rates of economic growth. While no one author's methodology is replicated here, the strength of the literature should bear forth regardless of the approach if the concepts are genuinely linked. If federations are indeed better able to provide public goods to heterogeneous populations at rates of peak local efficiency as suggested by Brueckner (2005), then stable federations – those with higher scores on this study's index – are almost certainly the best guarantors of the public welfare.

Research Design: A Quantitative Approach

As a beginning premise, this study hypothesizes that the higher a state's score on the Index of Federalism, then the higher will be its United Nations Development Programme Human Development Index score; that the higher a UNDP-HDI score a state receives, then the higher will be its rate of economic growth in subsequent years; and further that the federalism scores will correspond positively with higher rates of economic growth. This hypothesis is hardly a given, but it is one that can be logically induced as described earlier in this study. Since federations have trouble even being founded unless their constituent units perceive some benefit for themselves, it is a reasonable hypothesis (King, 1982) – not to mention all of the other rationale already described.

As a further point of distinction, this study must be viewed with an eye toward the temporal context. The United States was one of the poorer nations in the world at its founding; it was arguably at least as much a federation in 1789 as it is today, if not more so. Time, however, was kind to the United States, permitting the young federation to

economically grow at rates enviable to states in a comparable position today. Other federations experienced nearly-as-enviable rates of growth at other times in history. For this reason, time plays a crucial role in this study with data being taken from the years 1980-2000 for the states to be described shortly and analyzed with emphasis on the longer-term effects of the independent variables.

Discussion of Dependent Variables

This study makes use of the United Nations Development Programme's *Human Development Index* (HDI) as a standard measure of human capital accumulation. The UNDP-HDI is a comparative measure of literacy, education, life expectancy, and poverty levels for countries worldwide. It is a standard means of measuring well-being, especially child welfare. The index was developed in 1990 by the Pakistani economist Mahbub ul Haq, and has been used since 1993 by the United Nations Development Programme in its annual Human Development Report. The HDI measures the average achievements in a country in three basic dimensions of human development: A long and healthy life, as measured by life expectancy at birth; knowledge, as measured by the adult literacy rate (with two-thirds weight) and the combined primary, secondary, and tertiary gross enrollment ratio (with one-third weight); and a decent standard of living, as measured by gross domestic product (GDP) per capita at purchasing power parity (PPP) in 1993 US dollars (UNDP, 2007).

The index has been criticized for its weighting of the factors, for its inclusion of certain statistics and its exclusion of others, but all in all, the measure is an accepted and broad-based measure of development conditions within a given state (Ibid). While a state with a high human development index score may not necessarily be perfect and

one with a low score may not necessarily be overly deficient, the symptoms observed by the index can be emblematic of wider socioeconomic problems that could never be quantified and measured mathematically. As a quantifier of the abstract human condition within a given country, the HDI serves a highly functional purpose. As an expression of the first dependent variable in this study, it will help shed further light on the ability of federalism to fulfill the primary purposes of government as described earlier.

A further deficiency of the UNDP-HDI index, especially with regard to this present study, is its inclusion of per capita income data in calculating the HDI score for a country. The economic growth literature is rather explicit and unanimous in that growth is usually slower in places where per capita income is already high. If it is shown that countries with higher scores on the federalism index are linked with higher scores on the UNDP-HDI, then they will not also be linked with states that have high rates of economic growth. Richer countries, in other words, just do not grow as fast as poor ones. Further, the HDI's other factors are more reflections of the better ability of public goods provision that the theory discussed by this present study reviewed. In other words, this study claims that strong federations are better at providing public goods; the HDI measures conditions that would not be possible without adequate public good provision, but which are not in and of themselves public goods. The measurement is an indirect one, rendering the proving of what should be a straight syllogism into a light bending prism of potentially flawed logic. This being said, the UNDP has the best access to data on mortality rates, school enrollment rates, and income – data that is not largely available and readily accessible for all countries across all years. By accepting

and using the HDI index, this study gains data and comparability even as it sacrifices the ability to directly prove what it sets out to prove.

As a measure of economic growth, the second dependent variable, this study makes use of World Bank Data on the annual percentage growth of GDP. While hardly a perfect measure of the concept with regard to the benefits of federalism – more specific data on national sub-units would be preferable, though such data is lamentably non-existent for most countries – the wider assumption that the overall economy must be growing if GDP is growing will do well enough, especially in light of the fact that the UNDP-HDI data will help expose inequalities and other development issues otherwise ignored by basis measures of economic growth such as the one used herein. While the precise relationship between HDI and economic growth may be affected by the inclusion of per capita income data, it's hoped that the weighted impact of per capita income will serve to mitigate the relationship observed by the literature as described briefly in the previous paragraph.

Discussion of the Independent Variable

For the independent variable, this study has made an effort to amalgamate much of what has been previously written and observed about federal systems of government into a numerical index that, like the UNDP-HDI (which will act as an independent variable in the second section of the Analysis portion of this study), produces a normalized system for rating a government's level of federalism. The index will be explored in detail in the coming pages and also may well be subjected to criticism for its failure to account for one aspect or another of the topic or its seeming over-weighting or under-weighting of varying factors. The author of this study readily concedes that even

he finds failings with the *Index of Federalism* that has been developed for this study, not the least of which is the length of the index itself. The Index was developed in reaction to other indices that have been observed, which normally distinguish between federations and non-federations with either a one or zero, respectively. Given the sheer number of factors that go into generating the federalism score of each state for each year, then the number of possible outputs for this study is 5,040 – a dramatic real-world impossibility even if the study were expanded to include all 192 U.N. member states. There simply is not anywhere near the degree of variation in the world that this index is capable of measuring.

As a normalized tool, however, the index accomplishes its most rudimentary of objectives: namely, to provide some form of quantitative observation of what is otherwise a very abstract and difficult to define qualitative phenomenon. And while the amount of possible measurable variation in the study's universe versus what variation is actually possible may diverge to a great extent – 315 possible separate outcomes versus 5,040 measurable outcomes – the capability of the index to measure that amount of diversity is both a potential criticism and a strength. No other index – and perhaps some might argue 'with good reason' – goes to the same depth of examination that this one does, examining as many different viewpoints from the literature as this index does. Criticisms of the index and disagreements over definition will hopefully be addressed with the passing of time and the march of theoretical progress in further studies.

