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ESSAYS IN CONSTITUTIONAL ECONOMICS

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Stockholm, January, 1997

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PROEM TO ESSAYS IN CONSTITUTIONAL ECONOMICS*

By Niclas Berggren**

1 INTRODUCTION

The three essays which follow - and which, together with this one, constitute the author's doctoral dissertation - are all written in a revived and expanded classical tradition referred to as *constitutional economics*. It is revived in the sense that it relates to pioneering work in the field of economics which has tended to become inconspicuous with the passage of time, and it is expanded in the sense that it adds modern methodological and conceptual notions to the older and general basic insights. The main modern initiator of this approach is James M. Buchanan.

The purpose of this paper is twofold: to define and describe the overall research program to which the following essays belong - to delineate what makes it constitutional and what makes it economic (section 2), and to expand upon how each of the essays relate to this research program (section 3). Finally, some conclusions are offered (section 4).

2 THE BASIC IDEA OF CONSTITUTIONAL ECONOMICS

Following Buchanan (1987a, 1990), this section will attempt to clarify, more precisely, the basic idea of constitutional economics, along a few different lines. The term itself was first introduced by McKenzie (1985) to denote a distinct research program which had emerged within the public choice tradition and which was, and is, closely intertwined with it.

* The author wishes to thank Fredrik Bergström, Dan Johansson, and Karl Wärneryd (advisor) for valuable comments and suggestions, and the Stockholm School of Economics for financial support.

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Although the various contributions which are normally taken to belong to this field differ in many respects, it is suggested that the following definition is sufficiently comprehensive and general to encompass most, if not all, of these contributions: *constitutional economics* is the study, within a rational-choice framework, of the *choice of some of the constraints* facing individuals in their decision problems.

To elaborate somewhat, let us proceed by outlining how constitutional economics compares to regular economics and public choice, respectively. First, the standard form of microeconomic theory focuses attention on the choices of individuals under a *given* set of constraints, often relating to technology and budgets. While the constitutional approach retains the model of economic agents which is predominant in most of economic theory - *homo economicus* - along with the related presupposition of methodological individualism¹, it differs from standard economics in at least three ways:

(i) The object of analysis is different: instead of viewing all constraints as exogenous, some are considered open to various forms of (ultimately individual) choice - and hence also open to study for the economist *qua* scientist of human behavior. In other words, the analysis is moved up one step, in its focus on the rules or institutions which constitute the framework within which ordinary political, social, and economic choices are made (in a utility-maximizing manner). That is, instead of looking at choice *within* rules, the constitutional economist looks at choice *between* rules - and he does so on the premise that man is able to choose rationally², individually and collectively, also in this realm.

(ii) As is the case for the rational choice approach to human behavior in general, constitutional economics opts for methodological consistency in extending the just-mentioned model of man to all (including non-economic) spheres of life, such as politics, law, and religion.³

(iii) As for the rôle of the constitutional economist, following Buchanan (1959, 1979), it is somewhat different from that of the neoclassical welfare economist, who acts as a policy advisor to decision makers. Rather, it is that of one who offers "guidance to those who participate in the discussion of constitutional change. In other words, constitutional economics offers a potential for normative advice to the member of the continuing

¹ See von Mises (1949, pp. 41-44), Buchanan & Tullock (1962, ch. 2, pp. 315-317), and Vanberg (1986, p. 114).

² On this, see Buchanan & Tullock (1962, chs. 4, 6).

³ See Becker (1976), Brennan & Buchanan (1984, 1985, pp. 46-66), and Gwartney & Wagner (1987, pp. 7-8).

constitutional convention, whereas orthodox economics offers a potential for advice to the practicing politician." (Buchanan, 1987a, p. 585)

Second, constitutional economics differs from public choice in that the latter looks at how agents behave in the political sphere (as politicians, voters, interest-group members, bureaucrats, etc.) under *given* institutional structures. Thus, it is similar to regular economics in looking at choice within rules but has more of its subject matter in common with constitutional economics (although constitutional economics, as will be apparent below, *may* deal with non-political topics as well.) The positive results of public choice research⁴, e.g., the existence of "government failures," also provides a rationale for constitutional studies, since if such failures were non-existent, there would be a much less compelling reason for comparing alternative sets of rules: an unconstrained benevolent dictator would then be splendidly able to take care of collective affairs.

What is the larger intellectual tradition in which constitutional economics may properly be placed? Historically, as in many other fields of modern economics, Smith (1776) is the main originator of the type of analysis being conducted. Unlike most of modern microeconomics, Smith did not put emphasis on the allocational aspects of economic-political organization; instead, he engaged in a form of comparative institutional inquiry in which the working properties of a free market economy were contrasted with those of a mercantilist régime already in place. In this venture, he focused on demonstrating that the market order was more effectual in allocating resources to the satisfying of individual preferences - and not to the achievement, necessarily, of efficiency as interpreted in the two welfare theorems. Hence, his overall approach was about the choosing of rules within which people had to interact.⁵

Furthermore, Wicksell (1896) was of great importance for the development of constitutional economics. He argued that if one wanted policy outcomes to change, one should not try to influence the behavior of the decision makers directly but, rather, aim at changing the decision-making rules. One of his contributions was to stress the unanimity criterion⁶ as a normative benchmark for collective decision making, which relates to the Pareto criterion in the way in which efficiency is interpreted and which is sometimes, albeit not necessarily, used in normative constitutional economics. The setting: only individual

⁴ See, e.g., Crain & Tollison (1990).

⁵ Although Smith, as perceived by Buchanan (1991, p. 249), was naïve in believing that government would act upon sound advice and implement his suggested set of rules irrespective of the private incentives of politicians and bureaucrats.

⁶ See Buchanan & Tullock (1962, ch. 7) and Buchanan (1985a, pp. 28-29).

evaluations count and the only source of information about these evaluations stems from revealed choice behavior; and on the basis of this, a change is deemed efficient if and only if all individuals explicitly acquiesce.

Let us close this section by reflecting briefly on a philosophical issue: Is constitutional economics at base a positive or normative endeavor? The answer is, "Both, and most often in a rather interrelated fashion." The positive part of the research program is about examining, in various dimensions, the real political and economic effects of alternative constitutional arrangements and, to some extent, about predicting what rules will be chosen in a certain setting. The normative part is about assessing how relatively desirable these alternative constitutional arrangements are, on the basis of some value criterion - which in practice more often than not stems from normative individualism and contractarian political philosophy.⁷ Now, in spite of this recurring interrelationship, the positive and normative parts are distinct and separable: one can be a strictly positive or a strictly normative analyst, and if one is a normative constitutionalist, it is possible to be a contractarian or something else, such as an extreme conservative.⁸

3 THE CONSTITUTIONAL ECONOMICS OF SOCIAL ORDER, RELIGION, AND ECONOMIC FREEDOM

The preceding section was an attempt to present the basic idea of constitutional economics in a fairly general manner; here, the three essays - the titles of which appear below as the titles of the three subsections - will be related to the main idea in a more detailed way.

3.1 Social Order through Constitutional Choice: A Contractarian Proposal

The first essay is the most normative of the three, and it is also the one which is most directly constitutional, in a positive sense. Let us take these things in turn. Its first part is explicitly

⁷ See McKenzie (1985, p. 4), Brennan & Buchanan (1985, ch. 2), Coleman (1990), and Buchanan (1991, chs. 7, 11, 18).

⁸ On the possibilities of combination, see Brennan & Buchanan (1985, pp. 20-21) and Buchanan (1985b, p. 34). For an example of a positive analysis, see Anderson *et al.* (1990).

value-laden in that it introduces a criterion, inspired by Buchanan, for the legitimacy of constitutional choice: *A proposed Constitution - and the set of laws that are enacted in accordance with it - is legitimate in its function as the highest law of a jurisdiction if it is accepted as such by a qualified majority of X % of the votes in a plebiscite.* Clearly, it is written in the contractarian tradition, alluded to above, as it affirms that individual evaluations of a proposal for constitutional change are to determine its legitimacy.

However, its second part is positive in nature, in that it develops a constitutional proposal, both structurally and with a description of the miscellaneous effects of instituting it - and it does so under the premise that its validity is determined in accordance with the just-stated criterion. The proposal aims at the highest possible freedom of choice for individuals when it comes to defining the political system of their liking: a core (dealing with public goods and rights) is common for all, but everything else can vary between different sub-constitutions between which individuals choose.

Hence, the proposal connects to the most basic and mainline constitutional-economics analysis: it presents a suggestion of a change in the set of highest laws under the hypothesis that such a change would entail an "approximate Pareto improvement," as revealed by individual choice.

3.2 *Rhetoric or Reality? An Economic Analysis of the Effects of Religion in Sweden*

A conceivably less evident application of the constitutional-economics framework is contained in the second essay, which deals with a subject matter which traditionally has received little attention by economists, viz., *religion*. The question asked is: Can Christian religious faith and/or involvement be expected to affect the behavior of people, with particular reference to divorce, abortion, non-payment of debt, and children born out of wedlock? It is argued theoretically that, from a rational-choice perspective, there is good reason to suppose that such effects will, indeed, occur, as a result of various forms of punishment, which are inflicted upon violators of religious rules by the god and/or by devotees.

The empirical results confirm the implications of the theory: the higher the fraction of religious people in a Swedish city in 1990, the lower the incidence of the four types of behavior, all else equal and on average. This may come about both through religious people behaving "better" and through non-religious people behaving "better," as a result of social pressures from the faithful. Interestingly, a more detailed study reveals that in three out of

four cases, those active in the liberal Church of Sweden contribute to a larger, negative behavioral effect than members of generally more conservative free churches. The following explanation is proffered on the basis of the simple theory: either free-church members are more socially isolated, and hence influence their non-religious neighbors to a lesser extent, than those active in the inclusive Church of Sweden, or free-church members are not true believers to the same extent as those active in the Church of Sweden.

What makes this analysis belong to the field of constitutional economics? Let us begin by noting that although the most frequent subject matter in the field is of a legal and political sort, this is not a necessity; rather, the field was defined above as a study of the choice of constraints *qua* rules. In most cases, such choice is conducted in the area of politics, in a wide sense, but we assert that it is also at work in other areas, such as religion, in two ways.⁹ First, as observed by Buchanan (1990, pp. 3-7, 1994, ch. 3), there is an “individual constitutional economics,” which tackles the possibility for individuals to, in fact, choose their own constraints on an individual level (sometimes referred to as the economics of self control or temptation).¹⁰ Religion can perhaps best be placed between the two extremes - an entire polity and a sole individual - and of central importance is the possibility for an individual to *choose* to affiliate with a religious organization. In this sense, the religiously involved individual implicitly accepts a moral code - in effect, he chooses some of the constraints which he faces in his individual decision-making calculus.

Second, and less interesting for the purposes of this essay, there is a possibility for religiously involved persons to influence the moral rules of their organization: instead of treating them as exogenous, they are now seen as open to alterations.¹¹ Here as well, the religiously involved individual tries to influence some of the constraints which he has to comply with in deciding how to behave.

If we add a genuine belief in a god to this more worldly or social aspect of religion (a belief which we make no attempt to explain), it is clear that an individual who believes in

⁹ Myhrman (1996) notes that a rule, or an institution, can be either general or local and either private or public. To exemplify, a law is general and public, whereas a religion entails a set of rules which is local and private.

¹⁰ On this phenomenon and its classical roots, see Brennan & Kliemt (1990).

¹¹ For a study along these lines, see Lipford (1992). On why religious organizations use rules, it is argued that they do so to protect denominational reputation, which is consistent with other objectives, such as maximizing wealth or preserving doctrine. Another tack is provided in Anderson & Tollison (1992), who look at the *overall* set of rules for the religious market (in which morality is produced), where they evince that a monopoly is conducive to social welfare.

the existence of some deity, who may be believed to have revealed a moral code, regards this code as exogenous. The only choices for such a genuine believer, then, are to decide (i) which particular god to follow, (ii) the extent to which it is advisable to follow his (her?) rules, and (iii) which religious organization to join, if any.

Consequently, let us view the following as the essence of what places the essay in the domain of constitutional economics: a rational-choice framework is used to study some effects of the choices of individuals to become religiously active and *to succumb to religious behavioral constraints*.

But why does the individual accept limitations of his choice set? At least three alternative explanations exist: (i) He rationally identifies certain forms of personal behavior with which he is discontent and the execution of which he wishes to curtail (the solely individualistic motive); (ii) He agrees to impose constraints on his own behavior, not because he really wants to, but as a cooperative exchange with other individuals. As Buchanan (1991, ch. 15, 1994, ch. 3) argues, it might be rational to comply with ethical rules in the presence of prisoners' dilemma-type situations: by having the other player agree to bind himself, one may want to do so as well, if this is the price one has to pay for socially optimal cooperation to prevail¹²; and (iii) He has begun to believe in a god with moral rules and hence accepts the latter as a "cost" which must be incurred to reap divine rewards, on net. All these explanations (which are not, by the way, mutually exclusive) incorporate the idea that the individual chooses to limit his choice set because he wants to achieve some goal, the achievement of which is facilitated by means of this limitation (and, as in ordinary economics, his preferences are seen as exogenous¹³).

¹² This is to say that a person may join a church in order to be able to gain friends (for himself and, perhaps, his family) who are limited by certain rules of behavior (who behave "well") and which, albeit unwanted for himself, he accepts in the exchange. An interesting aside: some non-religious people may try to free ride on the rules of religious organizations by moving to communities where many are religiously involved, because they enjoy others behaving under these rules. However, such free riding can be expected to be counterbalanced by social reprimands of the faithful towards their neighbors. Hence, also in the case of non-religious individuals, there is an element of choice of constraints: "Shall we accept certain rules if we move to community x in exchange for others accepting them?"

¹³ Anderson & Tollison (1992) attest that people, to some extent, have a preference for behaving morally *and* that they may behave thus to preserve a good and valuable reputation for trustworthiness. The latter phenomenon is easily integrated into a constitutional-economics view, in that a person chooses not to behave in certain ways because this will retain his human capital. The former phenomenon - "internalized norms" - is trickier to integrate, but perhaps it can be seen as a choice by

3.3 Economic Freedom and Equality: Friends or Foes?

After the detour into the world of religion, the political theme is reintroduced in the last essay, although it differs from the first essay in a rather stark way in being less explicitly constitutional and in having a main contribution which is empirical. The issue which it tries to tackle is: How was income equality affected in a large number of countries in 1985 by changes in economic freedom¹⁴, both in 1985 and between 1975 and 1985? At least two other studies have shown that economic freedom is beneficial for a country's wealth and economic growth, and this provides a background for the issue of this essay.¹⁵ The goal is to make clear not only what economic effects economic freedom gives rise to, but also what equality effects it brings about (as both wealth and equality are often valued by individuals and policy makers).

In the paper, a theoretical section elucidates that we can expect there to be some relationship between changes in economic freedom and equality, but it is not possible to state exactly what this relationship looks like. It is, nevertheless, possible to identify the determinants of different equality levels: more precisely, differences in tax-and-transfer systems and different growth rates of gross incomes for the rich and the poor. Economic freedom influences the income development and is also connected to the redistribution system. Whether more economic freedom benefits the rich or the poor the most is, however, an empirical matter.

The empirical results, based on data-compilation tables and regressions, suggest that there is a *positive* relationship between changes in economic freedom and equality: the more an average country increased its economic freedom in the period under study, the better its equality situation at the end of the period (also *ceteris paribus*). However, looking at absolute levels of economic freedom at the end of the period, they seem negatively related to equality, as measured shortly afterwards. This latter result is, overall, less strongly supported than the former; but the two results *can* be reconciled, as the ensuing reasoning clarifies. Increasing economic freedom continually during a ten-year period affected equality positively shortly

those bringing up children: by teaching them certain values, the idea is that this yields socially desirable behavior. The choice act is hence performed by related individuals by "tacit proxy" on a continual basis, over generations.

¹⁴ This term purports to measure "the extent to which rightly acquired property is protected and individuals are free to engage in voluntary transactions." (Gwartney, Lawson & Block, 1996, p. 12) For a more detailed specification, see the essay, subsection 2.1.

¹⁵ See De Vannsay & Spindler (1994) and Gwartney, Lawson & Block (1996).

after the end of the period, most probably because the poor managed to take better advantage of the freer economic environment than the rich and increase their gross incomes at a higher growth rate. Increasing economic freedom in an isolated manner in 1985, just prior to measuring the effect on equality, affected equality negatively, most probably because of less redistribution and because there was insufficient time for the income growth rate of the poor to "kick off." While these results are somewhat tentative, there is clearly less support for the often-claimed belief that a country must curtail economic freedom should it want equality to improve over time.

How can we relate this essay to constitutional economics? The topic under study - what we might call a perusal of the effects of varying the economic constitution along certain confines - is in concord with the mainstream in the field: a comparative analysis of the working properties of various institutional arrangements.¹⁶ Admittedly, the present study is much more partial and specific than Smith's (1776) undertaking, that of comparing two entirely divers and capacious constitutions; but it does belong to the same tradition.

In addition, one might argue that the particular concept of economic freedom is more in line with a constitutional outlook than other, more narrow policy-related notions, on the basis of its general and extensive character.¹⁷ Whilst, say, an analysis of the effects of raising an excise tax on perfume also informs rule makers, an analysis of the effects of economic freedom concerns legislative activity in a much broader way - possibly both in relation to daily policy making, in relation to the specification of economic constitution (the set of laws defining the structure for economic activities), and in relation to a discussion of the rules governing the legislative body and which induce certain policy outcomes.¹⁸

At base, we are back at the fundamental collective predicament about how to arrange, in a cooperative manner, the laws of the polity such as to escape from the brutal state of nature.¹⁹ Given more specific goals than that of tranquil coexistence, such as wealth and equality, a positive analysis can inform members of a country's constitutional convention (interpreted such as to include "all" individuals) about how to design the body

¹⁶ See, e.g., Brennan & Buchanan (1980), McKenzie (1985), McDonald (1988), and Niskanen (1988).

¹⁷ It has been stressed by Brennan & Buchanan (1985, p. 28 ff.) and Vanberg & Buchanan (1989, p. 54) that constitutions, in the regular sense, are distinguished by the properties of generality and durability - which seem to relate well to the nature of economic freedom.

¹⁸ As for the rôle of the economist, as stated above, this essay is somewhat in the borderline between regular and constitutional economics: it could be interpreted as proffering advice both to the practicing politician and to the member of the continuing constitutional convention.