A further criticism of the Index of Federalism developed by this study lies in the potential for intercoder unreliability. To address any potential claims of non-duplicability

or even claims that the index itself was purely subjective in nature, this study had a separate researcher examine a number of the cases used in this study and perform the same blind analysis, scouring the literature and internet and reference sources for information separately from this study's primary researcher. While a few differences of opinion arose that were mostly settled ultimately one way or the other by a careful reexamination of the language contained in the index, the two separate sources of data, those coming from the main researcher and the second, never varied by more than one standard deviation from one another – in most cases, they were identical. If anything else, the index needs attention to tighten up the distinction between factors and to make the instructions clearer.

In the forthcoming paragraphs, the Index of Federalism is broken down by criteria with an explanation for each with a review of relevant literature. On the relatively infrequent occasion that a criterion had to be excluded from the calculus of the index score for a given state, the data that could be derived from that criterion was excluded. Reference is made to this fact in the relevant criteria discussions. At the right of each criteria is included, parenthetically, the total possible points the specific criterion was worth depending on the answer to the survey question. A 'perfect' score would mean the case rated as a purely federal government, while anything less than a final score of 1 meant that the case slipped away from the ideal in some fashion, either as a result of confederal or unitary tendencies in the case of Part I or as a result of lacking one of the conditions that help facilitate the existence of federalism in Part II of the index.

Criterion 1 – “Does the case define itself as a federation? (i.e. does “federation” appear in the state’s official name or constitution?) (Y 0.25, No 0)

An affirmative answer to this first question meant that in official government documents – websites, Constitutions, laws – the case defined itself as a Federation, whatever form that federal definition might take. Certain examples, such as the United States, use language such as “union of states,” which is meant to imply an affirmative response to this question. Some states do not call themselves federations and yet reflect federal tendencies and characteristics – such as the Belgium; at least one state, Austria, calls itself a federation and yet does not score as high as one would expect on the federation index. This is beside the point so far as the criterion is concerned. The score designation of 0.25 if the case defines itself as a federation is a reflection of the general consensus not only in the literature but in psychology as well that things tend to make an effort to at least appear to be what they call themselves – even if they are what they say they are in name only. The conscious act of taking the name *federation* sends a political message that the country is going to operate a certain way and that constituent units – if pre-extant to the adoption of the name – should have certain expectations for what their rights and responsibilities will be under the so-called federation.

As criteria go, this was one of the more difficult to explain the utility of, at least when compared with other criteria. It is well known that many states have called themselves democratic republics without evidencing any of the usual characteristics thereof, so it is reasonable to assume that just because a state calls itself a federation that it may in fact not necessarily be one. In establishing the presence of a federal form of government, however, the index draws upon the fact that federalists prefer to distinguish themselves by calling attention to their *modus operandi* (Franck et. al, 1968).

A compromise was established for the scoring in an effort to downplay this criterion while not excluding it.

Criterion 2 – “When founded, did the case coalesce from formerly independent (or pseudo-independent) states that agreed to unify for common cause? If origins of case are imperfectly known, does the state’s founding “myth” include such a coming together of separate states?” (Y 0.25, N 0)

A commonality among many – though certainly not all – federations is the way in which they came into existence. The United States was founded when the thirteen independent states decided to pool their sovereign resources for their common advancement. Canada was forged by what would become Ontario, Quebec, and most of the modern Maritime Provinces to counter a perceived threat to the south; prior to unity in the Dominion of Canada, each existed in complete autonomy from the others. Foundations and origins need not mean everything, and the low potential contribution to overall score by this criterion reflects such a conclusion, but it is relatively unlikely that a state which was formed from previously independent states continues to exist as a single state outside the framework of something not unlike federalism.

Some federations have artificially created their internal divisions – such as the states in Nigeria – and so are seen as a federalist example even without the origins of the state showing disparate parts collaborating to create a federation. But where the origins have contributed to the establishment of a political culture founded upon principles of power sharing between equally-sovereign parts, the presence of a federation is a strong possibility. While obviously not an exclusionary criterion if absent, the circumstances surrounding a state’s *modern* founding and territorial integrity have a role to play in explaining the federal composition of a given state.

Criterion 3 - Does the case possess constituent components delineated geographically? (i.e. states, provinces, districts, etc). **If “No,” proceed to Part II.** (Y 1, N 0)

This criterion is perhaps the most quintessential of all; indeed, one of the few generalities that the overall literature is willing to concede about federalism is that is composed of a central government and several constituent governments. The scoring reflects this fact in that a full point is granted if the condition is satisfied. Further, a response in the negative to this question will also result in the analysis moving to Part II of the survey, “Conditions Facilitating Federalism,” thus skipping criteria 4 through 13 and receiving 0 points for each of those criteria. None of the states in this present study answered “No” to this question, and this was partially on purpose as will be discussed in the case selection section to follow the present discussion of the independent variable.

In addressing this criterion as a part of the independent variable, it is important to note the role of the literature. In as much as political theorists over the decades have disagreed on exactly *what* constitutes federalism and what is necessary and what is not, this single criterion is omnipresent and is the hinge criterion on which all of the other criteria follow. It is important also to note the order of this criterion – it is number three – as the previous two criteria could very well apply to a state lacking constituent units. No examples of this phenomenon were encountered by this study and none come immediately to mind, but that does not mean that they do not or could not exist – Austria, for instance, could very well be moving that direction. The point is to show that the criteria are not necessarily randomly organized, that the methodology of the index attempts to provide for the varying conditions that exist, or could exist, in states throughout the world.

Criteria 4 – “Do citizens/subjects of the case identify both with their local constituent unit and the central government? (i.e. personal adjectives, “demonyms”) (Y 1, N 0)

This criterion was developed when it was noted in Ronald L. Watts' *Administration in Federal Systems* (1970) that people tend to identify with the government and territorial entity with which they have the most contact. Political and personal identity, embodied in the adjective that individuals anoint themselves with (or have anointed on them), can play a very important role in preserving the continued federal nature of a pre-extant federation. Where a federation does not exist, personal adjectives – known as *demonyms* in the Oxford English dictionary – can be a source of sub-national nationalism. Consider the fact that Americans can also be Floridians or New Yorkers or Californians; that Canadians can also be Albertans or Nova Scotians or, perhaps infamously, Quebecois. These demonyms help to define people and direct their loyalties, simultaneously building and sustaining a federal form of government.

In the United States, where such loyalties are perhaps among the most famous in the world, state governments endeavor to instill state patriotism in young people by requiring them to learn the state's history, understand its system of government, know of its cultural heritage, and explore its natural landmarks and landscapes. The demonyms of constituent units do not necessarily prevent individuals from also identifying with the central government – consider that all Georgians, Michiganders, and Oregonians are also Americans – but help instead to foster a diversity of identity that can both encourage friendly competition and focus administrative oversight in constructive and regionally-confined ways. Of course, the United States did see a dark side to this identity-derived nationalism during the mid-19th century when loyalty to one's state led individuals to take up arms against the central government. It should be noted,

however, that even given this fact, the criterion requires *dual* identity, an adjective for both the national and constituent component level. A federation is therefore a moderated presence of identity, a balance between the unitary excesses of absolute loyalty to the center and the confederated excesses of absolute fealty to one piece of the periphery.