¹⁹ This is a Hobbesian view; see Buchanan (1975).

of laws in the relevant sphere so as to best achieve their goals, whatever those goals may be. Consequently, the contribution of the essay is that of providing new and, presumably, relevant information for collective choice regarding how to contrive economic constitutions - the specification of which does have demonstrable effects in essential areas.

4 CONCLUDING REMARKS

The field of *constitutional economics* can be defined as the study of the choice of constraints on grounds of basic microeconomic theory regarding human behavior. This definition allows for a rather broad range of applications, since the precise subject matter is not exclusively confined to a certain phenomenon (admittedly, though, the political theme is dominant). As a consequence, although remaining within the limits of the field, the three essays which have been written differ quite a bit from each other, both in the topics analyzed and in the methods of analysis.

The first essay is the most explicitly constitutional, by specifying a contractarian criterion for constitutional choice and by presenting a concrete proposal of a constitution. The second essay is the odd man in this group (in terms of subject matter), as it looks at the effects of individuals submitting to *religious* rules by voluntarily affiliating with gods and religious organizations. And, lastly, the third essay returns to politics to investigate what can be said about the effects of designing the economic constitution of a country in different ways with reference to economic freedom. In all, constitutional economics provides an applicable framework within which it is possible for new ideas and facts, which are relevant for real-world decision making, to emerge. It is the hope of the author this has been achieved in the three essays presented here.

With that said, it is now due time for the reader to continue into the more detailed world of constitutional proposals, religion, and economic freedom - which is to say that the bulk of this dissertation remains.

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SOCIAL ORDER THROUGH CONSTITUTIONAL CHOICE: A CONTRACTARIAN PROPOSAL*

By Niclas Berggren**

Abstract. The present paper consists of two closely related parts: one which outlines a normative criterion for evaluating the legitimacy of constitutional change and one which specifies a particular proposal of a constitution. The criterion used stems directly from the "pragmatic" brand of contractarianism developed by Buchanan, where an approximate rule of unanimity is utilized. The proposal aims at the highest possible freedom of choice for individuals when it comes to defining the political system of their liking: a core (dealing with public goods and rights) is common for all, but everything else can vary between different sub-constitutions between which individuals choose.

JEL Classification. D63, D70, H11, H70.

Keywords. Constitution, Veil of ignorance, Social contract, Institutional competition, Federalism.

1 INTRODUCTION

The last sentence in Vanberg and Buchanan (1989, p. 61) reads: "Cooperation can replace conflict only if the differing interests, held with varying intensities by persons, can be traded-off or compromised, actually or symbolically, in a *social contract*." [italics in original] The purpose of this paper is to suggest a way in which this trade-off or compromise can be carried out. Hence, through a combined usage of principles of political economy and contractarian philosophy, this paper tries to provide answers to the following questions: How can we define a legitimate realm of activities for a State (i.e., an organization for the satisfaction of needs through political-coercive means), and how can this concept of

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legitimacy be operationalized while minimizing the departure from the normative ideal? In this venture, modern constitutional-contractarian scholars are followed, in particular James Buchanan. A basic starting point is the premise of methodological and normative individualism, from which unanimous agreement between individuals follow straightforwardly as the criterion of legitimacy of collective action. In other words, only Pareto superior moves, as revealed by voluntary individual choice, are considered acceptable in this normative setting. However, as has been pointed out, first by Wicksell (1896) and later by Buchanan and Tullock (1962), unanimity as a practical decision rule is very costly and may, in fact, render any political system non-operational. Instead we may, in practice, have to be content with an "approximate unanimity rule" (requiring, say, a minimal majority of 5/6; see Wicksell, 1896, p. 92) or a rule of simple majority - perhaps even on the constitutional level of choice.

Hence, taking the *strict* unanimity rule to be undesirable in practice (and anarchism to be non-feasible for the attainment of social order¹), a proposal of a Constitution is developed which we believe to be operational and in close (but imperfect) accordance with the just-mentioned ideal. There are two main elements in this Constitution: one - kept to a minimum - which specifies rules that deal with *all* individuals of the polity in the same way (such as in the case of deciding about public goods) and one which specifies alternative "societal contracts", between which each individual of the polity must choose at some defined age and which contain different rules and policies which, then, apply to different *subsets* of individuals, as determined by their choices. It does bear noting that all members of the polity get to choose between *all* these contracts, regardless of geographic residence²; taken together, the contracts satisfy widely differing political conceptions, which perhaps could not be realized under a unified system, like today's. Thus, individual preferences are,

¹ By *social order* is meant any inclusive arrangement, implicit or explicit, between all or most individuals which is stable and self-sustaining over time. This is taken to be a goal for all or most individuals, for only if it is met can they pursue their other goals, whatever they may be (excluding goals which are realized through coercion not based on contractual agreement). Or as stated by Buchanan (1987, p. 313): "Both [Madison and Wicksell] sought to bring all available scientific analysis to bear in helping to resolve the continuing question of social order: How can we live together in peace, prosperity, and harmony, while retaining our liberties as autonomous individuals who can, and must, create our own values?"

² Hence, the contracts can be said to be *individual-specific* rather than *territory-specific*. A useful analogy might be provided by a religious organization, in the first case, and by a local municipality, in the second.

to a relatively large extent, allowed to govern the shaping of the political system. Below, this contractarian proposal of real constitutional choice will be spelled out and analyzed as a system through which social order can be sustained with a relatively small departure from the normative ideal.

In section 2, the rationale behind the contractarian enterprise will be presented briefly; also, the normative basis and the core idea of the proposal of this paper will be outlined. In section 3, the proposal will be described in detail, and it will be evaluated along with possible points of criticism. How the idea of federalism relates to this proposal will also be examined. Finally, in section 4, some summarizing and concluding remarks are offered.

2 A PROPOSAL FOR CONSTITUTIONAL CHOICE: NORMATIVE BASE AND CORE IDEA

2.1 *The Contractarian Enterprise (Generally)*

Following Rawls (1971), an extensive modern literature on the idea of a social contract has emerged, and the present paper incorporates basic elements from that approach, in particular from the version presented in the works of James Buchanan.³ A *social contract* can be defined as an actual or hypothetical voluntary agreement between individuals that results in the formation of the State and which defines the rights of each, with the (optional) normative addendum that this contract provides legitimacy for the existence of the State.⁴

³ For a historical survey of the idea of a social contract, see Gough (1957).

⁴ The contractarian enterprise is further described by Sugden (1990, p. 63): "The fundamental contractarian idea is that society should be viewed as a voluntary scheme, organized according to principles that free and equal persons would assent to under circumstances that were fair. [This formula is John Rawls's (1971, p. 13).] From a contractarian perspective, there is no social point of view; there are as many points of view as there are persons. There is no over-arching social objective or aggregate of individuals' welfares to be maximized. Society has no purposes of its own; it is simply a system of cooperation among individuals for mutual advantage." And Sugden (1993, p. 1) states: "It [The contractarian enterprise] seeks answers to questions about the moral obligations we owe to one another, about the legitimate functions of government and the nature of our obligations to it, and about justice in the distribution of income and wealth. Its mode of inquiry is to consider how rational

This paper makes use of the legitimizing feature of such a contract, interpreted in a conceptual, but not hypothetical, fashion. A few general things regarding this concept need to be expanded upon somewhat before turning to the more specific elements of the theory of the proposal of this paper.

First, the social contract is not believed to constitute a fruitful concept by which to *explain* very much. That is, we do not go back in history, looking for actual social contracts as the foundational elements of states (that would, indeed, be a futile mission).⁵ Instead, the concept can be used in a hypothetical or in a conceptual manner, either to specify abstract principles of justice or to evaluate actual laws and proposed changes thereof. Buchanan (1977, p. 127) states it thus:

"To the contractarian that law is legitimate, and just, which might have emerged from a genuine social contract in which he might have participated. That law is illegitimate, and unjust, which finds no such contractual basis."

Second, the normative basis for the contractarian enterprise is unanimous agreement among individuals. This basis follows directly from the central notions of methodological and normative individualism (as outlined in Vanberg, 1986), the latter of which can be motivated on epistemological grounds (Rae, 1988; i.e., it is not conceivable that anyone but the individual knows better than he or she what is in his or her best interest) or because the individual is, quite simply, seen as the ultimate sovereign in matters of social organization (Buchanan, 1991a, ch. 18). There are at least two possible avenues for applying this criterion of legitimacy *strictly*. On the one hand, there is the Rawlsian set-up, which is not in any direct way concerned with actual laws, neither historical nor present ones, but which specifies a veil of ignorance behind which unanimous consent is expected with reference to certain abstract principles.⁶ On the other hand, there is the Buchanan set-up⁷,

individuals, each concerned with his or her own interests, might agree to cooperate for mutual benefit; thus the theory of rational choice - the core of economic theory - is brought to bear on philosophical and political questions."

⁵ As Buchanan (1987, p. 312) puts it, the social contract is not used as an "explanatory" but as a "justificatory" device. See also Rawls (1971, p. 16), Buchanan (1975, esp. ch. 5), and Buchanan (1977, pp. 81-93).

⁶ Rawls (1971, p. 12): "The principles of justice are chosen behind a veil of ignorance. This ensures that no one is advantaged or disadvantaged in the choice of principles by the outcome of natural chance or the contingency of social circumstances. Since all are similarly situated and no one is able to design

which instead hopes either to elicit actual unanimous consent for real-world constitutional propositions (no matter if the present rules did not arise from a genuine social-contract process of choice), as these are perceived behind a veil of uncertainty, where the uncertainty stems from the difficulty for individuals to assess how their own future positions are related to different Constitutions due to the constitutional properties of general applicability and extended temporal validity, or to evaluate such propositions on the basis of a hypothetical reasoning concerning whether or not the proposition in question could reasonably have been accepted by everyone behind a veil of some sort.

Then there is a pragmatic version of the Buchanan approach which, in essence, sympathizes with the criterion of actual, real-world unanimity but which lamentably believes it to be "utopian romanticizing" (Brennan & Buchanan, 1985, p. 27) in that it is improbable that actual unanimity can ever be reached (for reasons outlined below) and in that it is seen as desirable to be able to make it possible to depart from the *status quo*. Hence, the Knightian notion of "relatively absolute absolutes" is brought to bear on the constitutional analysis: the normative ideal is retained as a benchmark, but the practical research program is one of pointing at possible ways to operationalize the contractarian concept while departing as little as possible from the ideal.⁸

Third, it is important to realize that there is a difference between choice *between* rules and choice *within* rules.⁹ The contractarian enterprise deals with the *constitutional* level of choice and it is to that level that the normative ideas presented above apply. It is perfectly in order for *post-constitutional* rules, which stem from a Constitution which has been accepted in accordance with contractarian norms, to entail, say, a simple-majority rule which, if applied to the constitutional stage, would violate the contractarian idea. As

principles to favor his particular condition, the principles of justice are the result of a fair agreement or bargain." See also Buchanan (1977, p. 128-130).

⁷ On the (sometimes, but not always, subtle) differences between Rawls and Buchanan, see, e.g., Coleman (1990) and Gaus (1991).

⁸ Buchanan (1993) can be seen as an attempt to secure as much as possible of generality and non-discrimination given that we are unable to obtain support for a replacement of the simple majority rule by some alternative arrangement, which would be more desirable, from the perspective of the constitutional-contractarian ideal. The flat tax and demogrant advocated by Buchanan have been shown, by Wessels (1993), to be a possible outcome of a constitutional process behind a (non-perfect) veil of uncertainty.

⁹ Cf. the oft-used analogy between a constitutional choice and the choice of rules for a parlor game. See also Buchanan & Tullock (1962, pp. 77-80).

Buchanan (1991a) points out, it is perfectly legitimate for a principal to delegate power to, say, a legislature operating under a less-than-unanimity rule.

Lastly, as is clear from above, to the extent that social-contract theory has been applied to analyses of present-day laws and Constitutions, and changes thereof, it has had to evaluate these on the basis of a *hypothetical* social contract. As such, this sort of analysis is valuable, but it is, admittedly, ambiguous and may be used unwisely. Even though Buchanan accepts the usefulness of a hypothetical veil construction, he criticizes Rawls (1971) for categorizing the two principles of justice as the *unique* outcome of a social-contract process behind a perfect veil of ignorance (Buchanan, 1991b, p. 48). Rather, he advances the idea that, if anything, this setting (or some variant thereof) may be used to *disqualify* certain constitutional propositions.

2.2 *The Normative Basis of the Proposal*

The proposal of this paper derives its legitimacy from what was referred to above as the pragmatic version of Buchanan's brand of contractarianism. That is to say, whilst the ideal for the constitutional proposition is held to be voluntary acceptance through a rule of actual unanimity, this is considered undesirable in practice as it is highly improbable that any departure from the *status quo* would ever be possible under such a regime - in spite of the existence of at least two unanimity-enhancing mechanisms, discussion and compensation.¹⁰ There are several related reasons for this: (i) a large number of people cannot be brought together to discuss these issues, and actual payment of compensation is impossible due to the subjective and unverifiable nature of value¹¹; (ii) strategic hold-out behavior is a serious

¹⁰ Both of these activities have been favorably discussed: the former and the latter in Buchanan (1959) and the former in Vanberg & Buchanan (1989), where it is argued that at least the (dominating) *theory* component of constitutional change could be expected to be narrowed down into something akin to general agreement through discussion between individuals.

¹¹ In addition to the practical problems in actually carrying out such an action of immense present-value redistribution (e.g., the knowledge problem - who knows who should contribute to the present-day net winners in the redistributive game and how much they should contribute?; who knows what these net recipients would receive under the new system - do they know themselves?), there is also at least one normative point of criticism against such a scheme: there is an infinite amount of changes involved in constitutional change, and only the claims of losses of those that "suffer" materially (lost benefits in dollars and cents) from changing systems can be objectively quantified; all other claims cannot be substantiated due to the non-observable character of many "sufferings". The moral could

threat to real-life unanimity, at least if it is not credible to all that the proposal is of a genuinely one-shot nature; and (iii) it is not unreasonable to believe that there are people who receive immense utility kicks solely from opposing others and who would block real-life unanimous agreement just for the sake of it. Even if compensation was feasible, this could be problematic due to the enjoyment they get from shocking others: it is not probable that they would reveal their obstinacy prior to, say, a referendum.

Hence, this is the suggested criterion of legitimacy for the proposal of this paper: *The proposed Constitution - and the set of laws that are enacted in accordance with it - is legitimate in its function as the highest law of a jurisdiction if it is accepted as such by a qualified majority of X % of the votes in a plebiscite.*¹²

What is the rationale behind the adoption of this criterion? As for contractarianism in general, the goal is to "take seriously the distinction between persons" (Rawls, 1971, p. 27), i.e., to not force people into collective arrangements which are anathema to their own values, whatever these look like, for the purpose of maximizing some social welfare function or for some other rather narrowly defined teleological purpose. Thus, the criterion can be seen as one way in which to try to obtain this goal, albeit imperfectly.

Now in embracing this contractarian version, the Rawlsian setting is refuted because of its abstractness and ambiguity, which stem from the hypothetical veil. However, it is plausible that the proposal would not be disqualified from the set of possible outcomes from a genuine contractual process of choice behind a perfect veil of ignorance, as it is structured so as to enable a substantial freedom of choice between different manifestations of the constitutional system.¹³ Note that this is not used as a legitimizing construction in this paper.

Anarchism is ruled out in this set-up, since it (following Rawls, 1993) can be categorized as an *unreasonable* doctrine in constituting a set which is completely disjunct from the set representing a (minimal) political conception. At base, this difference in relation to contractarianism is due to the anarchist view of man's nature: Buchanan (1975, 1977, pp.

then be stated: if not everyone that really should be entitled to compensation can be compensated, then it would be unfair to compensate only a few.

¹² It is important to realize that the normative and the positive arguments in this paper are conceptually separable. That is, one may dislike the stated criterion of legitimacy while at the same time finding the positive proposal congenial, or vice versa.

¹³ The one thing which speaks against its being accepted in such a setting is the presence of individuals who would dislike the unavailability of some type of mandatory social-insurance system.

22-23) has chosen a Hobbesian model of man and rejects anarchism as non-feasible¹⁴ and, indeed, utopian on that basis. If man, however, is perceived to be able to live together with his fellow men in peace and harmony, then the legal system (or any other feature) of a State will not be needed for social order to be viable. This paper concurs with the view that most men satisfy the latter model of man, but that there are sufficiently many who are brutish and nasty, wherefore a legal-institutional framework of some sort and an accompanying enforcement mechanism are needed for stability to endure (Buchanan, 1987, pp. 292-293).¹⁵

2.3 Core Idea of the Proposal

First, we establish that we start from the *status quo*, i.e., what is, is, whether we like it or not.¹⁶ The following is a forward-looking proposal for constitutional change; it is not, *per se*, an attempt to analyze present or past political-institutional structures on the basis of idealized principles. Thus, today's situation is, quite realistically, taken as the given starting point. With this as the base, we ask, "Can the present situation be improved upon, from a contractarian perspective?" and answer, "Yes, we think so", and hence, in that spirit, we present our proposal, the core idea of which can be stated in the following manner.

The Constitution specifies an institutional structure with two foundational pillars: (i) a system for a collective provision of public goods financed by general taxation and for the sustainment of basic rights (which applies equally to every citizen of the polity), and (ii) a set of "societal contracts", which have a common, overlapping core in their

¹⁴ What is the nature of the notion of *non-feasibility* in the context of social arrangements? Conceptually, the idea is that any outlined social arrangement can be placed either in the feasibility set or in the non-feasibility set on the basis of its inherent characteristics. These, in turn, can be discrete or continuous. Examples: A discrete (either-or) characteristic of a (proposed) social arrangement is its model of man, which may be realistic or romantic. If it is realistic, this does not rule out feasibility, which is the case if it is romantic. A continuous (a-matter-of-degree) characteristic is the transaction costs of implementation; here, there may be a threshold level above which, on this count alone, a proposal can be said to be non-feasible.

¹⁵ Admittedly, there are arguments to the effect that the free market could produce legal services so as to ensure social order; see, e.g., Rothbard (1973), Barnett (1985, 1986), and Friedman (1989).