Criterion 5 – “Are the constituent components of the case self-governing? Are their political institutions and legal jurisdictions independent of those of the case?” (Y 1, N 0)

While at first a seemingly muddled criterion, the requirements embodied within it are meant to address the issue of sovereignty. Bottom line: are the constituent components sovereign within their own territory or are they merely regional subdivisions of the central government? I suppose this question could have itself been the criterion, but the language of the criterion as stated is important. There are many examples of states throughout the world, especially in the Caribbean, duly divided into constituent components, usually parishes or departments, which possess their own governments but can collect no taxes of their own and find they are dependent on the central government for handouts. Still others can collect taxes, but only *for the central government*. Some can make their own policies and collect their own taxes, but are appointed by and responsible to the central government.

Argentina is perhaps the most intriguing example: the provinces of Argentina have their own governments chosen by their own people, make their own laws, collect their own taxes, and enjoy considerable influence in Buenos Aires as compared with similar constituent units in other countries. What’s the catch? The central government can dissolve a provincial government at its leisure and call new elections, suspend the operation of the provincial government, or even indefinitely dissolve the government

until the center decides the province can govern itself again. The incompatibility of local and national fiscal policies in Argentina had disastrous consequences during the run-up to that country's 2001 financial crisis during the late 1990s. Papers could be written and have been written on the Argentine financial crisis, and while the inability of the provinces and the central government to agree on common policies was a contributing factor, it was by no means the exacerbating cause that bears responsibility for the crisis itself. Indeed, the provinces played a key role in maintaining order and establishing some form of stability in the wake of the crisis – an impossibility had Argentina been a unitary republic.

These various situations are more directly addressed under the headings of other criteria, but crucial for this criterion is the question of sovereignty and constituent government autonomy. It is not just enough that a state possess constituent components if it is to be a federation, it must also permit them to function as they will – albeit perhaps within agreed upon ranges of authority or limits. If a federation is to be a federation and not just a near-unitary state with administrative departments like Austria, then local autonomy must be active and very much alive.

Criterion 6 – “Does the case possess “dual” or “overlapping” jurisdiction whereby the central authority and relevant constituent authority can both be exerted on individuals?” (Y 1, N 0)

Assuming that the constituent components have their own governments – independent or otherwise – a federation is usually characterized by a term that Watts (1970) and others termed “dual jurisdiction” whereby laws could be passed at either level of government and, theoretically, directly impact the lives of people living within the relevant jurisdiction. A state whose central government's law-making authority is limited

to making recommendations or that is trumped by state legislation is a *confederation* and naturally a state whose constituent components find they are without any ability to make laws is a unitary state. The dual jurisdiction, also called “overlapping jurisdiction” by King (1982), features two systems functioning parallel yet independent (or not) of each other, usually most obvious in the judiciary process though also apparent in the legislative (two systems of law) and executive (two different bureaucracies) processes.

Criterion 7 – “The political rights of the constituent polities of the case are constitutionally entrenched and may not be altered by a decision of the central government without their consent.” (Y 1, N 0)

This criterion harkens back to criterion 5, but takes it a step further by inquiring as to how stable that autonomy and the privileges enjoyed truly are. Argentina is a good example to bring up here again given its affirmative in criterion five yet constitutional failure to protect its provinces from central government interference. Further, Argentina lacks a provision in the process of amending its national constitution that would enable the governments within the provinces a say in the ratification process other than their popularly elected senators. While it is true that Argentina is not the United States and countries need not follow the admittedly difficult threshold formula mandated in the US Constitution, the fact that Argentina’s national government could theoretically vote its provinces out of existence, change their borders, create new provinces, or dissolve old ones without significant input from the provincial level is a militating factor with regard to the Index of Federalism. Argentina enjoys the benefits and existence of federalism, but the federal model is not as stable in Argentina as what it could potentially be.

Criterion 8 – “The sovereign responsibilities of the constituent components are clear, either as reserved or expressed powers, and are unique from responsibilities of the central government.” (Y 1, N 2)

This criterion is an important one for the overall federal index in that powers that are clearly defined prevent an erosion of sovereignty at either the national or sub-national government levels. Jurisdictional and territorial issues do not play as big a role when the national government operates within its sphere of influence and the sub-units operate within their topical areas of sovereignty. While hardly in and of itself a death knell for federation – meaning, a federation can exist without this criterion, as it can exist without a number of them herein cited and as discussed – the lack of a clear distinction of sovereignty between the central and constituent governments can ultimately lead to the slow eclipse of one side over the other. Austria is a poster child for this phenomenon. In such a situation, the federation would slowly evolve – devolve, depending on one’s perspective – into a different system of government.

Criterion 9 – “The case possesses formal standards describing how the constituent polities that comprise it relate to one another.” (Y 1, N 0)

Like criterion 8, this criterion is more a standard of convenience than necessity, yet one more example of a single loose thread that when pulled does not necessarily unravel the entire fabric but one that if left unattended could cause fatal damage. Consider a federation where the members were free to enter into treaties with one another against the others, or where marriage laws or driver’s licenses were not given equal standing. Granted, individuals need not necessarily concern themselves with such issues: if you don’t leave your own region, why should it matter? That, one could suppose, would be a threat to the freedom of travel and could in and of itself threaten economic growth in the state as a whole. A failure to regulate interactions between federal members can lead to a shaky federation in the near term and potential secession and collapse ultimately.

Criterion 10 – “The constituent polities have equal powers and rights vis-à-vis one another, with each constituency a member in equal standing, i.e. no special privileges or voting rights that others lack.” (Y 1, N 0)

This criterion is important given that not a single federation currently in existence, regardless of one’s definition of the term, is composed of member units that are perfectly equal and homogenous with respect to one another. Rhode Island and Alaska are both states in the United States, but Alaska is many hundreds of times the size of Rhode Island; regardless, each has two votes in the Senate. Rhode Island has more people than Alaska; regardless, each has two votes in the Senate. Federal law applies to all the US States, not just some. And so on. The essence of federalism is the ability of each member to stand with its fellow members regardless of the differences that separate them and embrace the commonalities that bind them.