¹⁶ See Buchanan (1977, p. 222, 1985, p. 30).

acceptance of (i) but which may differ in any other respect.¹⁷ Among these contracts, everyone - irrespective of where in the jurisdiction one lives - gets to choose at a constitutionally defined age and one's choice will define different aspects of the political system that one will have to live under for at least some (constitutionally predefined) period of time, after which a switch to another societal contract may be made. In other words, under such a Constitution, there would exist parallel but (in different degrees) overlapping "sub-constitutions", where sub-constitution (synonym to societal contract) can be defined as one particular realization or manifestation of the Constitution.¹⁸

Generally, a system of sub-constitutions may be described in terms of three characteristics: (i) the supply of contracts between which to choose, (ii) the time interval between a change of contracts, and (iii) the transaction costs of a change of contracts (by which is meant information costs and physical and mental costs of moving or changing contracts), when such a change is permitted. In terms of the first of these characteristics, it is possible to define a system of sub-constitutions as "monopolistic" if the supply is limited to just one contract and "fully competitive" if the supply is equal to or larger than the number of choosing individuals, if there is no time interval required between changes, and if there are no transaction costs (clearly an impractical theoretical construction). In between these two extremes, it is possible to imagine a large number of intermediate alternatives - such as the proposal of this paper and a federalist system.

The proposed system can be described, in terms of the three characteristics, as encompassing (i) a supply of constitutional choice alternatives between one and the number of choosing individuals (this upper bound will probably be lower, for reasons given below, at least as far as the contracts which are in active use are concerned), (ii) a time interval between changes of contracts (as small as is needed for a contract to function in a stable

¹⁷ This precludes anarchism as the basis for a societal contract. Those who value the benefits of such a system high enough to exit from the polity may do so (as may any person for any reason of a non-criminal nature at any time).

¹⁸ This proposal may be seen as an (imperfect) substitute to *secession*, in that each person within the same polity (as opposed to groups of persons forming separate and independent polities) can choose under what type of political system he or she wants to live. The imperfectness comes about through the mandatory participation in the creation of a minimal state (to use Nozick's, 1974, term) and the resulting legal prohibition of anarchism. Of course, there is nothing in this set-up that, *a priori*, excludes regular secession as a part of the constitution, but the demand for it could be expected to be quite low.

manner), and (iii) low transaction costs involved in changing contracts (as there is no need to move in the physical room).

But what determines the design of a constitutional system, e.g., with respect to the three characteristics just mentioned? First, as for constitutional proposals, they are naturally developed on the basis of some philosophically inspired set of values in combination with a positive assessment as to the working properties of alternative features of a constitutional system. The goal one wishes to reach by means of adapting a Constitution may differ, from wanting the maximum possible freedom of choice to wanting the most growth-enhancing system, or the most equal one in terms of the distribution of wealth and income. But the general question for any constitutional designer is: For a given goal, what constitutional system will achieve it in the best way? Second, as for the positive question of the actual process of constitutional choice, this varies between countries. The process consists of three steps, starting from the *status quo*: a presentation of proposals for (more or less comprehensive) change, a (possible) consideration in accordance with the formal rules for constitutional change in existence, and implementation or rejection. The present proposal (the details of which will be expanded upon in section 3) fits into this scheme in that it is developed from an explicit, contractarian value base and in that it must be accepted in accordance with the present rules in order to be implemented (although it should be stressed that such an acceptance does not, in itself, render the proposal legitimate in this normative setting, as will be obvious from the following subsection).

3 ELABORATIONS AND CRITICAL EXAMINATION OF THE PROPOSAL

The purpose of this section is to provide a detailed, in-depth rendering of the alluded-to features of the proposed Constitution, and it will do so in three subsections, dealing with elaborations, points of criticism, and the concept of federalism, respectively.

3.1 Elaborations on the Proposal¹⁹

First, this paper encompasses the *overall* working properties and the *basic* rules of a proposed Constitution, but many a detail are left out in order not to distract the reader from the general features (after all, this is not a paper in the field of Constitutional Law). Of course, when a proposal for a new Constitution is voted upon in a referendum, then all details have to be included.

• *The Constitution (more specifically).* The basis for all features of the political system under the outlined proposal is the Constitution. Here, as elsewhere, this document is not concerned with end-state results of social interaction but with the highest level of laws, with which all lower-level laws and all forms of political activity must comply. Only if the Constitution is legitimate can laws and political actions that follow from it be legitimate. The two main parts of the Constitution in the proposed setting, as described above, concern the provision and financing of public goods and the definition and enforcement of rights, on the one hand, and a system of societal contracts, on the other. This is the subject matter with which it is concerned.

Let us outline the form of government - both on the national and the contractual level - which is required for the system of contracts to work. First, a *national State* apparatus is needed to administer the issues which apply similarly to all individuals of the polity (public goods and basic rights) and to uphold the "infrastructure" of the system of societal contracts²⁰; it is financed by general proportional taxation, the size of which must equal the outlays. The precise organization of this State is not specified here; suffice it for our purposes to enunciate the basic structure with which many detailed solutions, regarding things like parliamentary design, length of terms of office, electoral system, etc., are compatible. A central tenet of the overall system is that it is constrained in that it is constitutionally required not to deal with any issues except those for which it has been given authority to act in the Constitution. More specifically, the institutional structure consists of

¹⁹ It should be noted that this subsection, in addition to elaborating on the central, basic concepts of the proposal, also discusses a number of specific suggestions about how different rules could be designed. It is certainly possible to disagree with the author on these specific details but still find the central, basic concepts appealing.

²⁰ In addition to the public goods and basic rights, this might, e.g., include rules which state which societal contracts that are to be offered and a process through which to add new such contracts, rules which stipulate how and which individuals are to choose between contracts, and rules which stipulate on what grounds a contract is to become passive.

three major parts: a national legislature, a Constitutional and Supreme Court, and a set of lower-level courts (an administrative system is included in each case, needed to execute the decisions which are made); more on the Court below.

Second, each *societal contract* contains a certain "program", i.e., a mixture of institutional and policy-specific features, which can vary between the contracts. The basic governmental set-up needed for this system of contracts to be functional is the national system alluded to in the preceding paragraph, with the structural rules, a supervisory function, and an enforcement mechanism (i.e., the public good which is called the legal, or judicial, system, consisting of courts and a police force). And, in addition to this, then, each contract is governed in accordance with a structure which is specified in the contract, examples of which are: no further governance structure (a night-watchman contract), a bureau (if, say, the contract is only to perform a few well-specified tasks), and a contract-specific legislature. Furthermore, for whatever setting, the required rules are outlined. The compliance, in practice, of each contract with its specific rules is supervised by a unit of the Constitutional Court.

- *Public goods.* Basically, there are things which may be desirable but which cannot be handled practically by the individual-specific contracts; these must be dealt with in a unified manner throughout the territory. The questions here are: Who gets to decide what a public good is, and who gets to decide how public goods (as defined by someone) are to be financed? In other words, who gets to specify what the national legislature can do in this area?²¹ The Samuelsonian pure public good, with its two properties of non-excludability and jointness in supply, is well known. However, it is not always clear, in practice, what goods qualify for this strict definition, and it is not at all clear that, even if such goods can be unambiguously identified, the state should produce them. The following is one possible way of dealing with this issue. The Constitution defines that the national legislature can do only certain things, and nothing else. Among these is production of public goods. The actual specification of what constitutes such goods, and whether their provision is desirable or not, is left for the national legislature to decide by a highly qualified majority. It must also decide on how to finance these goods; here, the Constitution may require (following Wicksell, 1896)

²¹ It is clear that if public goods are to be provided by the government, this could only be done by the national government, since those living under different contracts do not necessarily live separated geographically. Therefore, no single contract, or any subgroup of contracts, could provide such goods - at least not optimally. Although it is by no means certain that a national government could provide such goods optimally, it can probably do so less suboptimally.

complete and simultaneous financing²² and it may restrict what type of tax which may be used (e.g., only taxation in accordance with a generality and non-discrimination principle).²³ Another possibility altogether would be to specify in the Constitution that only certain goods could be produced by the State, e.g., the setting up and operation of a system of courts, a police force, and a national defense.

- *Clause for addition of rules applicable to all.* A clause which specifies the conditions under which new areas of rules, which are applicable to all, may be added is to be included in the Constitution.

- *The societal contracts (more specifically).* It now stands clear why the societal contracts can also be referred to as sub-constitutions: through these contracts, the individuals can choose most of the constitutional features under which to live.²⁴ Common to every such contract will be a statement of allegiance to the minimal, common state - the core of this political system - as specified in the Constitution.

What then, more exactly, will these societal contracts be like? A simple example may be illuminating. The Constitution specifies which societal contracts (SC's) that are to be offered; say that there are six to choose between: SC1, SC2, SC3, SC4, SC5, and SC6.²⁵ SC1 may be a socialist contract, which stipulates a legislative body working under simple-majority rule and under a requirement to operate a specified scheme of redistribution, financed by progressive taxation. SC2 may be a mildly leftist contract, with, say, a cap on the degree of progressiveness in the tax system and a requirement not to resort to inheritance taxation (otherwise like SC1). SC3 may specify a legislature with simple-majority rule but with a requirement only to use flat taxes and demogrants (cf. Buchanan, 1993). SC4 may be a

²² That is, a balanced-budget requirement.

²³ For a different analysis of public goods provision on contractarian grounds, see Sugden (1990).

²⁴ In other words, the Constitution can be seen as a meta-constitution serving as the basis for a system of *overlapping sub-constitutions* (where "overlapping" refers to public goods and basic political rights). Necessary for this system to function is some sort of overlapping consensus between individuals' reasonable, comprehensive doctrines on the minimal political structure (a slight variation on Rawls, 1993).

²⁵ The number six is arbitrary and solely chosen for the purpose of illustration. Note that in the following example, only a very restricted number of features of each contract are mentioned, in particular, those that refer to taxation and redistribution; naturally, they are presumed to be able to encompass much more (and the degree to which this happens will vary). Not the least, there may be different rules for companies in different contracts, and this may also influence the choice of individuals between contracts. For a full treatment on the idea of a contractarian-based fiscal constitution with specific reference to taxation, see Brennan & Buchanan (1980).

conservative contract, which sets up a legislature which can only decide on issues of taxation (which can only be proportional) and redistribution with a 75 % majority and which is bound by a balanced-budget amendment. SC5 could be a libertarian contract, with no public activities except for those specified in the Constitution (i.e., this would be a minimal, or a night-watchman, state). Lastly, SC6 may be called a tithing contract, which requires each individual to pay 10 % of his or her income to private charities of his or her choice. No public welfare system is set up, aside from an agency which supervises the transfers; thus, this is a minimal state plus a mandatory system to provide for, e.g., the poor and handicapped.

A natural question at this point is, Is there a limit to the number of contracts that can be offered in the original Constitution? Conceptually, no, but practically, yes. There cannot, e.g., exist nearly an infinite number of contracts, for two reasons. First, such a system, with everyone having his or her own contract, would not be operational in the sense that a minimal political system would not exist; however, a fairly large amount of contracts could probably constitute a workable system (it is, admittedly, difficult to specify what, exactly, a "fairly large amount" is). Second, it is plausible to believe that people, under a veil of uncertainty, would not want a close to infinite amount of choice options, due to a realization of the problems of operation of such a system and due to the fact that, in reality, it would require substantial resources for each individual to make up his or her mind on what to choose. So, applying (and reinterpreting) an idea in Buchanan and Tullock (1962, pp. 63-72), what we can try to look for is an optimal number of contracts, where the optimum minimizes the joint costs, defined as follows.²⁶ On the one hand, there are transaction costs, which are a positive function of the number of contracts. On the other hand, there are external costs imposed through not being able to choose *exactly* the contract one desires, and these are a negative function of the number of contracts. This set-up renders a unique equilibrium, i.e., the optimal number of contracts.

Will it be possible for an individual to change to another societal contract after the initial choice? Yes, but within the limit of a time restriction, which will be specified in each contract, the length of which will be determined by the perceived need for a lag to obtain basic stability. This length may, consequently, vary between contracts. It may also be changed, if it is deemed too short for the contract to work in a stable manner or if it is considered to be unnecessarily long. Such changes will be decided by the Constitutional Court on the basis of an initiative of its own or on the basis of a request from a certain minimum fraction of contract signers. Furthermore, no contract may deny anyone from

²⁶ Buchanan (1969) explains the difficulty in performing cost calculations of, e.g., this sort. Thus, the exercise described here can best be seen as a conceptual one.

joining, as the contracts are not private clubs but features of an all-encompassing, generally applicable Constitution.

Will it be possible to add (or delete) contracts to the Constitution over time? Yes, constitutional change, of this and other sorts, will be possible, conditions for which will be specified in the Constitution. Such changes will be legitimate irrespective of the decision-rule for change, given that the Constitution itself is legitimate. The starting point is that the initial form of the Constitution offers a certain set of contracts, between which the relevant citizens can choose. Directly after the first choice (and subsequently at all times), the possibility is opened up for citizens to suggest new contracts which, if accepted, will be valid at the next opportunity for contractual choice (after the predefined lags) at the earliest, depending on if they are functional at that point in time. A suggested contract will be accepted, i.e., offered for people to choose, if a minimum number of people (probably, a rather small number would be sufficient, in general) commit to belonging to it for at least one period. Furthermore, the proposed contract(s) must not contradict the Constitution in any way (as interpreted by the Constitutional Court). As for deleting contracts, this will be possible if they are seriously and non-temporarily non-operational, i.e., if they cannot perform that which they have promised to perform. This will be decided upon by the Constitutional Court. However, contracts can also become *passive*, if too few choose them for them to be operational. Thus, they remain "in store" for possible future adherents and will be in active use again if a sufficiently large number of people choose them at later points in time. Each contract will contain its own passivity rule, on the form "if fewer than X people choose this contract, it will become passive until X people or more choose it at a later point in time."

Will cooperation between the particular political systems of different societal contracts be possible? That is, can the overlapping part of all political activities between two or more contracts be bigger than what the Constitution specifies as the minimum? Yes, it is perfectly conceivable, and quite probable, that some or all contracts will contain no ban on more or less structured cooperation of different types between groups of people living under different societal contracts. One possible example: two or more contracts could allow for their legislatures, agencies or the like to enter into "deals" which are expected to be mutually beneficial for the people of these contracts. In the area of schools, to take one area which is plausibly suitable for cooperation, different contracts could either agree on a scheme through which students under one contract can use the other contract's public schools, at the payment of a certain amount per student, or on an agreement to own school buildings commonly but with each contract using its own system of financing.

What is the role of the (constitutional) political economist in all of this? Aside from, like the writer of this paper, working on constitutional proposals *pre* reform, as the constitutional process is ongoing, there are things to do at several instances. For instance, the positive analyst can study the positive properties of the system, and this will constitute valuable knowledge about the working properties of a proposal like this. Also, the normative analyst can study how well the system is working, judged by contractarian and other criteria of evaluation. If any of the two discover characteristics which he or she suspects may be deemed undesirable by everyone, then revisions of the Constitution, or specific contracts, may be suggested as hypotheses for improvement (again, following Buchanan, 1959). For most economists in the field, there will probably be little risk for involuntary idleness.

• *The comprehensiveness of the concept of legitimacy.* The question arises, Who are actually bound by the concept of legitimacy pronounced earlier?²⁷ First of all, those that have signed a societal contract are seen as having given their consent to the Constitution, no matter if a particular individual voted in favor or against the proposal - so long as a large enough majority voted in favor of it. Second, if the legal custodian of a child or a mentally incompetent person is bound by the Constitution, then so is the child or the mentally incompetent person. Third, children who grow up in a society which, prior to their birth, has accepted the Constitution will be bound by it when they reach the lawful age. Fourth, immigrants who become citizens of a country which has accepted the Constitution are also bound by it.

The whole process of signing a contract - and specifically, thereby giving one's consent and allegiance to at least a minimal-state arrangement - gives high credence to the idea that the Constitution, and the State which it regulates, is seen as, and indeed is, legitimate for all citizens that stay in the polity, as an exit option is ever-available²⁸; the acts of signing plus staying are taken as indicators of legitimacy, even for those that did not actually vote in favor of the Constitution at some point in time. At least, credence is higher for this idea of legitimacy compared to the present system, which lacks the signing part. A key concept here, as outlined in Vanberg (1986) and Brennan and Buchanan (1985, p. 103), is

²⁷ It bears noting that "being bound" refers to the Constitution and not the various manifestations of it in the form of different societal contracts. That is, through the possibilities to change between contracts and to add contracts, one is not bound to a particular, actual realization of a political system but to an over-arching "principle", as formulated in the Constitution. Thus, in effect, it may be said that more or less continual renegotiation of the social contract takes place.

²⁸ On the usefulness of the exit option in constitutional analysis, see Lowenberg & Yu (1992).

tacit agreement: where the exit costs are low, staying on is interpreted as giving one's consent to the basic institutional structure of one's polity. But needed, at the bottom, is for the proposed Constitution to actually have been accepted at some point by a sufficiently large qualified majority - and this legitimacy endures until a new proposed Constitution is enacted by a similarly qualified majority.

- *Actual versus proposed rules for transition.* What about the actual rules for constitutional change in place in the real world today?²⁹ These constitute a necessary *but not sufficient* hurdle to pass for legitimacy in constitutional revision or replacement. That is, it is recognized that these rules must be complied with, but unless they are supplemented with a referendum, asking the electorate to vote "yes" or "no" to a proposed constitutional change, and unless a sufficiently large majority votes in its favor, then the resulting Constitution is not seen as legitimate, as it has not come about in a way which includes the criterion of legitimacy of this paper. This holds even if the present Constitution has not, in itself, come about in a way which has made it legitimate: we always start from the *status quo*.

- *The Constitutional Court and the enforcement mechanism.* There is to be a Constitutional Court (which is also the Supreme Court) which is to carry out the tasks of controlling the observance of the Constitution (through a unit of supervision) and of seeing to its being enforced. This includes monitoring that each societal contract is fulfilled in that contract legislatures, agencies or the like do not act in ways not in accordance with their respective contracts; if it turns out that there is a violation, the Court can force the contractual authorities to change. Similarly, the national legislature will be under surveillance to ensure that it does not violate the rules of the Constitution; if it turns out that a violation has occurred, the Court can nullify the decision of the legislature. In order to ensure that this role of the Court will function reasonably well, without being influenced by the politicians, the Court will be largely independent from the legislature. This may come about through some financing and judge-nomination mechanism over which the legislature does not have a complete influence. One idea would be to let potential justices be nominated by professors of law and then accepted or rejected by a simple majority of the national legislature.

- *The concept of an individual.* Any analysis based on methodological and normative individualism, i.e., any analysis which takes persons seriously, runs into the problem of defining what an individual is. Clearly, as Buchanan (1991a, p. 228) puts it, "qualification for membership as individuals in the human species that is relevant for the

²⁹ In Sweden, e.g., the rule for constitutional change is for two parliamentary sessions, separated by a general election, to vote in its favor with a simple majority.

free exercise of choice cannot be met by children and the mentally incompetent." So these two groups of people are *not allowed* to sign a societal contract themselves; rather, they follow the choice of their legal custodians. How about those that *refuse* to sign a societal contract? Unless they wish to exit, they could be added, by default, to the contract which specifies the least comprehensive political system.

- *The(im)possibility of redistribution and incentive problems.* The philosophical basis for the proposal at hand, which states that legitimacy in collective action stems directly and solely from the "unanimous" consent of the individuals of the polity, *precludes* a system of redistribution of income or wealth unless such a system has been accepted in accordance with the legitimacy criterion. That is, no one can be coerced to share of his income or wealth to some other individual(s). In this setting, justice is not a function of income or wealth distribution but of the process through which political decisions are taken: only those decisions which are taken by means of the proper process, based on "unanimous" consent, are just - and they are always just.

However, there is room for societal contracts which offer redistribution in different dimensions; naturally, these are chosen on a voluntary basis. It seems likely that two categories of people would tend to choose these sort of contracts: those who benefit *pecuniarily* from them, on net (i.e., below-average income earners or wealth owners) and those who hold an *ideological* belief to the effect that a system of redistribution is preferable. If contracts of this sort do not function, in the sense that too few people choose them, nothing can be done about upholding a redistribution system constitutionally (note: private gifts are always permitted).

What incentive problems might the exclusion of a mandatory social-insurance system give rise to, e.g., in terms of moral hazard and adverse selection? On free markets, there is a tendency for incentive problems of this sort to arise, to the extent that incentive systems do not eliminate the underlying problems of information (see Kreps, 1990, p. 577). Consequently, these problems occur under the proposed system as well (but probably to a lesser extent than in an anarchistic system, since some can be expected to choose societal contracts with requirements for redistribution; there might, e.g., be people who choose such contracts for other reasons and who are bound by its redistributive content, among other things).

In connection with mandatory social insurance, it has been argued that it is efficiency-enhancing, to which two comments suggest themselves. First, this argument might be correct in a "gross" sense, but not necessarily on net, in that the total efficiency effects of such a system are not considered (e.g., the effects from taxation and a bureaucracy

with, possibly, motives disjunct from those which are in line with the public interest); see Layard and Walters (1987, p. 384, p. 386). It might even be incorrect in a gross sense, since the designers of these mandatory systems might not possess perfect information or be altruistically motivated and thus choose insurance levels which are far from optimal. Second, as the normative basis for this proposal does not elevate "efficiency maximization" to a goal in itself, in that view, this argument is not decisive for an overall evaluation.³⁰

- *The judicial status of companies.* In unified systems, like those we can observe today, juridical persons are not a problem: they ultimately obey the rules of the Constitution and, more directly, the laws enacted by the legislature(s) that exercise jurisdiction in the geographical area in which they are registered.³¹ In the proposed system, not very much would be different. More precisely, any company operating within the country must register with one societal contract and obey the rules that it stipulates. As in the case of individuals, these rules may vary in any way between the contracts, e.g., in the fields of taxation and regulation. Thus, this system provides a strong and direct element of institutional competition between different sets of company-specific rules. In addition, in an open economy, other nations' laws and rules in this area would be competing with the laws and rules of the societal contracts of the country which implements the proposed system.

- *Contractually induced externalities.* What if a contract gives rise to negative externalities, which are imposed on signers of other contracts? To such a situation (which is plausible and, even, probable), one possibility is to rule out any policy-specific action to try to rectify it, for two reasons. First, it is well known that attempts by political decision-making bodies to correct "market failures" very well may end up worsening the situation due to the presence of "government failure". Second, on contractarian grounds, those contracts which are specified in the Constitution are to be allowed without any interference from signers of other contracts; any external effects are to be taken into consideration at the stage of constitutional design, where the societal contracts are specified. Later policy actions against the rules of a contract, as written in the Constitution, are not to be permitted. Of course, a change in the Constitution is possible, *in accordance with specified criteria for legitimate change*, which can alter the relationship between the contracts if, say, a certain

³⁰ Of course, it is conceivable that a system like the one proposed here can include general coercive redistribution, if there is an alternative normative foundation.

³¹ Note that a system like the proposed one is effectually in operation in many cases today: companies register in certain geographic locations but may carry out operations in other locations in a certain country or around the world.

disturbing external effect, not perceived at the time of the constitutional design, should appear at a later point.

- *Fiscal and monetary policy.* The ability to conduct fiscal policy on a national level is restricted by the allowed realm of national, all-encompassing policy making. Only the contracts can really conduct anything like ordinary fiscal policy, the net effect of which is hard to imagine, at least to the degree that no coordination of policy takes place between the contracts. As for monetary policy, this proposal *per se* does not necessitate any particular form of money production: it is conceivable that a central bank be established with no, some or substantial independence from any other entity; also, free banking³² - i.e., the production of money on a competitive market without a central bank - is another option. All in all, these are matters to be settled in the Constitution.

- *Institutional competition.* A nice feature of the proposed system, for anyone who values competition, is that institutional competition is rather direct and strong. It takes place on two different levels: through individual changes in contractual belongings (a slow effect, due to the built-in inertia in the form of allowing for contract switches only after a certain period of time) and through direct changes of decisions by contractual legislatures/agencies (a quick effect, but a limited one, since the legislatures/agencies are relatively restricted in what they may change).³³ What does such competition imply? It implies that those institutions-contracts that satisfy people's wants the best are going to survive, within this polity, *in the long run*, given the fact that we give lexical priority to the principle of voluntariness and non-coercion. That is, the institutions that survive may not be what everyone desires - some may, e.g., prefer massive redistribution schemes in their favor, which may prove non-feasible over time. They will not find that the competitive, or evolutionary, process satisfies their wants. But the thing to note here is that these wants build on the forced taking of parts of other people's incomes or fortunes for the purpose of redistribution, an activity which violates the principle of voluntariness/non-coercion and which we, therefore, ignore. Other wants will, however, tend to be satisfied.

³² See Selgin & White (1994) and the references therein.

³³ An example of the effects of institutional competition: If income or capital tax rules differ widely, this may give rise to two types of events: people with higher-than-average incomes/fortunes may switch to lower-tax contracts and, due to eroding tax bases, the legislature/agency of the high-tax contract may have to reduce tax rates as much as it is allowed to. Over time, the contract may indeed become passive, if sufficiently many switch away from it (not the least due to a spiral effect).

But what is the risk for collusion between different contracts? May not some work together in a cartel-like manner in order to restrict competition?³⁴ This is certainly a possibility, here as in any governmental arrangement (the problem of who guards the guardian), and here, it arises in the context of contractual cooperation. It is clearly tricky to delineate which forms of cooperation constitute unlawful restriction of competition, but such a delineation must be ultimately made by the court system. However, we assert that the risk for collusion is relatively minor with the proposed setting because of a well-specified and well-enforced Constitution, which makes clear the rights and obligations of each societal contract.

3.2 Possible Points of Criticism

Several possible objections to the proposal have already been commented upon above; here, a few additional points of criticism will be discussed.

- *The need for societal contracts.* A basic question concerns whether the societal contracts are really needed for the fulfilment of the goals which have been stated previously. A possible argument is that, given the existence of a minimal political system (a minimal State), all other arrangements that people wish to enter into voluntarily can be provided privately without any direct constitutional regulation (this would be equal to only having *one* societal contract, viz., what was referred to as SC5 above). E.g., then, if people want redistribution, they could enter into some voluntary, private organization, created for that particular purpose and hence would not need a particular constitutional option.³⁵ While this argument contains correct elements, there are at least two possible reasons for having societal contracts. First, given that the just-stated argument holds, the proposed Constitution may still fill a purpose as a *method of transition*: it may be too big of a jump to go from the

³⁴ Bish (1987, p. 383) warns, in the context of federalism, that "[a]lthough federalism is designed to provide 'substitute' governments so that the officials of different governments or branches of government watch each other, there is nothing intrinsic in federalism that would prevent collusion among government officials or between government officials and some citizens. In fact, because governments wield coercive power, the incentives to engage in such collusion may be even stronger than may occur among Smith's businessmen."

³⁵ Arguing that not much redistribution would occur under such a system, since presumably selfish individuals would not voluntarily give much to others, is irrelevant, since the same criticism applies to the proposed Constitution of this paper, which also precludes forced redistribution.

status quo to a minimal State, and the proposal can constitute an intermediary goal along the way. Second, with the proposed Constitution, there is an element of assurance or commitment which is absent from private solutions. That is to say, to the extent that people display a readiness to enter into, say, redistributive arrangements in which they are net losers in a pecuniary sense, partly because of an expectation that "others will do the same and stick to it", then an organized system assists in accomplishing this. It thus provides stability through a structure which people may voluntarily join and to which they are bound for some time.

- *On the concept of legitimacy being static.* It is possible to question the validity of the concept of legitimacy spelled out for the proposal, the weak point then being that the concept is a static rather than a dynamic one. That is, while it is possible to see the logic of the criterion for people who are involved in the actual voting, it is perhaps hard to see how subsequent generations - with no individual who participated in the legitimizing referendum - could be bound by the Constitution (which they legitimately are, according to what has been stated above). Although a hypothetical social contract with a perfect veil of ignorance has the disadvantage of being arbitrary, its concept of legitimacy is more directly valid over time, since it does not stem from the views of some people at some point in time but rather from just principles, presumably ever-valid. Still, the hypothetical contract is rejected due to the just-mentioned disadvantage. Clearly, for the purpose of this paper, it would be desirable to have a dynamic concept of legitimacy based on real-world (approximate) unanimity, but lacking such a thing, it is claimed that the static concept - albeit imperfect - is sufficiently useful to be retained in the proposed normative set-up; indeed, it is seen as better than no such foundation at all.

- *The costs of running the system.* It may be argued that the proposed system entails high costs of operation through the many societal contracts. Whether these costs are higher than in some real-world system, with its bureaucratic system and different levels of government, is hard to say *a priori*, although computer technology greatly facilitates the running of an individual-specific, as opposed to a territory-specific, constitutional system. Perhaps some data chip or the like could be put inside the human body, through which the contractual belonging could be easily verified in different circumstances. But, at base, the cost argument is not considered to be normatively decisive: although information to voters and others regarding costs of operation are welcome, if the voters should decide for a system with higher costs (presumably for some other reason), this is to be so. It is a display of inadmissible paternalism to say otherwise, in the proposed setting.

3.3 The Concept of Federalism

The purpose of this subsection is not to analyze federalism in any general way but to provide certain glimpses of this concept with respect to its relationship to the proposal of this paper. Also, Nozick's (1974) Utopia will be commented upon briefly in a similar way.

First, *federalism* can be defined as a political-institutional structure with "a multiplicity of competing government units within a single nation" (Hamlin, 1985, p. 189), two purposes of which is to provide decentralization (in order to "attain a better correspondence between the package of goods and services provided by government and the preferences of individuals by allowing the content of the package to vary across regions", Hamlin, 1991, p. 194) and competition (which leads to increased efficiency as "a multiplicity of governments will compete with each other both with respect to resources (seen as tax bases) and with respect to voter-citizens", Hamlin, 1991, p. 194).³⁶ Now it is clear that the idea of federalism stems from the same considerations that underlie the (positive part of the) proposal of this paper in that both approaches, in addition to providing decentralization and competition, stress the importance of structuring or constraining government so as to prevent the rulers to act in ways not in line with the basic wishes of the population.³⁷ In this endeavour, the two approaches can be seen as (imperfect) substitutes.

The main difference concerns the way in which individuals belong to different government units. In a federalist system, the individuals belong to a geographic territory which is ruled by a certain institutional set-up, and the policies that emerge from it, whereas the proposal here provides a system which enables individuals to belong to a certain institutional set-up (in the form of a societal contract) with certain policies irrespective of geographical residence.³⁸ Hence, federalism is a territory-specific system and the proposal here is an individual- or contract-specific system.

³⁶ For more on federalism, see, e.g., Rose-Ackerman (1981), Wagner (1989), Aranson (1990), Wildavsky (1990), Casella & Frey (1992), and Siebert & Koop (1993).

³⁷ In this regard, both systems allow personal preferences to govern which contracts that are to prevail. Just as those societal contracts that people dislike will become passive, those territories which offer a combination of taxes and public service which many do not wish to support will either adapt its policies or see a reduction in its tax bases.

³⁸ This characteristic of federalism enables the production of some public goods on a local or regional basis (and, then, possibly in different quantities in different regions), which could be expected to be efficiency-enhancing.

In terms of the three general characteristics of a constitutional system discussed above, viz., the supply of contracts between which to choose, the time interval between a change of contracts, and the transaction costs of such a change, a federalist system entails an intermediate supply of "contracts" (i.e., territories within the federalist system) and is, consequently, neither a monopolistic or a fully competitive system. Furthermore, the time interval between a change is not formally defined, as in the proposed system; but there is a *de facto* time interval - which arises due to the need to arrange practical matters, such as switching jobs, houses, schools, etc., before moving - which may or may not exceed the one in the present proposal. And the transaction costs of change are probably substantially higher in a federalist system than in the proposed one, since moving in the physical room can be expected to be costly, in terms of transport costs, information costs, and psychological adaptation costs.

How would mandatory redistributive policies fare under federalism? As noted previously, the idea with federalism is to provide institutional competition, and to the extent that it does that, policy makers will have incentives to form policies which attract individuals and companies. Thus, they will not be able to provide redistribution unless their "key" citizens want it: the rich can simply move, should they so desire. However, to the extent that this competition is not perfect, due to collusion or transaction costs, such policies will be possible also in the presence of discontent among taxpayers. The reason is that it is costly to move - for many more costly than to stay on - and that the alternative territories may offer nothing better, perhaps because of an agreement (possibly tacit) between rulers, to the effect that competition should be suppressed, or because the decision rules (e.g., the simple-majority rule) give rise to similar policy outcomes. If involuntary redistribution does occur, it can be expected to do so to a smaller (larger) degree than in a monopolistic (the proposed) system. As noted above, the risk for collusion in a federalist structure depends on the set of rules which governs the territories.

Would it be possible to imagine the proposal co-existing with a federalist system? There are two possibilities: (i) that a set of societal contracts operate next to a federalist structure, where each system deals with different subject matters; or (ii) that each territory in a federalist system has its own set-up of societal contracts. These alternatives will not be analyzed here; suffice it to note that it would be a much more complex system than either the proposed one or a federalist one, possibly without any additional gains in terms of freedom of choice (compared to the proposal).

Assume that there were no transaction costs or lags in either a federalist or the proposed system, and assume that everything is the same in the systems (including the

starting point) except for the constitutional structure. Then, would, at any arbitrary point in time, the two systems exhibit the same "result" in terms of political outcomes and policies? The answer is probably "yes", i.e., we expect the law of one price to hold in this context. Thus, the basic competitive processes are probably identical. However, such idealized systems are not items of the real world, which is the reason that the just-discussed differences apply.

All in all, then, a selective comparison of federalism with the proposal of this paper reveals that there are differences in the way that these systems can be expected to function, if applied to the real world. However, the basic ideas underlying each system are quite similar, and even though there are institutional and functional differences between them, they are relatively similar compared to alternative constitutional set-ups.

As for Nozick's idea of Utopia - the best possible world for everyone - it has much in common with the normative goal of this paper, which is clear from the following description: "The model is designed to let you choose what you will, with the sole constraint being that others may do the same for themselves and refuse to stay in the world you have imagined." (Nozick, 1974, p. 302) Nozick refers to the idea that there is *one* best society for everyone to live in as an "incredible idea", and states that "...utopia is meta-utopia", meaning that each person must be allowed to form as much as possible of her own preferred world, including those things which are of a collective nature. And when all these individual realizations are taken together, they constitute "meta-utopia". While giving a role to design of (parts of) such a system, he stresses that a good society cannot be constructed but that it must be allowed to constantly develop and reshape itself as a result of new individual choices. In guessing what Utopia would look like, Nozick describes a basically federalist system - although he is concerned about the problem of defining a proper role for a central authority - with a radical vision of competition between communities. So, all in all, the Nozickian aim is similar to the one sketched out here but the rather vague basis for Utopia is territory-specific variations in the political system rather than individual- or contract-specific ones. Also, Nozick envisages wholly private associations and communities dealing with collective issues (aside from the minimal State), and does not discuss the possible role of a Constitution in this regard. And as discussed above, a wholly private system is probably a good substitute to the proposal of this paper in obtaining social order through individual choice, although the proposal here does have a couple of things speaking in its favor.

4 SUMMARIZING AND CONCLUDING REMARKS

The objective of this paper is ambitious indeed: to develop a contractarian proposal of constitutional choice as a means to achieve (approximate) actual unanimous consent between individuals with incompatible doctrines to a feasible and legitimate political system. Initially, the philosophical basis for the proposal was described, viz., the idea of a conceptual social contract, as used by Buchanan. It was argued that the contractarian enterprise is appealing due to its strong emphasis on voluntary agreement between free individuals as the normative foundation for legitimacy in collective action. On these grounds, a type of decentralized Constitution, which gains its legitimacy through its being subject to a plebiscite with a highly qualified majority of the electorate voting in its favor, was proposed. The key idea is to have a feasible system which minimally departs from the contractarian ideal. The proposed Constitution consists of two sets of rules: those that regulate things that all individuals of the polity have in common (rules concerning public goods and basic rights) and those that specify a number of societal contracts, which concern everything else. Thus, through signing one societal contract, each individual of the polity gets to choose his or her most preferred variant of the political system. In other words, freedom of choice is a central characteristic of the proposed constitutional order. We have elaborated in some detail on some central features of the proposal, and we have also responded to a number of possible points of criticism. All in all, a system is proposed which is relatively strong in its combination of practical implementability and a contractarian foundation. On whether we have succeeded in meeting the objective of the paper, the reader must judge. At least, it has been attempted to provide some ideas that can be used for further, and hopefully improved, analysis in the field of constitutional political economy.