This criterion is important given the fact that some federations do, indeed, grant some members special rights or privileges not enjoyed by other members – either an extra number of votes in a national legislature, or exemption from certain taxes, or special language rights in some cases. In Canada, the provinces do not enjoy equal say in the Canadian parliament; the Maritimes, three separate provinces, are forced to group together for purposes of representation in the Senate and on the Supreme Court. This does not necessarily spell doom for the Canadian federation; their system works well enough for them and no one is necessarily disenfranchised. But one of the key principles of federalism, as expressed by Riker (1968) in his earlier mentioned book, is equality of constituent parts. Federalism suffers when that principle is laid aside. Of course, in some cases, the constituent components have no say in national politics, as

discussed in the next criterion. But the equality desired by this criterion does not suffer so long as no constituent unit has any say.

Criterion 11 – “The constituent components have a defined role in shaping national policies, either through an equal-vote legislature or some other mechanism that permits influence.” (Y 1, N 0)

This criterion takes the previous criterion, as discussed, a step further and examines the role that the constituent units have to play in the creation of national policies. Perhaps the defined role is a very limited one; perhaps it is very broad. Perhaps it is nothing more than equal votes in a Senate, perhaps it is the ratification of treaties by constituent governments, and it could be any number of infinitely different combinations. The key is not so much *what part* of national policy the constituent components can influence; the key is that they have some kind of influence. Why is this important? Again, the difference between federalism and its two opposites, confederalism and unitarism, requires that the sub-units share in the policy-making process with the central government, providing their own specific public goods and having their voices heard as deemed appropriate. To deny the regions any voice in national policy would be to subordinate them to the central government in something other than a federal power-sharing system.

While it would seem to be the perennial whipping boy, Austria here again is the example of choice for showing a situation where a so-called federation neglects yet another of the ingredients that go into federalism so far as this index is concerned. The role of Austrian states has been steadily decreasing over the last fifty years and their role in national policy making is for all empirical considerations non-existent. As Austria

is an outlier in this study, a special section given over to just this state – along with a few others – awaits in the forthcoming portions of this study.

Criterion 12 – “Though multicultural/multiethnic, the case has no notable risk of ethnic conflict arising in the near future. (Note: If the case is not multicultural/multiethnic, skip this question).” (Y 0.20, N 0)

This criterion is the first criterion in Part II of the Federalism Index, which is entitled “Conditions Facilitating Federalism.” The criteria included in this section are partly of the literature and partly of this study’s creation, but which have been shown over time to influence the stability of governments and which especially would play into (or play against) the successful maintenance of a federation. All of the criteria in this section – there are five total – are worth two-tenths of a point, so if a country missed a point in the first part, it can partially make up for its loss in this section and so help mitigate the drop in its federalism score. Naturally to score a perfect “1” on the index, the state must possess all the attributes of Part I and Part II. While some might critique Part II as giving certain factors – such as the likelihood of ethnic conflict or even the fact that armed conflict is currently on-going – too little weight and thus skewing the data results in light of what is being compared to the federalism scores, it is important to bear in mind two things: one, that no index is perfect; and two, just because a country is in a state of siege does not mean that Part I is reduced or done away with or cancelled out. And as long as this fact is understood, then allowances can be made.

Criterion twelve specifically looks to the ethnic and cultural make-up of a society to determine its relative level of ethnic tension and violence. Understandably, a federation, like any other state so plagued, would have trouble surviving in the face of ethnic violence or difference that could not be peacefully resolved. The biggest

objection to this criterion is no doubt how to define multicultural/multiethnic and whether the state was subsequently at risk of conflict arising. For purposes of this criterion, it was defined as follows: "This criterion is assessed using the Minorities at Risk data set of Ted Robert Gurr and associates... with specific reference to whether the state is shown to possess ethnic minorities, whether those minorities are subject to discrimination at present (atrisk1), and the group's score on the Index of Political Autonomy Grievances (autlost)."⁴ If a state possesses a rambunctious group that feels it necessary to riot or engage in violence, then the stability of that state is threatened, whether the state be a federation or not. But especially so for a federation considering such a government must achieve and maintain so delicate a balance of power in order to survive. Any threat to that balance is understandably grave.

Criterion 13 – "Does the case have any active separatist movements that are serious political players within the case? Is secession – peaceful or otherwise – a real possibility, or at least treated as if it were?" (Y 0, N 0.20)

Yet another criterion requiring definition, "serious political players" with regard to separatists was defined for purposes of the index as: "Serious Political Players should be understood to refer to any separatist movement that has formed an organization, political or otherwise, that enjoys noticeable support among relevant populations – especially separatist political parties." It should be noted that Canada flunks this criterion, yet that federation does not seem to be in any imminent danger of collapse. Again, these Part II criteria are merely 'facilitating conditions,' not absolutes.

Criterion 14 – "Within the boundaries of the case, is there a serious risk of armed conflict erupting in the near future – or has it already erupted and is presently ongoing?" (Y 0, N 0.20)

⁴ MARgene data downloaded from <http://www.cidcm.umd.edu/inscr/mar/registration.asp>

“Serious Risk of Armed Conflict” should be understood to mean those cases where individual acts of violence driven by the causes of the potential conflict have occurred in sufficient quantity to merit mention by contemporary media. Obviously the second part of the statement is self-explanatory, though for simple purposes of clarification it can be understood to mean the territorial waters of the case as well. This distinction is important given Argentina’s involvement in the 1982 Falkland Islands War, as well as for other reasons not bearing mention here. Further, this criterion is focused not only on any intrastate conflict but also any interstate conflict the state might find itself involved in. While Riker believed that the “military condition,” the notion that an external threat would unify the sub-units toward a common cause, was a necessary determinant in the origins of a federation, this study would contend that ongoing conflict within the borders of the case would be more detrimental to the survival of a government dependent on so delicate a balance of power.

Criterion 15 – “In an effort to dissuade separatists or to quell armed conflict, do one or more areas of the case or portions of the population enjoy privileges not granted to other areas or portions?” (Y 0, N 0.20)

This situation harkens back to a few earlier criteria with regard to the equality enjoyed between members of a federation. The difference between these sets of criteria, or rather what makes this criterion unique, is the conditional phrase at the beginning, “in an effort to dissuade separatists...” In some countries, such as Serbia or Spain, the granting of autonomy to particularly agitated regions is a tool that has been used for sometime. Similarly, in India, certain types of subdivisions enjoy privileges not enjoyed by others, largely done in an effort to persuade insurgents to stay within the larger fold. While a false veil of peace may prevail, such situations can do nothing but

postpone a wider problem. It is almost guaranteed that the residents of such compensated regions do not identify with the central government; indeed, they may even resent it, further developing nationalist sentiments. A state that finds it must answer “yes” to this criterion may not be remaining in tact forever, or at best must manage its affairs with care.