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RHETORIC OR REALITY? AN ECONOMIC ANALYSIS OF THE EFFECTS OF RELIGION IN SWEDEN*

By Niclas Berggren**

Abstract. On the basis of simple rational-choice theory, it is argued that Christian religious involvement influences the divorce, abortion, non-payment, and children-born-out-of-wedlock rates negatively. This influence stems from an expectation that a god punishes certain forms of action and from social reprimands of devotees. Regression analysis is then used to test the theory in the case of Sweden in the year 1990, and the importance of religion, in its affecting all of these rates negatively, is strongly confirmed. A particularly interesting result: the marginal effect on three of these rates of increasing the fraction of people active in the Church of Sweden is clearly larger than the marginal effect of increasing the fraction of more conservative free-church members.

JEL Classification. A13, D10.

Keywords. Religion, Rational choice, Divorce, Abortion, Non-payment, Children born out of wedlock.

1 INTRODUCTION

"You conclude, that religious doctrines and reasonings *can* have no influence on life, because they *ought* to have no influence; never considering, that men reason not in the same manner you do, but draw many consequences from the belief of a divine Existence, and suppose that the Deity will inflict punishments on vice, and bestow rewards on virtue, beyond what appear in the ordinary course of nature. Whether this reasoning of theirs be just or not, is no matter. Its influence on their life and conduct must still be the same." [italics in original]

- Hume (1993, p. 23)

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What effects, if any, does *religious involvement* have on human behavior? In providing a partial answer to this question, the present study looks at four forms of observable behavior: the divorce rate, the abortion rate, the rate of non-payment of debt, and the rate of children born out of wedlock. Theoretically, it is argued, on the basis of simple rational-choice theory, that the incentives facing a utilitarian, religious person are such as to discourage him from engaging in these activities, given moral rules which term them sinful. It is demonstrated that, all else equal, a religious person with a faith is more prone to act in accordance with the moral rules of his religion than agnostics and atheists. However, through the effect religious people have on their non-religious neighbors, it is also to be expected that non-religious people in communities with a higher ratio of religious people behave more morally than their non-religious counterparts in other places.

Empirically, using Swedish data for the year 1990, the theoretical implications are confirmed: the higher the fraction of religious people in a community, the lower the incidence of the four types of behavior. This result is particularly interesting in a relatively secularized nation of the Swedish type. Tests also show - perhaps surprisingly - that increasing the fraction of people active in the liberal Church of Sweden generally gives rise to a *larger* behavioral effect, on the margin, than increasing the fraction of members of free churches. A plausible explanation for this is given in terms of the theoretical approach of the paper.

Now, economists have traditionally been hesitant to put their tools of analysis to use in non-economic fields such as religion - but over the past few decades, this has begun to change.¹ More specifically, the structure of the religious market has been looked at by means of the theory of the firm and institutional theory (Hull & Bold, 1989, Iannaccone, 1991, and Hamberg & Pettersson, 1994); certain theological innovations, such as hell, purgatory, usury, and indulgences, have been analyzed as methods by which church leaders have tried to maximize membership, commitment and, ultimately, wealth (Ekelund, Hébert & Tollison, 1989, 1992, and Hull & Bold, 1994); ways of overcoming the free-rider problem, such as imposing strict moral rules, have been explained to be rational (Wallis, 1991, and Iannaccone, 1992); and empirical testing of the effects of religion has been carried out (Pettersson, 1991, Medoff & Skov, 1992, and Sandén, 1994).

Continuing the last-mentioned type of research, this paper is structured as follows. First, there is a theoretical discussion of the basis for expecting religion to influence behavior in general. Then a more detailed theoretical reasoning follows which aims at explaining how

¹ See, e.g., Block, Brennan & Elzinga (1985), Bhagwati & Srinivasan (1986), Anderson (1988), Anderson & Tollison (1992), Ensminger (1994), Iannaccone (1994), and Kuran (1994).

religion can be expected to influence the particular forms of behavior under study here (section 2). The next part of the paper contains an empirical analysis of the issue, where regression analysis is used in order to test the theoretical implications (section 3). Finally, after an evaluation of the empirical results, an overall summary and some concluding remarks are offered (section 4).

2 THEORY

2.1 Religion and Behavior: A Theoretical Discussion

This study focuses on individuals who are generally referred to as *religious* people, by which is meant that they possess some sort of self-confessed faith in some supreme being, often referred to as a god. The rationale for having such a confession of faith is but touched upon here, and it is mainly used as the defining characteristic for the people under study and is thus viewed as a given, exogenous feature in the analysis. Note the words *self-confessed* faith: it may be that someone claims to be a believer without actually being one - which may very well matter for the way religion affects behavior (more on this below).² Instead of primarily looking at what motivates a confession of faith, the issue in this paper is the following: On the basis of rational-choice theory, what reason is there to expect religion to affect behavior and, if such an effect is to be expected, what forms might it take?

Let us commence by stating that as part of the complete set of individuals, who are all assumed to maximize a utility function of the Beckerian household-production form³,

² One possible reason for falsely claiming to have faith: one's family is religiously involved while expecting or demanding that all family members adapt to these practices.

³ That is, the individual maximizes $U = u(Z_1, Z_2, \dots, Z_n)$, where Z_i is (the services from and the quantity of) a basic commodity (or want) which is produced by using input goods x_i and time t_i ; thus $Z_i = z_i(x_i, t_i; E)$, where E denotes environment variables which shape production technology. The maximization takes place under three constraints: the production function constraint just outlined, a time constraint and the usual income constraint. Here, religion is seen as an input good (" x_r ", where r can refer both to faith and involvement). See Becker (1976, chs. 5-7). Furthermore, individual tastes (over the Z goods)

there is a subset for whom, among the various and individual-specific inputs, religious involvement (R) and faith (F) can be noticed - in some form and combination. R is a binary variable (i.e., either one is involved in a religious context (1) or one is not (0)), while F is a continuous one, which may vary from zero to one. That is to say, $R \in \{0,1\}$ and $F \in [0,1]$. In accordance with our previous definition, anyone with $R=1$ and/or $F>0$ is religious. Below, four discrete types will be discussed, as defined in the following table:

Table 1. Four types of persons

		RELIGIOUS INVOLVEMENT	
		Yes	No
True faith	Yes	True believer ($F=1, R=1$)	Agnostic ($F \in (0,1), R=0$)
	No	Religiously involved w/o faith ($F=0, R=1$)	Atheist ($F=0, R=0$)

Note: In all other respects, the types are identical.

Why does R and/or F confer positive utility effects on the religious individual? For a person with $R=1$, there are worldly, non-spiritual considerations of importance, three types of which can be mentioned: (i) an insurance motive (to become involved with others in an environment which explicitly encourages helping people in need gives a feeling of safety); (ii) a social motive (gaining friends); and (iii) a reputation motive (as pointed out by Smith, 1979, a person might improve his reputation, and thereby his human-capital value, by associating with a church which enforces moral⁴ virtues like honesty; see also Vanberg, 1988). Second, a person who has a genuine faith ($F>0$) pays attention to spiritual or non-worldly aspects in his becoming religiously involved, most notably the achievement of divine approbation and rewards - both in the present life and, not the least, in the one to come.

Thus, it is clear that there are several possible reasons for people to choose to spend of their resources on R and/or F: putting time, money, and other things into religious activities instead of spending it all on worldly consumption goods is not necessarily inconsistent with a postulate of man as rational and self-interested.

Given the presence of religiousness, the question is: What are the implications of being religious on individual behavior? First, one can easily observe an abundance of

are assumed to "neither change capriciously nor differ importantly between people." (Stigler & Becker, 1977, p. 76)

⁴ A terminological clarification: by using the term *moral*, we make no value judgement. Rather, that behavior is termed moral which the religion under study defines as moral (with which one may or may not agree), no matter what induced the action or behavior in question to occur (if a virtue)/not to occur (if a vice).

behavioral rules in almost every religion, which underlines the fact that religions and, more specifically, religious leaders *strive to* influence the way their adherents act in different ways. Thus, "consuming" R and/or F might entail, as a cost, a certain moral code, which one is encouraged or required to follow. And, of course, the reason why such a cost is accepted by many religious individuals is that they value the benefits from R and/or F at least as highly as the sum of this and other costs: no-one rational and self-interested would succumb to a limitation of his choice set were it not a necessary requirement for the attainment of some desired good.⁵ By similar reasoning, the extent to which these rules are actually followed depends on the expected cost of violating them. Hence, if the individual decides to obey the rules, that constitutes a cost to him, if he would like to act contrary to them (as determined by his preferences), and if he decides to violate the rules, then religious enforcement constitutes a cost, which he takes into consideration and weighs against the costs of alternative actions, before settling on a particular behavior.

What enforcement mechanisms are available in this realm of affairs? Generally, there are two groups of methods which can be used to induce people to act in a certain way, viz., rewards and punishments (the focus in this paper will be on the latter). These, in turn, can be divided into secular and divine ones, depending on if a religious organization implements them or if a deity of some sort is believed to do so, either in this life or in the after-life.

More specifically, the secular enforcement methods that can be used in a religious context are, e.g., promotions to more prestigious positions and encouragement and esteem from fellow members (on the reward side), and ostracism and excommunication (on the punishment side). The possibility of divine enforcement reinforces the degree of behavioral conformism for those with a faith. Here, a god can be thought to reward those who adapt to his recommendations (as revealed by religious leaders and scriptures) in this world, e.g., through wealth, health, or general harmony and joy, and in the coming world. Moreover, the same god may punish those who disobey him, in this world, e.g., through allowing or

⁵ Buchanan (1991, ch. 15) argues that it might be rational to comply with ethical rules in the presence of prisoners' dilemma-type situations: by having the other player agree to bind himself, one may want to do so as well, if this is the price one has to pay for socially optimal cooperation to prevail. A related, general approach, within the framework of new institutional theory, is presented by Myhrman (1996, ch. 2), where religion is discussed as an example of a private institution with which it may be rational to comply in the presence of information costs. This may also assist in explaining a zeal for having others converted: one may believe that social behavior in general thereby will be rescued away from suboptimal solutions, to the benefit of all (including oneself).

inflicting sickness, poverty or other hardships, and in the coming world, through condemnation to purgatory or hell.⁶

To be more complete and general, for given preferences and rules, the actual behavior of a religious, rational, and self-interested individual can be said to be governed by at least *six* factors, which interact so as to result in certain actions (rather than alternative ones): (i) the enforcement methods; (ii) the degree of diligence (frequency and harshness) with which the enforcement methods are actually used; (iii) the degree of information possessed by the individual regarding, e.g., the will and nature of a god, the content of rules, and how they are enforced; (iv) the extent of existence of a genuine faith; (v) the degree of social control; and (vi) the possibility and cost of obtaining forgiveness. That is, a religious individual's behavior is more prone to be in line with the dictates of the religious authority *the more* enforcement methods that are used, *the more* frequently and harshly these methods are used, *the more* information the individual has about the dictates and the practices concerning teachings and enforcement, *the more* a person truly believes in a god, *the more* a person is subjected to social control, and *the more* costly it is to receive forgiveness for a transgression (if the option for forgiveness exists at all), both in the secular and the spiritual realm.

At this point it should be stressed that this "economic" approach does not necessarily preclude the influence of internal norms and the like on behavior; it simply states that attaching an external punishment, which can be expected to be enforced, to an action makes its execution less probable, all else equal.^{7,8}

⁶ As Levy (1992) states, "If you 'truly' believe that God gives infinite punishments and rewards, then you never act contrary to the will of God for merely finite pleasure." (p. 212)

⁷ Buchanan (1991) criticizes the type of model espoused here, which focuses on the costs of violating rules as determinants of behavior, precisely for neglecting the role of social norms (see also Hayek, 1979, and Buchanan, 1994). But there is no reason, we argue, to expect internal norms to vary between the categories of people which are studied here. This is in line with the assumption that preferences are, indeed, fixed and similar between people (in particular when studying a homogeneous cultural setting, such as Sweden), given that we interpret these internal norms, of which people are claimed often to be unconscious, as part of the individual's tastes. That is, we see these norms, should they exist, as such that the individual does not *want* to act immorally. This leads us to conclude, on this matter, that the possible existence of social norms is irrelevant to this study, which solely tries to investigate if religion exerts behavioral influence on a few forms of behavior, *ceteris paribus*.

⁸ We disregard secular moral codes for the reason that we conduct an all-else-equal analysis. We ask, Does imposing religion - and only religion - *add* any behavioral implication? Without religion, we

To narrow the analysis, and to make it a bit more formal, let us look at an expression for the expected cost of a transgression for individual i , which can be expressed as:

$$E(C_i) = p_{GEi} * p_{GCGi} * [(C_H / (1 - \delta_i)) * D_{Hi} + C_{ODP} * D_{ODPi}] + p_{GCCi} * C_{CHi}$$

where C_i = total cost of a transgression for individual i , p_{GEi} = (i 's subjective) probability that the god exists (= the degree of faith), p_{GCGi} = (i 's subjective) probability of getting caught by the god (= degree of divine omniscience), C_H = cost of being in hell per time period (there is an infinite amount of such periods), δ_i = discount factor for individual i , D_{Hi} = dummy variable taking the value 1 if individual i believes that the god condemns people to hell as a punishment for a transgression, and 0 otherwise, C_{ODP} = cost of other divine punishments than hell, D_{ODPi} = dummy variable taking the value 1 if individual i believes that the god punishes people by other methods than hell, and 0 otherwise, p_{GCCi} = (i 's subjective) probability of getting caught by church members, C_{CHi} = cost of church punishments for individual i , and where $p_{GEi} = 0 \Rightarrow p_{GCGi} = 0$.

With this as a background, we can say that obedience (such that a certain transgression is not carried out) is more likely the higher the expected cost of the transgression.

Let us now turn to the four types of persons defined above and investigate, in terms of expected costs, what behavioral differences that are to be expected between them under a few assumptions. First, let us write each type's expected cost, where tb = true believer, ri = religiously involved without a faith, ag = agnostic, and at = atheist:

$$\begin{aligned} E(C_{tb}) &= 1 * [(C_H / (1 - \delta_{tb})) * 1 + C_{ODP} * 1] + p_{GCCtb} * C_{CHtb} = (C_H / (1 - \delta_{tb})) + C_{ODP} + p_{GCCtb} * C_{CHtb} \\ E(C_{ri}) &= 0 + p_{GCCri} * C_{CHri} = p_{GCCri} * C_{CHri} \text{ (as } p_{GEri} = 0) \\ E(C_{ag}) &= p_{GEag} * [(C_H / (1 - \delta_{ag})) * 1 + C_{ODP} * 1] + p_{GCCag} * C_{CHag} = p_{GEag} * [(C_H / (1 - \delta_{ag})) + C_{ODP}] + \\ &\quad p_{GCCag} * C_{CHag} \\ E(C_{at}) &= 0 + p_{GCCat} * C_{CHat} = p_{GCCat} * C_{CHat} \text{ (as } p_{GEat} = 0) \end{aligned}$$

We assume the following:

would expect everyone to subscribe to a certain moral code, neither enforced by deities or by social organizations with a moral agenda.

- $\delta_{tb} > \delta_{ag}$ (i.e., the one more certain about the existence of a god and a probable glorious after-life has a lower rate of time preference)
- $0 < p_{GEag} < 1$ (hence $p_{GEag} < p_{GEtb}$ - which is a definitional component)
- $0 < p_{GCCag} = p_{GCCat} < p_{GCCtb} = p_{GCCri} < 1$ (i.e., if you are a church member, it is more likely that you will get caught by other church members than if you are a non-member)
- $0 < C_{CHag} = C_{CHat} < C_{CHtb} = C_{CHri}$ (i.e., church members punish other church members more harshly, should they get caught, than non-members)

Then, the relationship between the four cost expressions is the following:

$$E(C_{tb}) > E(C_{-tb})$$

$$E(C_{-at}) > E(C_{at})$$

This gives rise to the following conclusion: the expected cost of committing a transgression is higher for the true believer than for every other type, which leads us to expect the true believer to behave more morally than any other type; and this cost is lower for the atheist than for any other category, which leads us to believe that the atheist will be more prone to behave immorally than any other type. This implies that we cannot say, on grounds of theory, whether the agnostic or the religiously involved person without a faith will behave more morally. Furthermore, nothing can be said, *a priori*, about the absolute-size relationships between the four types of individuals. Naturally, this conclusion does not preclude the influence of non-religious rules, such as the body of laws of the judicial system, but these apply equally to all and are, therefore, irrelevant for this study. Because of laws (which apply in some cases), *and* because agnostics and atheists can be expected to be influenced by religious neighbors (in religiously relevant cases; note that $p_{GCCag} * C_{CHag} = p_{GCCat} * C_{CHat} > 0$), it is not to be expected that non-religious individuals will behave totally immorally.^{9,10}

⁹ Locke (1963) disagrees, "Lastly, those are not at all to be tolerated who *deny the being of a God*. Promises, covenants, and oaths, which are the bonds of human society, can have no hold upon an atheist. The taking away of God, though but even in thought, dissolves all." [italics in original] (p. 93)

¹⁰ Note: it may be that the legal system *per se* is sufficient to induce the atheist to behave just as morally as the true believer along some behavioral dimension; but the believer can then be expected to hold on to that behavior with greater steadfastness and determination.

Of what relevance, then, is religion in terms of "macro" effects on behavior? On the basis of the analysis above (which is pursued within the confinements of methodological individualism), it can be concluded that, *holding everything else constant, the higher the ratio of people with a religious involvement, and the higher the ratio of people with a genuine faith (these two categories are probably quite overlapping), the more moral will the aggregate behavior of a community or society be, as judged by religious standards.* This comes about both through the incentives faced by the religious individuals *and* through the social-control and social-disapprobation effect which arises from non-religious persons having religious ones as neighbors. (To the extent that what is termed "moral behavior" is conducive to the attainment of some economic goals, it is possible to say that, all else equal, the higher the degree of religious involvement, and the higher the fraction of people with a genuine faith, the easier the attainment of some economic goals.) Again, nothing precise can be said on theoretical grounds about the actual magnitude of this effect. If, e.g., everyone is religiously involved and has a genuine faith, then the effect can be expected to be significant and large; whereas if only a rather small fraction are religiously involved without having a genuine faith, then the aggregate effect can be expected to be quite small. So, with this view, the aggregate behavioral effect of religion is simply and directly corresponding to the rational, self-interested behavioral decisions of the individuals.