Criterion 16 – “Has the case suffered at least one geographically-driven/inspired coup d’etat in the preceding 5 years? Or is the current government the result of such a coup, no matter how long ago?” (Y 0, N 0.20)

Geographically-driven/inspired coup d’etat should be treated as a situation where a coup has resulted from primarily geographic grievances; class, employment, military-status, ethnicity, or any other variables should be of secondary concern. Geographic origin of the coup masters should be the driving force. The best way to identify such a coup is the shared origins of the coup masters, with Comoros being one example. Having suffered from more than fifteen separate coup attempts since in independence, a number of the coups were driven by individuals concerned with integrating Mayotte Island into the Comorian federal union, while still others were concerned with extending Mayotte’s control over the other three islands. Still another saw a coup by military officers from Grand Camorra hoping to extend that island’s hegemony over the other members of the union. A theoretic illustrative situation in the United States would be if the New England states staged a coup to seize control over the U.S. government and then proceeded to exert control over the other states in the union, or if Texas coup masters did the same. While admittedly a subject that might as well be relegated to science fiction, the notion this criterion is looking to measure is reflected in these examples.

Why include this condition – especially given that not one of the states studied except Comoros answered “yes” to it? It again goes back to the equality of member units. If a central government is dominated by the forces or interests of one of its member units, then it can hardly be called a federation anymore. It becomes instead a puppet regime dominated by a single interest with all the other interests now its satellites. The Soviet Union, or better still, the former Yugoslavia might fall into this category, though the coups that brought both about were naturally driven by more than just geographical concerns. The point is, the conditions prevailing in such a state might look like federalism and might even be arguably labeled federalism, but beyond the fact that an authoritarian regime would all but exclude the possibility of federalism – again, Yugoslavia might be the fly in the ointment here – the domination by one sub-unit’s people over all the others would more than likely threaten long term viability.

Units of Analysis/Case Selection

Fifteen countries were selected for this study based upon a number of factors. First, each of the states chosen has been labeled by some portion of the literature as a federation. While hardly a scholarly source, the *Wikipedia* article on “Federalism” also saw fit to list the fifteen states chosen – as well as a number of others not selected – as federations, citing a combination of national constitutions and a few of the articles this study actually made use of as sources. The point is the ones chosen have been deemed by someone prior to this study, making use of something other than this study’s federalism index, to be federations. The second criterion for the selection of the fifteen chosen cases was a desire to see some level of regional diversity with no one region of the world necessarily over-represented or under-represented. While hardly a dummy

variable, this criterion helped to control for the possibility that a given region might possess states where, regardless of the government, growth is poor or strong.

This study did discriminate based on size, leaving out St. Kitts and Nevis, a stellar example of a two region federation – and also a microstate with little more than 41,000 people. While population size or land area should not impact the linkage between the variables observed by this study, the chance that either could meant that St. Kitts and Nevis had to be excluded for now. A case study would be recommendable, however, especially given the unique nature of that particular state’s government in the Caribbean. Comoros, a federal archipelago off the east coast of Africa, was included in this study because of the wealth of data and because its population is above 500,000. While called by some a microstate (Falleti & Cameron, 2005 among them), Comoros has sufficient people, population, and theoretical potential to be of interest to this present study.

Russia is another so-called federation that did not make it into this study, and that is primarily because of the excessive complexity of the case. Far from not meriting attention, Russia deserves a study all its own – and many studies have been published on Russian federalism. The complexity of the case would almost certainly guarantee it an outlier’s position and would merit the attention of at minimum a full section in this study. The sheer number of variables that could influence Russian public good provision and economic growth is staggering. But Russia was also excluded for another reason: Russia was only independent in 1991 and data prior to that time would reflect Soviet statistics, rather than Russian ones, muddying the waters beyond the point of discernible clarity.

Methodology/Testing Procedure

Building from the hypothesis that high scores on the Index of Federalism will positively correlate with scores in the measure for human capital accumulation, the UNDP-HDI, and further that the federalism scores will correspond with higher rates of economic growth, this study proceeds with the running of regressions to determine what if any correlations can be found to exist. To begin, the Index of Federalism is completed for each of the fifteen countries across the time period 1980-2000. Each state is carefully examined for the specific conditions extant during each year, and while not much variation occurs with federation scores over time, enough variation occurs with enough of the cases to provide something of interest to compare.

Once the scores from the Index of Federalism are compiled, they are then compared in part one of the analysis section with data from the UNDP's Human Development Index. The federalism scores from 1980-1984 are averaged and then compared with the HDI score for 1985 to show a cumulative effect on human capital accumulation over time; the process is repeated for the federalism scores from 1985-1989 with the score from 1990, and etcetera through to the HDI score for the year 2000. Regressions are run for all fifteen as a group to show the broad applications of the theory regarding federalism's impact on human capital accumulation.

In the second part of the analysis section, UNDP-HDI scores are compared with economic growth figures – again, averaged over five year periods of time, but this time with the UNDP scores *preceding* the averaged economic growth data. For example, the 1980 HDI scores will be compared with the average of economic growth over the period 1980-1984, and so forth, ending with the HDI score for 1995 being compared to

economic growth during the period 1995-1999. In this section, this study hopes to reinforce the described correlations observed by the literature described in the introduction of this study, especially by Agiomirgianakis et. al., 2002.

In the third part of the analysis section, the federalism score means will be compared with economic growth rate means. Certainly federalism may positively correlate with human capital accumulation and certainly human capital accumulation may correlate positively with economic growth, but the strength of the relationship between the independent variable and the latter dependent variable will reveal whether the syllogism proposed by this study is sound or mere spurious coincidence.

A brief review of the several outliers in this study will be conducted throughout the analysis sections with an eye towards explaining derivations from expected results. This portion of the analysis will also indulge in some minor critique of the literature in an effort to reconcile observed derivations. While not proposing new variables, this section will also examine potential qualitative as well as further quantitative variables that might be to blame for the hypothesis going awry – assuming it does. This section will be followed by concluding remarks tying the study together.

Analysis Part I - Federalism and Human Capital Accumulation

The Federalism Index scores for all fifteen countries were divided into five year time period blocks and averaged. These means were then compared with the Human Development Index scores for the year immediately following the five year time periods covered by the averaged Federalism scores. What emerged was a decidedly significant positive correlation between a state's level of federalism and its accumulation of human capital – with a cubic twist, that will be discussed shortly.

Figure 1 – Mean of scores on Index of Federalism by country, five year periods

	1980-1984	1985-1989	1990-1994	1995-1999
Argentina	0.97238	0.97620	0.97620	0.97620
Australia	1.00000	1.00000	1.00000	1.00000
Austria	0.58740	0.58740	0.58740	0.58740
Belgium	0.59520	0.59520	0.58000	0.79050
Brazil	0.71048	0.77144	1.00000	0.99620
Canada	0.88190	0.88570	0.88570	0.88190
Comoros	0.69520	0.69140	0.69520	0.66854
Ethiopia	0.32380	0.32380	0.33906	0.83046
India	0.82860	0.82860	0.82860	0.82860
Malaysia	0.90480	0.90480	0.90480	0.90480
Mexico	0.90000	0.90000	0.89238	0.86190
Nigeria	0.74766	0.36670	0.36670	0.46194
Pakistan	0.98100	0.98100	0.98100	0.93146
USA	0.99238	1.00000	0.99238	1.00000
Venezuela	0.78570	0.78190	0.78190	0.78570

Figure 2 – UNDP Human Development Index (HDI) Scores, selected years

	1985	1990	1995	2000
Argentina	0.8110	0.8130	0.8350	0.8600
Australia	0.8780	0.8930	0.9330	0.9470
Austria	0.8740	0.8970	0.9160	0.9370
Belgium	0.8810	0.9020	0.9320	0.9450
Brazil	0.6990	0.7200	0.7490	0.7850
Canada	0.9090	0.9290	0.9350	0.9425
Comoros	0.5000	0.5060	0.5210	0.5390
Ethiopia	0.2930	0.3140	0.3220	0.3490
India	0.4770	0.5150	0.5480	0.5770
Malaysia	0.6960	0.7230	0.7610	0.7910
Mexico	0.7570	0.7660	0.7840	0.8110
Nigeria	0.3870	0.4070	0.4190	0.4330
Pakistan	0.4200	0.4630	0.4930	0.5110
USA	0.9020	0.9170	0.9300	0.9400
Venezuela	0.7420	0.7600	0.7680	0.7740

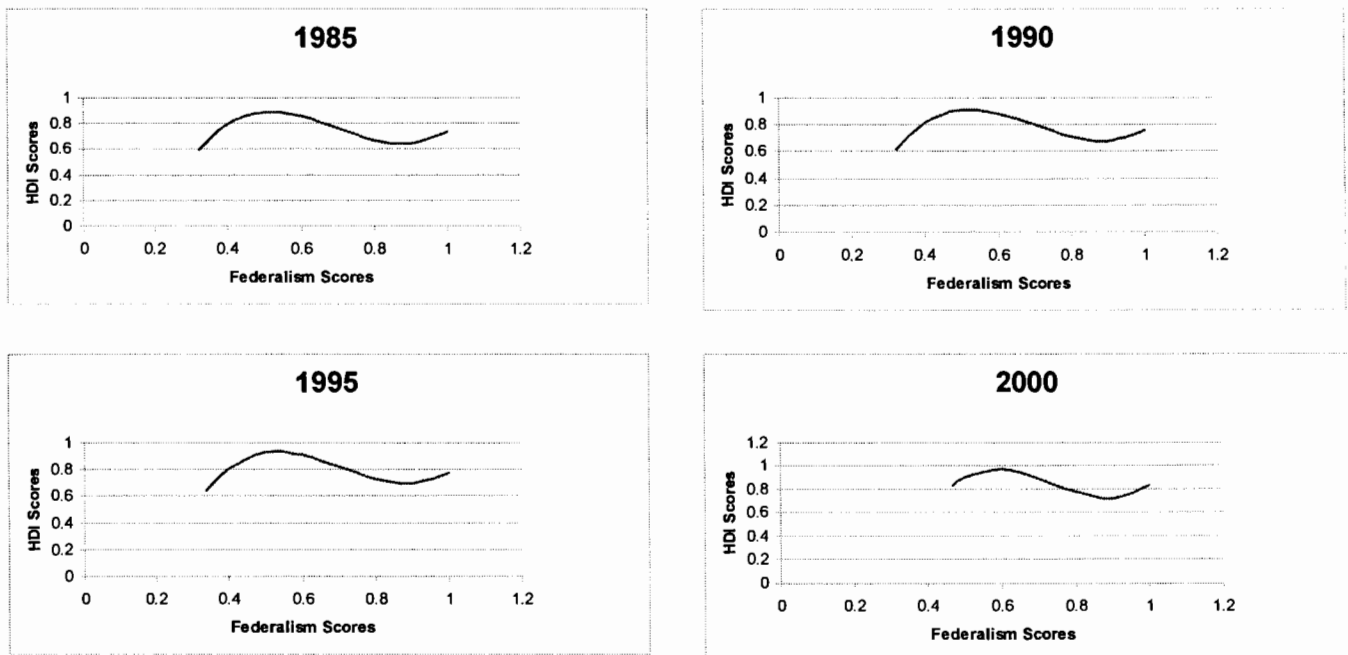
For all of the time periods in question, no significant correlation emerged between the federalism index scores and the UNDP-HDI data until the Index of Federalism score means were cubed – at which point not only did the data become significant, but a healthy adjusted-R² emerged as well. Even with dummy variables accounting for the

fact that a state was in Africa or that the state was the United States or Canada, the data remained significant and the adjusted-R² remained of intriguing importance. The data for the time periods were regressed and the data for each regression follows now.

Figure 3 – Regression Results, FED Means vs. UNDP-HDI, with significance

	1985	1990	1995	2000
FED-Mean	14.45006	13.97016	15.25575	27.7972
FED-Mean ²	-22.16587	-21.15855	-22.8796	-39.21341
FED-Mean ³	10.57308	9.9742	10.72551	17.65556
_constant	-2.117757	-2.035093	-2.324446	-5.403759
AFRICA	-.2993118	-.3073493	-.3077792	-.3887309
US-CANADA	.2233001	.2125373	.2042882	.1622997
Min. Sig. level	90%	90%	90%	90%
Adjusted-R ²	0.5612	0.6228	0.6378	0.6238

Figure 4 – Graphs of Regression Curves



With adjusted-R² for each of the time period showing stronger than 0.5, the odds are fairly good that the regression curves generated in Figure 4 reflect the data examined – and by extension, the wider federal world. The data cannot be expanded to the entirety of the world for lack of proper non-federal control cases. However, if countries choose to

adopt federalism as a system of public good distribution, then one can project the range of variation in HDI scores that will result if the country is a stronger or weaker federal model.