2.2 Specific Applications: Expected Behavioral Effects of Religion

This subsection will use the general theoretical framework developed above to look at the expected effects of religion on some specific forms of behavior - still primarily on grounds of theory. In addition, the control variables which will be used in the econometric study will be discussed towards the end of the section. In order to render this analysis somewhat precise and in order for it to be easily applicable to the subsequent empirical study of religion in Sweden, it will be necessary henceforth to pay exclusive attention to the Christian religion and, more specifically, to its Protestant branch.

First, let us state and motivate the *four* forms of behavior which will be studied here: the divorce rate, the abortion rate, the rate of non-payment of debt, and the rate of children born out of wedlock. In addition to these four variables having been chosen because they were seen to be among the most interesting ones to study in their own right, they were also chosen because (i) it is theoretically possible to infer in what way religion can be expected to influence their execution, (ii) they are all supposedly *negatively* related to religious faith and

involvement (a pedagogical rationale), and (iii) it is possible to find the relevant statistics for them (defined in an operational way). These points will be expanded upon below.

What can be expected (on the basis of the theoretical framework of this paper) regarding how religion influences each of these four forms of behavior? Let us take each of them in turn; note that all statements are made in a *ceteris-paribus* fashion. Firstly, *the divorce rate* can be expected to be negatively related to the number of Christians¹¹ because the Biblical position on divorce is very restrictive: at the most, it is only to be allowed in cases of adultery.¹² This divine position has traditionally been upheld in Christian churches, and in many contemporary Swedish churches, there is a negative attitude towards divorce. The character of the action in question is also such that it is easily observable, which leads one to believe that social mechanisms of punishment will be used whenever two people decide to get a divorce for illegitimate reasons.

Secondly, *the abortion rate* can be expected to be negatively related to the number of Christians. This is both because of Biblical positions on the matter, where there are passages which indicate that life begins at conception and which establish that the taking of innocent life (i.e., murder) is prohibited¹³, and because of the disapproving attitudes in most churches, which stem from this interpretation of the Bible. Furthermore, although it is quite probable that a woman can have an abortion without other church members noticing it (either because the pregnancy does not show or because the woman goes elsewhere for some time), the punishment in the church *ex post* (i.e., if detection occurs) can be expected to be of the harshest sort. And, of course, as always, the god can see what the members do and inflict punishment if they violate his (her?) commandments.

Thirdly, *the rate of non-payment of debt* can be expected to vary negatively with the number of Christians, as not paying one's debts is a (mild) form of theft (in that one thereby makes it impossible for the debt-holder to earn interest on his capital from the agreed-upon moment in time), which is a sin which the god is believed to punish.¹⁴ Also, punishments of a social sort is possible in this case (since knowledge of a person not paying properly is often published and since such knowledge is also easily spread by gossip). Thus, the decision

¹¹ The finer distinctions are left for later; suffice it here to term genuine believers in the Christian God and Scriptures, those involved in Christian churches without a genuine faith, and those agnostics who in some way or part are in possession of a genuine faith (which may potentially influence behavior) "Christian".

¹² See Mt. 5:31,32; Mark 10:1-12; 1 Cor. 7:10,11.

¹³ See Ex. 20:13; Ps. 139:13-16; Mt. 5:21; Gal. 1:15.

¹⁴ See Ex. 20:15; Rom. 13:9; 1 Cor. 6:10.

problem facing the potential non-payer is the following: Is the expected net utility of not paying one's debts (on time) greater or smaller than the expected net utility of paying them (on time)? For a genuine believer in a god who punishes theft with eternal condemnation to hell, the choice will be to pay in time.

Lastly, *the rate of children born out of wedlock* can be expected to be less frequent the larger the proportion of Christians, since Christian moral teaching condemns all forms of pre- and extra-marital sex (the former of which is included in the term fornication).¹⁵ This is a phenomenon which both the deity and church members can observe and punish.

Based on the expected-cost expressions above, and for all four types of behavior, the fact that we expect true believers to behave most strongly in accordance with divine and church directives, and atheists to generally behave most weakly in accordance with such directives, comes as no surprise. Nor does it startle the reader that it is not theoretically possible to say whether the religiously involved or the agnostic behaves more morally.

Before offering a summary of the section, the theoretical grounds for the selection of a set of *control variables* will be discussed summarily. In order for us to carry out the regression analysis satisfactorily, other potential variables of relevance for explaining our types of behavior, aside from religion, must be introduced in order to separate sources of influence. The following ones will be used below on an operationalized form; (+) denotes an expected positive partial-derivative effect, (-) an expected negative partial-derivative effect, (?) a theoretically uncertain partial-derivative effect, and a blank space indicates that the variable is not used in the regression equation in question:

Table 2. Control variables and their expected signs

Dependent variables →	DIVORCE	ABORTION	NON-PAYMENT	CHILDREN OUT OF WEDLOCK
Explanatory variables ↓				
Population density	(+)	(+)	(+)	(+)
Education	(-)	(-)	(-)	(?)
Income	(?)	(?)	(-)	(?)
Age	(?)		(-)	(-)
Female age		(-)		
Urban fraction	(+)	(+)	(+)	(+)
Unemployment	(?)	(+)	(+)	
Female labor participation rate	(+)	(+)		(+)
Share of single women		(+)		(+)

A few comments are in order. First, these variables have been chosen because they are perceived to comprise a comprehensive and somewhat exhaustive set of relevant alternative

¹⁵ See 1 Cor. 5:1-13 and 6:18-20; Gal. 5:19-21; 1 Th. 4:3-8.

influences, in addition to religion, on the dependent variables (in varying degrees). The selection is partly based on preceding studies in the field.¹⁶ Second, regarding the direction of these influences, the table indicates what can be expected, based on the following summaric reasoning (in each case under the assumption of *ceteris paribus*). *Population density* exerts its influence primarily through its positive relationship to anonymity: the larger a population, the easier it is for a person to avoid being observed as doing something which others may disapprove of. Also, the larger a population, the larger the probability for variation and the introduction of alternative points of view. *Education* is believed to influence the divorce and abortion rates negatively, based on the idea that education and a feeling of life fulfilment are positively related, as are education and an ability to plan one's life purposefully. The effect on the non-payment rate can also be expected to be negative, as educated people are probably more aware of the potentially harmful consequences of not paying. It is, lastly, hard to ascertain the theoretical relationship between education and the rate of children born out of wedlock.

The effects of *income* are ambiguous on the divorce rate: while higher income implies a better capacity for self-sustained life, the higher the income of one's partner, the more favors one can expect from remaining married.¹⁷ Similarly, in the case of abortions, while a higher income enables you to afford more children, it is also the case that many high-income earners are in the middle of careers which they possibly would not want children to interfere with. Also, the relationship between income and the rate of children born out of wedlock is uncertain on a theoretical level. However, income can be expected to affect the non-payment rate negatively (based on a belief that the higher the income, the smaller the reason not to pay in time). As for *age*, older people may generally be believed to be more conservative (which implies a negative effect on the dependent variables), but in the case of divorce, this effect is counterbalanced by the fact that the probability of getting tired of one's partner - a plausible reason for divorce in some cases - might be believed to increase with age. In the case of abortion, where *the female age*, in particular, is believed to be of relevance, the "conservative effect" can be expected to be reinforced by the fact that older women are more mature than younger ones, thus knowing more about issues of procreation; also, they are more often in stable life situations.

¹⁶ In the case of divorce, see Sander (1985), Medoff & Skov (1992), and Duncan & Hoffman (1995); and in the case of abortion, see Garbacz (1990), Byrne *et al.* (1992), Medoff & Skov (1992), and Rothstein (1992).

¹⁷ At least this is the probable way in Sweden, with no general usage of large divorce settlements on the basis of income flows.

The urban fraction of a population can generally be expected to be positively related to anonymity and, thus, exert a positive influence on several variables, for reasons outlined above. *Unemployment* is expected to be positively related to unhappiness, which leads one to expect a positive influence on the abortion variable. Unemployment also entails financial problems, which may further induce a woman to abort. The same reason leads us to expect unemployment to be negatively related to the non-payment rate. The effect on the divorce rate is ambiguous: while unemployment, through financial hardships, may cause strains on marriages, it cannot be ruled out that spouses cling together more strongly in times of trouble.

The female labor participation rate is expected to influence the divorce rate positively, since a capacity for women to live alone increases with the extent to which they earn their own incomes, and the abortion rate positively, since housewives can be expected to be able to handle (unexpected) children with smaller disruptions than career women. As for the rate of children born out of wedlock, it can be expected that the higher the share of women in the labor market, the higher the rate. The reason: women with employment of their own can sustain an independent life to a higher extent, which should induce them to be more willing to have a child in a non-married relationship, which has a higher probability of failing. Lastly, *the share of single women* is expected to affect the abortion rate positively. This is because single women are believed to be more prone to initiate abortions since they are without the emotional and financial support of a spouse. The influence on the rate of children born out of wedlock can likewise be expected to be positive, as single women who bear children are usually not married.

To summarize the theoretical approach and analysis very briefly, this section has demonstrated that rational, self-interested individuals who, for reasons largely unexplored here, in some way have a religious belief and/or affiliation can be expected to behave systematically differently from individuals who, except for this religious dimension, are identical. And the larger the religious fraction of a community or society, the larger these behavioral effects will be in the aggregate, both due to the effect religious rules has on religious individuals and due to the effect such rules indirectly have on non-religious people, through the social attitudes of those who are religious. In four specific forms of behavior under scrutiny - divorce, abortion, non-payment of debt, and children born out of wedlock - the influence of Christianity has been shown, within the theoretical framework of the paper, to work so as to deter these phenomena. A test of this result now follows.

3 EMPIRICAL ANALYSIS

This section begins with a discussion of the empirical problem at hand and its technical specification. Then, some regression analyses will be presented, the results and contents of which will be analyzed. Finally, some conclusions regarding the empirical findings will be offered.

The main aim of the present study is to provide insights about whether religion in Sweden in any significant way influences four types of behavior, based on an economic-theoretical framework which has been developed above. To find this out, a technical specification of the variables under study has been made, along the following lines. First, all data have been collected on a municipal level for each Swedish municipality (total number: 284) for the year 1990, except for the non-payment variable, where the data refer to 1995.

Second, the four dependent variables have been defined as follows: the divorce rate (*DIVORCE*) = the number of divorces per 1,000 inhabitants; the abortion rate (*ABORTION*) = the induced number of abortions per 1,000 women; the rate of non-payment of debt (*NONPAY*) = the percentage of inhabitants who have been reported not to have paid one or more debts (in time); and the rate of children born out of wedlock (*CHILDREN*) = the share of all children who were born by an unmarried mother.

Third, the religious variable has been defined, following Pettersson (1991), as a "religious involvement score" (*RIS*), which is the sum of the percentage of average weekly service attendance in the Church of Sweden and the percentage of free-church membership.¹⁸ This is a reasonable measure of religious involvement, since the number of visits to Church of Sweden services can be expected to reflect some sort of religious drive or interest (as opposed to the Church's membership rate, which is more or less automatic for all citizens, irrespective of faith or religious involvement). Also, to become a member of a free church, one has to make a conscious decision to that effect, often by deciding to be baptized by immersion, which makes the proposed measure suitable as one reflector of the degree of religious conviction. Furthermore, three related variables are used: *RIS2* and *RIS3*, jointly, where the former denotes the percentage of average weekly service attendance in the

¹⁸ The Church of Sweden is the Lutheran state church of which 86 % of the population are members. The free churches are other Protestant denominations and churches. Alas, there are no data available on the number of Catholics or visitors to Catholic services on a municipality level, and thus the *RIS* does not incorporate Catholicism; for the same reason, it does not incorporate the Church of Jesus Christ of Latter-Day Saints.

Church of Sweden and where the latter denotes the percentage of free-church membership, and RIS^2 , which denotes RIS squared.

Fourth, the ten other independent control variables have been defined like this: population density ($POPDENS$) = the total number of inhabitants per square kilometer; education level ($EDUC$) = the percentage of the population with any educational degree above the upper secondary school; average income ($INCOME$) = the sum of all citizens' full income (wages, capital income, welfare contributions) divided by the number of citizens; average age (AGE) = the sum of all citizens' ages divided by the number of citizens; female average age ($FEMAGE$) = the sum of all female citizens' ages divided by the number of female citizens; urban fraction ($URBAN$) = the percentage of the population which lives in an urban area; the unemployment rate ($UNEMPLOY$) = the percentage of the work force which is without regular employment, including those in labor-market programs of different kinds; female labor participation rate ($FLPR$) = per cent of the female population with regular employment; and share of single women ($SINGLEW$) = per cent of the female population which resides without an adult companion. For a more detailed specification of all variables, see Appendix.¹⁹

3.1 Divorce Regressions

The first OLS regression, with the divorce rate as the dependent variable, is of the following form:

$$DIVORCE = \alpha_0 + \alpha_1 AGE + \alpha_2 EDUC + \alpha_3 FLPR + \alpha_4 INCOME + \alpha_5 POPDENS + \alpha_6 RIS + \alpha_7 UNEMPLOY + \alpha_8 URBAN + \varepsilon \quad (1)$$

Two alternative specifications, (1') and (1''), are also estimated, the only difference being the replacement of RIS by $RIS2$ and $RIS3$, in the first case, and by RIS^2 , in the second. The relevance of each variant will be discussed below. The results are as follows:

¹⁹ A higher degree of precision in the empirical results would be obtained if the variables were to be defined separately for the religious and the non-religious. Such statistics are not, however, available.

Table 3. Results of the DIVORCE regressions

	REGRESSION (1)	REGRESSION (1')	REGRESSION (1'')
Explanatory variables	Estimated coefficient values (t values)	Estimated coefficient values (t values)	Estimated coefficient values (t values)
Constant	4.0 (3.1***)	4.0 (3.2***)	3.8 (3.0***)
AGE	- 0.05 (3.3***)	- 0.04 (3.0***)	- 0.06 (3.8***)
EDUC	0.0007 (0.1)	0.002 (0.3)	- 0.003 (0.4)
FLPR	- 0.003 (0.3)	- 0.003 (0.3)	- 0.005 (0.5)
INCOME	- 0.000003 (0.9)	- 0.000004 (1.0)	- 0.0000003 (0.1)
POPDENS	0.0001 (1.6)	0.0001 (1.5)	0.0002 (2.1**)
RIS	- 0.04 (7.7***)		
RIS2		- 0.07 (4.7***)	
RIS3		- 0.04 (5.6***)	
RIS ²			- 0.002 (7.4***)
UNEMPLOY	- 0.03 (1.9*)	- 0.03 (2.1**)	- 0.03 (1.7*)
URBAN	0.01 (6.1***)	0.01 (4.9***)	0.01 (6.2***)
Adjusted R ²	50 %	51 %	49 %

Note: * = significant on the 10 % level, ** = significant on the 5 % level, and *** = significant on the 1 % level.

Regression (1) confirms the theoretical implication developed in section 2, viz., that the higher the fraction of religiously involved individuals, the lower the divorce rate, all else equal. This result is strongly significant. More specifically, in Swedish municipalities in 1990, the estimated *RIS* coefficient is -0.04, which means that if the *RIS* increases by 1 per cent unit (all else equal), then the divorce rate drops by 0.04 per mille (on average). If we take the city of Botkyrka²⁰ as an example, the number of divorces in 1990 was 212 and the population was 68,542, which gives a divorce rate of 0.00309, or 3.09 per mille. Now if the *RIS* increases by 10 per cent units (from the 1990 level of 3.29 per cent), i.e., if the number of religious individuals increases by 6,854, that would reduce the divorce rate by 0.44, to 2.65 per mille. That means that the number of divorces drops by 30 to about 182, which is a decrease of more than 14 per cent.

Regression (1') looks at the case where the religious individuals are divided into two groups, those active in the Church of Sweden and those who are members of a free church. The estimated coefficients are similar to the ones obtained in regression (1), and the two religious variables are both significant and negatively related to the divorce rate. Interestingly, the Church of Sweden devotees seem to cause a distinctly sharper reduction in the divorce rate than their counterparts in the free churches (in terms of the partial-derivative effects).

²⁰ This choice is completely arbitrary and solely chosen to obtain a practical, illustrative example of the size effect of religion on divorce (and on other variables below).

Regression (1'') includes the squared religious variable of regression (1), and this is done to investigate if there is a significant social-control effect stemming from religious involvement. If there is such an effect, we argue that a squared *RIS* will turn out significant, as the effect on the divorce rate of the ratio of religious people then is shown to be disproportionately greater the higher this ratio.²¹ That is, if the ratio of religious people is doubled, the drop in the divorce rate is proportionately even bigger, due to the effect religious people have on the behavior of non-religious neighbors. In this case, we do find *RIS*² to be negative and significant.

The *R*² reveals that the specified models explain about half of the variation in the divorce rate. There is no problem with autocorrelation; although there is multicollinearity, it is not of qualitative importance (as alternative model specifications, with deletions of correlated variables, do not alter much of the results); and there is no heteroscedasticity. Of the other variables, *AGE*, *POP**DENS*, *UNEMPLOY*, and *URBAN* are significant: the lower the age, the higher the population density, the lower the unemployment, and the higher the urban fraction, the higher the divorce rate, in each case holding everything else constant.

3.2 Abortion Regressions

The second OLS regression, with the abortion rate as the dependent variable, is structured like this:

$$ABORTION = \alpha_0 + \alpha_1 EDUC + \alpha_2 FEMAGE + \alpha_3 INCOME + \alpha_4 POPDENS + \alpha_5 RIS + \alpha_6 SINGLEW + \alpha_7 UNEMPLOY + \alpha_8 URBAN + \varepsilon \quad (2)$$

Two alternative specifications, (2') and (2''), are also estimated, the only difference being the replacement of *RIS* by *RIS*2 and *RIS*3, in the first case, and by *RIS*², in the second (see below). The results are given in the following table:

²¹ This test idea was suggested by Fredrik Bergström.

Table 4. Results of the ABORTION regressions

	REGRESSION (2)	REGRESSION (2')	REGRESSION (2'')
Explanatory variables	Estimated coefficient values (t values)	Estimated coefficient values (t values)	Estimated coefficient values (t values)
Constant	-13.9 (1.8*)	- 10.9 (1.4)	-16.4 (2.1**)
EDUC	- 0.3 (3.9***)	- 0.3 (3.7***)	- 0.4 (4.3***)
FEMAGE	- 0.2 (1.8*)	- 0.2 (1.9*)	- 0.3 (2.1**)
INCOME	0.00009 (2.6**)	0.00008 (2.3**)	0.0001 (3.1***)
POPDENS	- 0.0006 (0.7)	- 0.0005 (0.6)	- 0.0004 (0.5)
RIS	- 0.3 (4.7***)		
RIS2		- 0.4 (2.8***)	
RIS3		- 0.2 (3.6***)	
RIS ²			- 0.009 (4.2***)
SINGLEW	0.8 (8.6***)	0.8 (8.6***)	0.8 (8.7***)
UNEMPLOY	0.3 (1.8*)	0.3 (1.8*)	0.3 (2.0**)
URBAN	0.05 (2.2**)	0.03 (1.4)	0.05 (2.3**)
Adjusted R ²	48 %	48 %	47 %

Note: * = significant on the 10 % level, ** = significant on the 5 % level, and *** = significant on the 1 % level.

Regression (2) confirms the theory above by rendering the religious influence on the abortion rate strongly significant: if the *RIS* increases by 1 unit, the abortion rate decreases, on average, by 0.3 units, *ceteris paribus*. To get a feeling for the size of the effect of religion on abortion, let us take the city of Botkyrka as an example: the number of abortions in 1990 was 456 and the relevant female population was 16,522, which gives an abortion rate of 0.0276, or 27.6 per mille. If the *RIS* increases by 10 per cent units (from the 1990 level of 3.29 per cent), i.e., if the number of religious individuals increases by 6,854, that would reduce the abortion rate by 2.75, to 24.8 per mille. That means that the number of abortions drops by 45 to about 411, which is a decrease of a little less than 10 per cent.

Regression (2') reveals that those active in the Church of Sweden influence the abortion rate negatively and significantly, and they do so about twice as strongly as the free-church members (who also display a significant and negative relationship to the abortion rate).

Regression (2'') lends support to the hypothesis that religious individuals exert social influence on the abortion rate.

As in the case of regression (1), regression (2) explains about half of the variation in the dependent variable. There is no problem with autocorrelation; there is some multicollinearity, which however is of no major qualitative significance; and while heteroscedasticity is present, an alternative natural-logarithmic specification of the model, which decreases the problem, confirmed the qualitative results of the linear specification above. As for the other variables, *EDUC*, *FEMAGE*, *INCOME*, *SINGLEW*, *UNEMPLOY*, and *URBAN* are significant: the lower the education level, the lower the female average age, the

higher the income, the higher the share of single women, the higher the unemployment, and the higher the urban fraction, the higher the abortion rate, in each case all else equal.

3.3 Non-Payment-of-Debt Regressions

The third OLS regression, featuring the rate of non-payment of debt, is specified as follows:²²

$$NONPAY = \alpha_0 + \alpha_1 AGE + \alpha_2 EDUC + \alpha_3 INCOME + \alpha_4 POPDENS + \alpha_5 RIS + \alpha_6 UNEMPLOY + \alpha_7 URBAN + \varepsilon \quad (3)$$

Two alternative specifications, (3') and (3''), are also estimated, the only difference being the replacement of *RIS* by *RIS2* and *RIS3*, in the first case, and by *RIS²*, in the second. The relevance of each variant will be discussed below. The results:

Table 5. Results of the NON-PAYMENT-OF-DEBT regressions

	REGRESSION (3)	REGRESSION (3')	REGRESSION (3'')
Explanatory variables	Estimated coefficient values (t values)	Estimated coefficient values (t values)	Estimated coefficient values (t values)
Constant	22.3 (7.8***)	22.2 (7.6***)	20.9 (7.1***)
AGE	- 0.2 (4.5***)	- 0.2 (4.6***)	- 0.2 (4.8***)
EDUC	- 0.1 (4.2***)	- 0.1 (4.2***)	- 0.1 (4.5***)
INCOME	- 0.00002 (1.6)	- 0.00002 (1.5)	- 0.000009 (0.8)
POPDENS	0.001 (4.7***)	0.001 (4.7***)	0.001 (5.0***)
RIS	- 0.2 (7.4***)		
RIS2		- 0.1 (2.4**)	
RIS3		- 0.2 (6.5***)	
RIS ²			- 0.005 (6.1***)
UNEMPLOY	- 0.02 (0.4)	- 0.01 (0.3)	0.004 (0.1)
URBAN	- 0.006 (0.7)	- 0.004 (0.5)	- 0.004 (0.5)
Adjusted R ²	28 %	27 %	24 %

Note: * = significant on the 10 % level, ** = significant on the 5 % level, and *** = significant on the 1 % level.

²² Alas, the only figures that were available were from 1995, which means that the uncertainty of the results are greater than would be the case if the 1990 figures had been used. Hence, the precise figures should not be interpreted too literally. It can be argued, however, that the results can be expected to be approximately right anyway, if the various independent variables have evolved proportionately in the municipalities between 1990 and 1995.

Regression (3) - like (1) and (2) - confirms the theory above: there is a significant negative relationship between the fraction of religious people and the non-payment of one's debts (in time).

Regression (3') reveals that both religious groups exert a significant and negative influence on the non-payment of debt ratio, where the free-church members have about twice as high a partial effect as the Church of Sweden people.

Regression (3'') renders the squared *RIS* negative and significant, which we interpret as lending support to the idea that religious people affect the debt-paying behavior of their non-religious neighbors through social attitudes.

The tested models explain about 25 per cent of the variation of the dependent variable. There is not any problem with autocorrelation; there is multicollinearity which, however, is not of qualitative importance; and as for heteroscedasticity, although Glejser's test indicates that it is present in the case of unemployment, no other independent variable displays any clearly significant sign of it. Of the non-religion variables, *AGE*, *EDUC*, and *POPDENS* are statistically significant: the lower the age, the lower the education, and the higher the population density, the higher the non-payment rate.

3.4 *Children-Born-out-of-Wedlock Regressions*

The fourth and last of the OLS regressions, with the rate of children born out of wedlock as the dependent variable, looks like this:²³

$$\begin{aligned} CHILDREN = & \alpha_0 + \alpha_1 AGE + \alpha_2 EDUC + \alpha_3 FLPR + \alpha_4 INCOME + \alpha_5 POPDENS + \alpha_6 RIS + \\ & \alpha_7 SINGLEW + \alpha_8 URBAN + \varepsilon \end{aligned} \quad (4)$$

Two alternative specifications, (4') and (4''), are also estimated, the only difference being the replacement of *RIS* by *RIS2* and *RIS3*, in the first case, and by *RIS*², in the second. The relevance of each variant will be discussed below. The results:

²³ Ideally, one would like to measure the rate of unmarried mothers *at the time of conception*, since it is possible to get married after that moment and before the birth. Such statistics do not, however, exist.

Table 6. Results of the CHILDREN-BORN-OUT-OF-WEDLOCK regressions

Explanatory variables	REGRESSION (4) Estimated coefficient values (t values)	REGRESSION (4') Estimated coefficient values (t values)	REGRESSION (4'') Estimated coefficient values (t values)
Constant	- 20.5 (1.1)	- 14.6 (0.8)	- 21.1 (1.2)
AGE	0.8 (3.5***)	0.9 (3.9***)	0.7 (3.1***)
EDUC	- 0.7 (5.5***)	- 0.6 (4.9***)	- 0.8 (6.0***)
FLPR	0.3 (2.0**)	0.3 (2.3**)	0.3 (1.9*)
INCOME	- 0.00001 (0.3)	- 0.00005 (0.9)	0.00001 (0.2)
POPDENS	- 0.005 (3.8***)	- 0.005 (4.1***)	- 0.005 (3.6***)
RIS	- 0.5 (6.0***)		
RIS2		- 1.3 (6.5***)	
RIS3		- 0.3 (2.9***)	
RIS ²			- 0.02 (6.5***)
SINGLEW	0.7 (5.2***)	0.7 (5.2***)	0.8 (5.3***)
URBAN	- 0.02 (0.7)	- 0.08 (2.4**)	- 0.02 (0.7)
Adjusted R ²	39 %	42 %	40 %

Note: * = significant on the 10 % level, ** = significant on the 5 % level, and *** = significant on the 1 % level.

This regression supports the theory in that religion works so as to deter people from having children outside of a legal marriage, as *RIS* is strongly significant. If the *RIS* increases by 1 unit, the rate of children born out of wedlock decreases, on average, 0.5 units, *ceteris paribus*. To see the size of this effect, let us again take the city of Botkyrka as an example: the number of children born by an unmarried mother in 1990 was 445 and the total number of children born was 1,219, which gives a rate of 0.365, or 36.5 per cent. Now if the *RIS* increases by 10 per cent units (from the 1990 level of 3.29 per cent), i.e., if the number of religious individuals increases by 6,854, that would reduce the rate of children born out of wedlock by 5.19, to 31.32 per cent. That means that the number of children born out of wedlock drops by 63 to about 382, which is a decrease of more than 14 per cent.

Regression (4') indicates that both religious groups are significantly and negatively related to the children-born-out-of-wedlock ratio, where the partial-derivative effect of the state-church group is several times higher than that of the free-church group.

Regression (4'') confirms the view that religious people affect non-religious people in their child-bearing decisions, as the squared *RIS* is negative and significant.

Furthermore, the regressions explain about 40 per cent of the variation in the dependent variable. There is a little bit of autocorrelation and also some multicollinearity, none of which affect the results quantitatively; as for heteroscedasticity, while some variables show signs of it (not, however, the *RIS* variables), an alternative logarithmic specification reveals that it is of minor qualitative importance.

3.5 Evaluation

The four regression analyses presented above all concur in establishing that the rate of religious involvement, as measured by visits to the services of the Church of Sweden and by membership of free churches (separately and jointly, respectively), significantly affects human behavior in a predictable fashion. Although the present study confirms the idea that this effect is brought about through the direct behavioral adaptation of the religious individuals and the indirect ditto of their non-religious neighbors (the latter thing is showed by the significance of the RIS^2 variable), it cannot be inferred the exact degree to which each type of influence plays a role. Note that the effect on non-religious peoples directly stems from the attitudes of their religious neighbors.

The most surprising result is that regressions (1'), (2'), and (4') establish that *the negative marginal effect of increasing the share of active members Church of Sweden is larger than the negative marginal effect of increasing the share of free-church members*. The reason that this seems counterintuitive is that we generally find free-church members more conservative than those active in the Church of Sweden, and hence we would expect the former to represent a life style more in accordance with traditional Christian moral teachings than the latter. However, our theory assists us in offering two plausible explanations.

A first way of explaining this is to point out that what we are testing is the total behavioral effect of the presence of religious people of different sorts, and this effect includes non-religious people as well. This means that it is possible that free-church members behave more morally than those active in the Church of Sweden, but if that is so, this effect is dominated by the relatively larger influence which the latter have on their non-religious people neighbors. That is to say, the "counterintuitiveness" comes about, e.g., through the $E(C_{ab})$ expression, where the expected punishment from those active in the Church of Sweden is larger than that being expected from free-church members. This may be so because most Swedes are members of the Church of Sweden, which means that they interact more freely with those active in that Church, while free-church members may be more isolated, socially.

A second way of explaining this is to point at the possibility, alluded to in the title and in footnote 2, that free-church members to a larger degree than those active in the Church of Sweden are not true believers. If this is so, then the expected cost of a transgression for the former could turn out smaller than for the latter, even in the presence of stricter social control. Is there any reason to believe this explanation? Yes: free-church members bring up their children in their churches to a large degree, which means that they,

when they grow up, are less likely to have believed as a basis for joining their Church; it is, so to speak, socially expected of them to join. This effect may partly enter into the empirical findings as our data only record free-church membership, which may be a poor indicator of true faith.²⁴

Now, the empirical results appear quite firmly established, but there are a few caveats which should be pointed out at this stage. The theoretical section clarified the different dimensions along which religious involvement may manifest itself: both in terms of a faith, which can vary in strength, and in terms of church membership. The measure which is used in this study, *RIS*, is not a perfect proxy of the theoretical concept religious involvement, for at least two reasons. First, it does not include many religious groups, such as Catholics and Mormons or, for that matter, Muslims or Jews. Thus, it is important to interpret the term "religious" as "Christian Protestant". Were *all* religious groups to be included, it is probable that the result, that religion affects the four variables, would be confirmed even more strongly. Second, the measure *RIS* only measures church activity and membership and does not provide a measure of faith. It may be that some church goers and church members do not possess genuine faith, and it may be that non-church goers and non-church members possess such faith.

These things affect the way religion *de facto* influences behavior. The first problem means that only social (and not spiritual) factors are taken into account as costs. If we reason in an all-else-equal manner, this means that if we were able to establish (by using *RIS*) that religious individuals indeed behave differently in certain respects, the presence of non-believing church goers and church members implies that, in reality, the influence of religion is *potentially* even stronger. The second problem means that the contrast between those registered as religious here and the truly religious is weakened, which, in terms of the empirical results, implies that they are strengthened: *even* in the presence of truly believing individuals, not registered as religious here, those covered by the *RIS* measure are significantly different in behavior from their complementary set.

Furthermore, is it possible to argue that there is a statistical problem related to the religious people committing a transgression, in that they may cease to visit the Church of Sweden or withdraw as members of a free church after having committed it? If so, could the regression results overestimate the importance of religion in affecting behavior? The answer to these questions is "no", as we interpret the results as stemming from a combination of

²⁴ As suggested by Anders Bäckström, one way of investigating whether those active in the Church of Sweden (as defined in *RIS2*) constitute a very zealous group would be to alter the definition of *RIS2*, e.g., by looking at monthly numbers of visitors instead of weekly numbers.

behavioral adaptations of *both* religious and non-religious persons. That is, as we study whether people, both religious and non-religious, in Swedish communities behave more morally the higher the fraction of religious individuals, the behavior of all individuals is taken into account, not solely the behavior of those defined as religious.²⁵

An additional thing to note is that we do not know the extent to which religious individuals take the possibility of forgiveness into account when engaging in different acts. In section 2, it was basically assumed that there was no option of forgiveness, which clearly is a fairly strong assumption, which perhaps could be motivated on the following grounds. The nature of the types of behavior under study, with the possible exception of premarital sex, is such that they constitute actions which are most probably pondered upon before being executed. And the essence of the Christian doctrine of forgiveness is *genuine repentance*, which, it could be argued, is unlikely to appear after the carrying out of *planned* actions. But to the extent that forgiveness is taken into account, one would expect the behavioral effects of religion to be smaller, since the expected cost of a transgression is smaller if the transgressor believes that it can be forgiven. Hence, even though the empirical results confirm the importance of religion, its real effect is *potentially* even stronger.

To conclude the empirical section, although the results which have been presented must be interpreted with some degree of caution, the overall picture holds: religious involvement discourages divorces, abortions, non-payment of debt, and children being born by unmarried mothers. These results are significant in all cases. Furthermore, the actual size of these effects are non-trivial, in that it can be shown that an increase in the fraction of religious individuals in a community affects the rates under study quite noticeably (about -1.0 to -1.5 per cent per per-cent unit increase in *RIS*). If anything, the *real* effect of religion on these forms of behavior can be expected to be even greater, for reasons clarified above. That this is so in a supposedly non-religious country like Sweden is noteworthy. And we note the surprising, but not unexplainable, result, that the marginal effect of increasing the share of

²⁵ Even if we would interpret the results as stating that religious people behave more morally than others (which we have no *empirical* basis for doing), it is still not certain that the problem is serious, for two reasons: (i) in the case of free-church members, it is more probable that transgressing members remain members but cease to visit services than for them to withdraw their membership entirely, a much bigger step, and (ii) people may refrain from stopping to visit the Church of Sweden and from withdrawing as members from a free church if other matters benefit them enough for them to willingly endure the "punishment", not the least for people with $F > 0$ and for people with families and friends there.

those active in the Church of Sweden is larger than that of increasing the share of free-church members (in three cases).

Lastly, we note that the empirical results are in harmony with those of Pettersson (1991), where Swedish *crime rates* are found to vary negatively with the degree of religiousness; with the statistics of Sandén (1994), where Swedish *abortion rates* are shown, by means of comparison of rates, to vary negatively with the share of religious people (but no controlling for other influences is made); and with most of the results of Medoff & Skov (1992), where a similar regression analysis is made with U.S. data. However, the latter find a positive relationship between the share of Fundamentalist Christians and the divorce rate. In none of these cases is a rational-choice-based theory explicitly used to predict or evaluate the findings.

4 SUMMARIZING AND CONCLUDING REMARKS

Might a phenomenon such as religion, which deals with mystery and infinities, be analyzed by means of economic theory, the basis of which is the idea of rational choice? For a long time, the two have traveled on separate paths, but in recent years, it has been shown that many aspects of religion can be explained in terms of the economic apparatus of analysis. The present paper takes as a given starting point the fact that some people possess religious beliefs and belong to religious organizations, such as churches. It then proceeds by pointing out that religions promulgate certain moral teachings, the following of which can be assured by a combination of two costs, which a transgressor may have to endure: punishment by a god and punishment by fellow religious devotees. A rational, self-interested individual who, for reasons largely ignored here, is also religious can then be predicted to follow a net-utility-maximizing behavioral strategy: he chooses to engage in the sorts of activities that he likes - taking not only the pleasure of these activities into account but also the possible costs. When comparing such a religious person with someone just like him, except for the religious dimension, we can state that the former will be less prone to do the things they both like as much, *if* there is a religious condemnation of the behavior in question.

With this simple incentive-based theory as the base, it was then argued that Protestant Christians can be expected to be less inclined to divorce, abort, not pay their debts, and bear children out of wedlock than other individuals, for the simple reason that it is rational for them. Since both their god and their fellow Christians condemn all of these

things, to pursue them would induce substantial costs on them. However, it is also possible for non-religious individuals to be influenced by the attitudes of their religious neighbors, which leads us to expect non-religious individuals in a religious community to act more morally than their counterparts in a largely non-religious community, all else equal. These implications of the theory were tested by statistical analysis. In all four cases, the theory was quite clearly confirmed: the higher the rate of Christians in a Swedish city, the lower the rates of divorce, abortion, non-payment of debt, and children born out of wedlock, all else held constant.