The implication of all of this is that for a given range, normally any federalism score of less than approximately 0.55 and anything more than approximately 0.8, improvements in the HDI score are going to be significantly positively correlated with improvements in the Index of Federalism. For the intermediate range, however, the observed negative relationship implies a need either to regress to a less federal model or to push forward with more federal reforms.

The explanation for this no doubt lies in the nature of the index itself and the items described previously in the discussion of the independent variable. In the lower range of federalism scores, scores were normally depressed by the presence of armed conflict or the subsequent risk of conflict. Fears of secession and the other Part II factors also play a role. By removing the negative consequences of these factors, improvements in HDI scores (and necessarily the federalism score) would result. Past the point of about 0.5 on the index, however, considerations of local government powers come into play. Partial autonomy at the regional level – for instance a separate government but with routine interference from the center – would complicate the allocation of public goods and dampen the accumulation of human capital. Whereas once a state reaches the 0.8 point on the index, the factors preventing a perfect score of 1 are more likely than not a failure to integrate the regions into national policy making or the fact that the citizens of each region do not identify with their region. Necessarily, an

improvement in any of these factors at this level of federalism would result in further efficiency improvements in the allocation of public goods.

The simple explanation for all of this, mathematically, lies in the slope of the cubic equations for the various time periods. From the perspective of development economics, the implication is that reshaping a state into a federal system is not a quick fix for any country's development problems – unless that state is already a strong example of federalism and the strength of the example is subsequently improved. For all of the time periods observed the adjusted-R2 hovered between 0.56 and 0.64, showing the federalism scores accounting for roughly a half to two-thirds of the variation observed in the dependent variable at or above the 90% confidence level. In Africa, especially, the model held remarkably strong as Comoros, Ethiopia, and Nigeria illustrated the relationship between the variables far above the 95% confidence level for the years observed. The literature is awash with other variables that determine human capital accumulation, so even assuming that something was not accounted for in the Index of Federalism with regard to a state's level of federalism, these results are not surprising. From the standpoint of this study's hypothesis, however, they are most encouraging.

While the similarities between the two concepts are not complete, the relationship observed between federalism and human capital accumulation is not unlike coordination failure and that concept's view of multiple equilibria (Todaro & Smith, 2006). While it may be preferable to get to the level of federalism that would permit faster human capital accumulation, the intermediary range where $d(\text{HDI})/d(\text{FED}) < 0$ between the two points in the equation where $d(\text{HDI})/d(\text{FED}) = 0$ would mean sacrificing

human capital accumulation in the name of institutional reform. While certainly optimal for long-term improvements in HDI score, the necessary ‘big push’ between the two points would no doubt be political suicide, assuming the observed relationship holds in reality. In trying to translate these numbers into the real world of nations and provinces, think of it in terms of the transition from a nationally-run education system to a regionally-administered system. While the sub-units developed independent policies and gained institutional memory, the education system would suffer vis-à-vis the previously established national system. The opportunity cost would be born by the educational system during the transition period and would no doubt reflect in the state’s level of human capital accumulation for a proportionate period of time.

Analysis Part II – Human Capital Accumulation and Economic Growth

The economic growth rates were divided into five year time blocks beginning with 1981 and averaged, similar to the methodology used on the federalism scores in the previous analysis. These means were then regressed with the Human Development Index score for the year immediately preceding the five year growth rate; i.e. 1980’s HDI was regressed with the mean growth rate for 1981-1985. The rationale behind this approach was two-fold: one, to reflect the conclusions reached in the literature regarding the accumulation of human capital and economic growth rates; and two, since growth rates can be affected by a variety of phenomenon other than human capital accumulation and regardless such accumulation’s effects are more obvious over time, then an initial HDI-level approach seems most prudent.

Figure 5 – UNDP Human Development Index (HDI) Scores, selected years

	1980	1985	1990	1995
Argentina	0.8020	0.8110	0.8130	0.8350
Australia	0.8660	0.8780	0.8930	0.9330

Austria	0.8610	0.8740	0.8970	0.9160
Belgium	0.8670	0.8810	0.9020	0.9320
Brazil	0.6840	0.6990	0.7200	0.7490
Canada	0.8860	0.9090	0.9290	0.9350
Comoros	0.4830	0.5000	0.5060	0.5210
Ethiopia	0.2800	0.2930	0.3140	0.3220
India	0.4390	0.4770	0.5150	0.5480
Malaysia	0.6590	0.6960	0.7230	0.7610
Mexico	0.7370	0.7570	0.7660	0.7840
Nigeria	0.3760	0.3870	0.4070	0.4190
Pakistan	0.3880	0.4200	0.4630	0.4930
USA	0.8890	0.9020	0.9170	0.9300
Venezuela	0.7340	0.7420	0.7600	0.7680

Figure 6 –Economic Growth Rate Means, indicated time periods

	1981-1985	1986-1990	1991-1995	1996-2000
Argentina	-2.4293	-0.33326	6.701679	2.712718
Australia	3.099776	3.137875	3.401347	4.008101
Austria	1.43753	3.231046	2.054343	2.476074
Belgium	0.997764	3.0928	1.506466	2.75978
Brazil	1.19842	2.092942	3.164	2.288
Canada	2.820658	2.845016	1.754266	3.662666
Comoros	4.292042	1.620688	-0.60102	0.974639
Ethiopia	-2.9617	5.542383	2.628882	5.280009
India	5.377667	6.359127	5.214138	5.737746
Malaysia	5.154561	6.909401	9.473331	4.869206
Mexico	2.030393	1.722773	1.609953	5.513972
Nigeria	-2.75413	5.421808	2.494661	2.75172
Pakistan	6.77879	5.799526	4.843837	3.102836
USA	3.162899	3.228498	2.403202	4.186673
Venezuela	-0.91191	2.761355	3.534725	0.694263

Despite the expected relationship, however, no significant relationship emerged during any of the time periods save for some barely-significant negative correlations between the two variables during two of the time blocks for the three African countries – and these variations are more likely false echoes than an actual correlation. Any number of possible explanations for this eventuality exists, perhaps foremost a flawed approach to the data. The fact that only fifteen cases are used and most of the literature performing cross-country analyses of growth and some other variable use in upwards of

fifty cases could be a factor also. Further, the choice of independent variable in this study – the UNDP Human Development Index – might have led to what the growth literature has termed ‘convergence,’ or rather those countries with high GDP per capita do not grow as quickly as those that have comparatively lower GDP per capita. Since one of the factors that determine a state’s HDI score is GDP per capita, then those states likely to have high HDI scores are also likely to have lower rates of economic growth. Since a largely positive connection was noted in Analysis Part I between higher degrees of federalism and higher HDI scores, it is likely that this analysis section has fallen victim to convergence.

While no finding can be accepted without an ability to replicate it in subsequent studies, the volume of literature regarding human capital’s association with economic growth should not be rejected purely on the failure of this study to show any significant correlation between the two variables. Indeed, given the discussion in the research design portion of this study regarding the choice of the UNDP Human Development Index as the dependent variable in Part I and the independent in Part II, the evidence from the literature that has been independently duplicated, and the results of this part of this study’s analysis, it is likely that the UNDP-HDI is not an appropriate measure of human capital accumulation – even if its value as a measure of development is well established. As a measure of development, it more than likely reflects to a certain degree a state’s level of human capital accumulation, but it most likely does so in the same way that the presence of cable television indicates that a house has electricity. The source of power and the quantity are unknown. What is known is only that both are

sufficient to power a television set. In future studies, a more robust measure of human capital accumulation and the public good provisions that permit it will be required.

Analysis Part III – Federalism and Economic Growth

In this final analysis section, the federalism scores were again broken into five-year time periods and then averaged, beginning with 1980-1984 and continuing through to 1995-1999. The economic growth rate data was similarly treated, breaking the growth rates into five-year time periods and obtaining a mean for each time period, though instead of beginning in 1980, this time series began in 1981 and went through to 2000 on the basis of the assumption that a lag time would exist between a state's level of federalism and economic growth rate. A revisit to Figure 1 will show the data used for the independent variable in this portion of the analysis and the dependent variable data is the same displayed in Figure 6 in the previous analysis section.

Figure 7 – Regression Results, FED Means vs. ECON-GRW Means, with significance

	1985	1990	1995	2000
FED-Mean	7.621	-2.310	3.998	3.169
constant	-4.23	5.347	0.198	0.759
Min. Sig. level	90%	insignificant	insignificant	insignificant
Adjusted-R ²	0.166	-0.010	0.071	0.037

A significant positive correlation exists between the federalism data and the economic growth data throughout the early 1980s with just a simple linear model describing the relationship, though adjusted-R2 remains low, more than likely the result of the many other variables associated with growth as described in the literature. Beginning with the 1990 regression (FED 1985-1989, ECON GRW 1986-1990), however, the level of significance plummeted. Like the previous section of analysis, any number of factors could have influenced this sudden change in strength of correlation, including any of the other seemingly countless factors noted in the literature as related

to growth. One possibility is that the methodology described in the first paragraph of focusing on the averages – while seemingly justified in an effort to downplay hiccups in the data – is a flawed approach. The other possibility, the more likely of the two in this author’s opinion, is that federalism’s effect on economic growth is so minute and so varying over time that no real relationship can be described between the two phenomena with the data pool limited to twenty years and the case selection limited to fifteen countries. While the correlation observed between federalism and human capital accumulation in the first analysis section is certainly worth pursuing – even if with an alternative measure of the dependent variable – any hope to find a clear linkage between federalism and economic growth will have to remain relegated to the theoretical.

Going Forward

This study set out to accomplish two rather daunting tasks: the first was to quantify something, federalism, that scholarship has remained divided on *qualifying* let alone finding some method of quantifying; and the second was to use the subsequently-generated quantitative data to test if the observations made about federalism down through the years really meant something meaningful. Why ask the question “What is the best form of government” if the answer is not going to improve people’s lives? True, the arguments contained herein were purely economic in the sense that the hypothesized syllogism was pursuing the growth paradigm – a frequently criticized measure of well-being. And yes, though the Human Development Index is a measure of well-being, here it was used purely in pursuit of economic ends: how much human capital does the state have, and how is it contributing to growth? But that is beside the

point. What purpose does government serve if it cannot facilitate prosperity for its citizens?

While one could certainly argue that task-one of this study has been attained with the understanding that the criticisms will need to be addressed in any further work on this subject, the connection between federalism and growth will necessitate further study. The syllogism is a healthy one in the sense that if federalism truly does lead to better rates of human capital accumulation, it also by extension leads to better rates of economic growth. But it most likely does so via avenues such as free trade within federations, more efficient provision of public goods, better facilitation of investment, etc. among other possibilities. If Tamura (2005) and Agiomirgianakis et. al. (2006) and all the rest are right, and this study bets they are, then the hypothesized syllogism, while as yet unproven, is all but a logical certainty – albeit a non-provable one quantitatively.

If nothing else, this study has laid the foundations making further investigation possible, contributing to the ongoing theoretical debate about what federalism really is and why it matters. In any such future investigation, the index will need to be reevaluated in light of whether each factor truly is an independent factor or whether they may be co-variables, each existing only when the others – or a few of the others – do. The discussion of each criterion contained in this study should advise and guide that process with the overarching question being, “Does the presence of each criterion make a state more federal, or does it only make it that more certain that a given state *is* federal?” This study has approached federalism as a gray-phenomenon, something that cannot be codified as black or white, federal vs. non-federal. This approach may or may not be the best one to take from a theoretical perspective. This author personally

regards the merits of such an approach to outweigh any disadvantages, especially if the federalism index is tightened up to account for possible co-variances.

Additionally, any future study should focus on improving the operationalization of human capital accumulation and public goods provisioning. The link between these phenomena and federalism has been glimpsed quantitatively and is very real theoretically. A future study that includes some other measure alongside the UNDP Human Development Index – or that excludes the UNDP-HDI – would no doubt reach more intriguing conclusions with regard to this likely correlation. The Human Development Index is not so much a poor measure as it is a good reflection, but the likelihood of reaching any firm conclusions about a phenomenon indirectly through one of its products is very slim – think again on the electricity/cable television analogy for insight on this point.

Finally, this study's case selection was limited to fifteen "federal" countries, so-labeled by other studies and authors. This is fine, especially since this study was looking to see variations in federalism across federal countries (i.e. degree of federalism). The expansion of the study to include a sample of non-federal states would allow for wider conclusions to be drawn about the robustness of federalism's proposed link with human capital accumulation – and also about the robustness of the federalism index. The non-federal countries would act as an adequate control for those chosen (or randomly sampled) federal countries that would be regressed with the improved measure(s) of human capital accumulation and public goods provisioning.

This study set out to prove a syllogism and discovered a deeper vein of questions about the nature of government, human capital measure, and the causes of

economic growth. No deep, earth shattering conclusions can be offered now, but the likelihood of federalism being shown to be a unique system with very real, very positive implications for political and economic administration in a given country is very strong. When the results of this study are examined with regard to federalism's link with human development (HDI), then a curious situation demanding further investigation emerges. This study, ergo, is not the end of the study of federalism's impact on economic performance; it is only the beginning of a deeper collaboration for the public good.

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