Furthermore, this was shown to hold for both those active in the Church of Sweden and those who are members of a free church, with the partial-derivative effect being larger for the former group in three out of the four cases. Also, support was found for the idea that non-religious individuals are influenced by their religious neighbors. Now, this last result assists us, together with our theory, to explain the counterintuitive partial-derivative situation just described. A plausible explanation is that those active in the Church of Sweden affect the behavior of their non-religious neighbors to a larger extent than do free-church members, because of a wider range of social contacts.

It is noteworthy that Hume's intuition, as quoted in the beginning of the paper, can be shown to hold even in a relatively secularized country like modern Sweden. Not only are the results significant; in addition, the size of the effects of religion is not minor. Thus, to the extent one dislikes these phenomena and does not dislike other effects of religion, it could be considered wise to relocate to a community with a high degree of religious people - or to support religious groups.

APPENDIX

All variables except one used in the empirical analysis refer to the year 1990 (non-payment of debt refers to 1995) and to each municipality of Sweden, and they are defined in the following manner:

ABORTION = the number of induced abortions per 1,000 women between the ages 15 and 44; source: Statistics Sweden (SCB), *Statistiska Meddelanden* HS 46 SM 9102, "Abortions 1990: Statistics of the National Board of Health and Welfare", table 19, 1991.

AGE = the arithmetic average age; source: Statistics Sweden (SCB), Demopak, table 14.

CHILDREN = the ratio of the number of dead and living children born by unmarried mothers to the total number of dead and living children born by married and unmarried mothers; source: Statistics Sweden (SCB), computer printout 4K12 BE C40 EE.

DIVORCE = the number of newly divorced women divided by the total population at the end of the period multiplied by 1,000; source: Statistics Sweden (SCB), Avipak, table 115.

EDUC = percentage of the population between the ages 16 and 64 which has completed a post-upper secondary school education of less than three years, of three years or more, or graduate studies; source: Statistics Sweden (SCB), Folk- och bostadsräkningen (FoB90), Part 6 "Inkomst och utbildning", table 22, 1990.

FEMAGE = the arithmetic average age for women; source: Statistics Sweden (SCB), Demopak, table 14.

FLPR = share of the female population between the ages of 20 and 64 which works one hour per week or more; source: Statistics Sweden (SCB), *Årsbok för Sveriges kommuner*, 1990.

INCOME = the average total income for persons from the age of 20; source: Statistics Sweden (SCB), *Årsbok för Sveriges kommuner*, 1993.

NONPAY = the percentage of inhabitants from the age of 16 who have been reported to the legal authorities for not having paid one or more debt(s) (in time); source: Upplysningscentralen AB, computer printout, 1995.

POPDENS = number of inhabitants per square kilometer; source: Statistics Sweden (SCB), *Statistisk Årsbok*, table 23, 1992.

RIS = the sum of the total number of visitors at Church of Sweden services per week and the total number of members of free churches (more specifically, Evangeliska Fosterlandsstiftelsen, Svenska Missionsförbundet, Svenska Alliansmissionen, Svenska Baptistsamfundet, Fribaptistsamfundet, Helgelseförbundet, Pingströrelsen, Örebromissionen, Metodistkyrkan, Frälsningsarmén, Adventistsamfundet, and Jehovas Vittnen) divided by the total population multiplied by 100; source: Statistics from the Research Department of the Church of Sweden, "Läns- och kommunlista 1990"; and Skog (1992a,b).

$$RIS^2 = RIS * RIS.$$

RIS2 = the total number of visitors at Church of Sweden services per week divided by the total population multiplied by 100; source: Statistics from the Research Department of the Church of Sweden, "Läns- och kommunlista 1990".

RIS3 = the total number of members of free churches (see the definition of *RIS* for the list of churches) divided by the total population multiplied by 100; source: Skog (1992a,b).

SINGLEW = the share of the population from the age of 16 which consists of women who reside alone; source: Statistics Sweden, Folk- och bostadsräkningen (FoB90), Part 2 "Folkmängd och sammanboende", table 13, 1990.

UNEMPLOY = the sum of the number of people seeking employment without being employed and the number of people registered with the Labor Market Institute (AMI) or involved in other labor-market programs divided by the population between the ages 16 and 64; source: The National Labor Market Board (AMS).

URBAN = the fraction of the population which lives in urban areas, as defined on p. 18 in the source; source: Statistics Sweden (SCB), Folk- och bostadsräkningen (FoB90), Part 2 "Folkmängd och sammanboende", table 14, 1990.

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ECONOMIC FREEDOM AND EQUALITY: FRIENDS OR FOES?*

By Niclas Berggren**

Abstract. How does economic freedom, mainly how property rights are designed and protected, relate to equality, in the form of the distribution of income? *Theoretically*, it is argued that changes in equality are determined by changes in the tax-and-transfer system and by differential growth rates of income for different groups (such as rich and poor). Economic freedom affects the income development and is also related to changes in redistribution policies. Whether rich or poor are able to gain the most from (more) economic freedom is theoretically unclear and needs to be investigated empirically. *The empirical results* (both descriptive data and regressions) reveal that there is a positive relationship between changes in economic freedom and equality: the more a country increased its economic freedom between 1975 and 1985, the higher the level of equality around 1985. Also, there are some signs that the level of economic freedom in 1985 is negatively related to the level of equality around that year, plausibly because of less redistribution. However, the inclusive evidence points in a rather clear direction: that continual increases in economic freedom over time render an average country more equal, due to the relatively strong growth rates of the gross income of the poor in a freer economic environment.

JEL Classification. D30, D63, H30, I30.

Keywords. Economic freedom, Equality, Economic growth.

1 INTRODUCTION

What is the relationship between economic freedom, mainly how property rights are legally designed and protected, and equality? In contrast to those who hold that it is necessary to curtail economic freedom if advances in equality are to be achieved, this paper (i) argues that this relationship is theoretically ambiguous and (ii) shows that, empirically, continual increases in economic freedom over an extended period of time exert a *positive* influence on equality (although there are some signs of a negative relationship between economic freedom and equality when the former is changed just prior to the measurement of the latter).

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Why is it of interest to study this issue? The rationale is twofold: (i) Gwartney, Lawson & Block [henceforth denoted GLB] (1996) demonstrate that there is a positive relationship between economic freedom, on the one hand, and GDP levels and growth, on the other. It appears as if most people not only have economic wealth and growth as such as goals but as if they also have equality goals. Hence, in order to better be able to assess the usefulness of economic freedom as a policy instrument, this study provides new information about its equality effects; and (ii) As there is still no consensus regarding the exact relationships between other, somewhat related variables, such as that between economic growth and equality, finding out about how economic freedom affects equality may assist in further clarifying other causal links.¹ Before starting the analysis, let us take an instructive, albeit brief, detour by looking at two related issues.

A central topic of analysis in economics has been the relationship between *economic growth* and the *distribution of income* or, more generally, how efficiency relates to equality. Traditionally, it has been argued, on theoretical grounds, that these two concepts are in conflict, at least post-tax, since a more equal distribution is envisaged as coming about through growth-reducing taxes and regulations. However, the opposite relationship has been shown to sometimes arise in models of endogenous growth, e.g., if there is a discrepancy between social and private rates of return to investments (see Barro & Sala-i-Martin, 1992). Thus, the question needs to be settled empirically, and the results of both Barro (1991) and Persson & Tabellini (1994) seem to lend support to the traditional theory.²

A second line of inquiry concerns the relationship between *economic freedom* and *economic growth*. Theoretically, a positive correlation is to be expected, as the more an individual expects to retain from engaging in productive activities, such as work and investments, and the less restrictions that are involved in starting and running a company, the more he can be expected to engage in these things (all else equal). Empirically, GLB (1996) demonstrate that there is such a strong and clear positive relationship between these two variables, as well as between economic freedom and the level of GDP. This result is also obtained by De Vanssay & Spindler (1994), where a different measure of economic freedom is used.

Hence, there appears to exist a negative relationship between equality and growth, and a positive relationship between economic freedom and growth; which leaves us with the question posed at the beginning of the section: how are *economic freedom* and *equality* related?

¹ A third possible reason, inspired by, e.g., Nozick (1974), is to say that freedom has *intrinsic* value and that it is of interest to see what effects it entails when being implemented

² Persson & Tabellini (1994) mainly discuss *pre-tax* income inequality and argue that this variable is negatively related to economic growth. To quote, "[I]ncome inequality is harmful for growth, because it leads to policies that do not protect property rights and do not allow full private appropriation of returns from investment." (p. 617)

The purpose of this study, then, is to outline a tentative theoretical argument regarding this relationship (section 2) and - as the main contribution - to present an empirical analysis to see what can be said on the basis of available data (section 3). To the best of our knowledge, this has not been done before (e.g., GLB, 1996, make no mention at all of equality). New, high-quality income measures will be used to measure equality, and the study will involve a fairly large selection of countries (102) between the years 1975 and 1995. Lastly, some summarizing and concluding remarks are offered (section 4).

2 DEFINITIONS AND THEORETICAL CONSIDERATIONS

2.1 Definitions

At the start of this inquiry, it is essential to provide definitions of the central concepts which are used, viz., economic freedom and equality.

As for *economic freedom*³, we follow the definition of GLB (1996), who have constructed an Economic Freedom Index [henceforth EFI] along the following lines. First, it is established what constitutes the essence of economic freedom: personal choice, protection of private property, and freedom of exchange. To quote the authors: "[A]n index of economic freedom should measure the extent to which rightly acquired property is protected and individuals are free to engage in voluntary transactions." (p. 12) Second, the concept is made more precise through the specification of 17 components, divided into the following four groups: money and inflation, government operations and regulations, takings and discriminatory taxation, and international exchange (for the exact definitions, see Appendix 1). These components are then measured and given between zero and ten points, depending on how well they correspond to the goal of economic freedom in each case. Third, these components are weighed together into an EFI. This last step could be rather tricky; however, three different weight schemes are used, and they yield fairly similar results.⁴ In this study, the Survey Index Is1 will primarily be used, where the weights are based on a survey of participants at three conferences on Measurement of Economic Freedom (see Appendix 1).

³ Note that economic freedom is different from political and civil freedom, which in the former case refers to a free and open political process and which in the latter case refers to freedom of the press, of assembly, of religion, etc.

⁴ Davis & Wu (1996) provide a statistical scrutiny of the different indices presented in GLB (1996) and also contrast them with another, developed by the method of principal components. It is found that all these indices are consistent and in basic agreement with each other.

Clearly, even though many place a high value, for instrumental or other reasons, on economic freedom, the most probable reason for its not having been studied in a systematic fashion previously is the problem of measurement. The suggested EFI is an attempt to overcome this hurdle and, we assert, rather a useful one at that.

As for *equality*, we use this concept to denote the absence of differences between people with reference to disposable income. When comparing the degrees of equality of different countries or of the same country over time, one can choose to look at absolute and relative positions, and both will be considered below. The Gini coefficient, for instance, is concerned with relative positions, and perfect income equality can be said to exist when it equals 0. As for absolute positions, the study of the income share of the poorest can be motivated as an equality measure on the basis of Rawls (1971), who rejects utilitarianism for a setting in which the difference principle, a part of which is the maximin criterion, is advanced as the proper equality standard.⁵

2.2 Some Theoretical Considerations

What can be said on grounds of theory about how economic freedom affects equality (which in this subsection is defined in relative terms)? The basic idea runs as follows. We start with a given level of economic freedom, which is part of the institutional setting which strongly influences, over time, what economic activities that occur and in what way they are carried out. This is so since this level is a measure of the degree to which property rights are protected and how they are designed, the degree to which voluntary exchange may take place, the redistributive⁶ system, the set of rules and regulations in place, etc.

After some period of time, the economic actors, who as a result of the incentives they have faced have accumulated a certain national income (i.e., GDP, which has probably grown at some rate during this period), it can be established what the equality situation is like, i.e., how the national income has been distributed. This distribution has taken place in accordance with the existing institutional structure and the kind of economic policy at work. The level of economic freedom is largely defined by variables of this sort. Hence, we see that economic freedom necessarily influences the equality situation: both through the redistributive system and through its effect on the income-growth rates of rich and poor people.

⁵ For an extensive discussion, see Atkinson (1983). It bears noting that the term equality in this paper is purely descriptive and does not, *per se*, entail any notion of justice.

⁶ By "redistribution" is meant solely a politically orchestrated transfer of pecuniary resources from some people to others by means of taxes and transfers.

In order to qualify this reasoning, let us proceed first by looking at some basic institutional theory and then by stating a more precise expression of what determines equality. What is assumed, to begin with, about man and the world? First, that individuals act so as to achieve the highest possible utility, given the relevant constraints and their level of knowledge. They are in possession of less-than-perfect information with regard to consumption and production decisions, which means that the central economic decisions in enterprising are made under uncertainty. In such a world, the producers, striving to obtain as high profits as possible, need to experiment in a dynamic, competitive process, where new things are constantly introduced and where old things are made in new ways. The process thus becomes one of selection over time, where the producers which manage, *ex post*, to satisfy the wants of consumers most effectively and efficiently are more successful and survive.

Needed for such a system to function successfully is proper incentives, as determined by a set of institutions, where the key to understanding economic development, then, is the profit motive of the producer and what makes it possible for him to realize this motive through productive activities. At the center of this required set of institutions is economic freedom: freedom to experiment, protection of private property, low and non-distortionary taxation, a competitive process, free trade etc. As Myhrman (1994) puts it,

"[I]t is an important interpretation that one, by introducing the right institutions, achieves both the necessary and sufficient conditions for generating a sustainable economic development. /.../ [C]redible property rights are necessary to ensure economic development." [author's translation] (p. 104)

Likewise, Rosenberg & Birdzell (1986), North & Weingast (1989), and North & Thomas (1973, p. 1) stress that "[e]fficient economic organization is the key to growth", where the central tenet is well-defined and well-enforced property rights. This is not only argued in theory; in addition, in-depth case studies of Western economic development, which support the theory, are provided. A more modern and comprehensive study, with the same result, is presented by GLB (1996). So a given level of economic freedom affects the development of the national income, and we can furthermore state that this relationship can be expected to be positive.

But we are primarily concerned with the question of how the *distribution of income* takes place and what the rôle of economic freedom is in this regard. Let us begin by defining, in formulae (1)-(5), what equality is and which factors that are involved in determining it:

$$(1) \quad y_1^i = y_0^i(1 + x_1^i)$$

where y_t^i denotes the average gross income of persons $i=\{R[ich], P[oor]\}$ at time $t=\{0,1\}$ and where x_1^i denotes the growth in per cent of the average gross income of persons $i=\{R[ich], P[oor]\}$ between 0 and 1;

$$(2) \quad \overline{y}_1^R = y_1^R(1 - \tau_1^R) = [y_0^R(1 + x_1^R)](1 - \tau_1^R)$$

$$(3) \quad \overline{y}_1^P = y_1^P + T_1^P = [y_0^P(1 + x_1^P)] + \tau_1^R y_1^R$$

where \overline{y}_t^i denotes the average income after taxes and transfers (i.e., disposable or net income) for persons $i=\{R[ich], P[oor]\}$ at time $t=\{0,1\}$, where τ_1^R denotes the tax rate of R at time 1, and where T_1^P denotes the average lump-sum transfer to the poor at time 1. *Absolute equality* is said to prevail when

$$(4) \quad \overline{y}_t^R = \overline{y}_t^P$$

and equality has increased if

$$(5) \quad \frac{\overline{y}_1^R}{y_0^R} < \frac{\overline{y}_1^P}{y_0^P}.$$

Thus, the *determinants of equality* are (i) the start values of the gross incomes for each group (y_0^i); (ii) the growth rates of the gross incomes for each group during the period (x_1^i); and (iii) the redistributational policy (τ_1^R and T_1^P) in use.

So how does economic freedom relate to the determinants of equality? In order to get to that analysis, we define

$$(6) \quad EFI \equiv f(EFI_1, EFI_2, \dots, EFI_n),$$

where EFI denotes the level of the economic freedom index and where $EFI_1, EFI_2, \dots, EFI_n$ denote the values of the n individual components of this index (in the definition used in this study, $n=17$, as specified in Appendix 1). There are three general ways in which the EFI can change or not change between two points in time:

- (Case i) All components of the economic freedom index remain constant and, consequently, the index itself does not change.
- (Case ii) Some or all of the components change such that the index itself does not change.

- (Case iii) Some or all of the components change such that the index itself changes.⁷

In formulae (1)-(5), we saw that a change in equality depends on whether the level of redistribution (τ_1^R and T_1^P) has changed and on the growth rates of gross incomes for the rich and the poor, respectively (x_1^i). As for the first source of influence of economic freedom on equality, the tax-and-transfer system,

$$(7) \quad EFI \equiv f(\tau_1^R, T_1^P, \bullet)$$

$$(8) \quad \frac{\partial EFI}{\partial \tau_1^R} < 0$$

$$(9) \quad \frac{\partial EFI}{\partial T_1^P} < 0.$$

For case (i), it is trivially clear that the system of redistribution does not *per se* affect the change in equality between two points in time. For cases (ii) and (iii), there might be such an effect, depending on which components that change. If the tax rate for the rich and the transfer to the poor are reduced, then economic freedom increases and equality decreases, all else constant.

As for the second source of influence of economic freedom on equality, the growth rates of gross incomes,

$$(10) \quad x_1^i = f(EFI_1, EFI_2, \dots, EFI_n, \bullet),$$

where it is probable that, for $k=1, \dots, n$,

$$(11) \quad \frac{\partial x_1^R}{\partial EFI_k} \neq \frac{\partial x_1^P}{\partial EFI_k}.$$

⁷ Just as a *high level* of economic freedom can be expected to affect the level of income positively, we expect an *increase* in economic freedom to do likewise - and perhaps to a larger degree. The reason is that economic activities are decided upon by economic agents not only on the basis of the institutional setting of the day, but not the least on the basis of an *expectation* of how this setting will evolve over time. And if the agents thus have been able to observe a series of positive changes in the level of economic freedom, or if they for other credible reasons believe such changes to be forthcoming, this will influence how they act economically. An expectation that terms will improve for enterprising, for instance, will then cause the entrepreneur to act more boldly, all else equal. But even if an increase in economic freedom leads to more growth than a high level, all else held constant, there is no way to know, *a priori*, if rich or poor will increase their gross income more than the other - and hence, exactly how equality is affected by such an increase is (as usual) not clear.

That is, each of the components of the economic freedom index may influence the growth rates, both in case (i) and cases (ii)/(iii) - probably differently for rich and poor in each case and, to that extent, they also affect equality. If the level of economic freedom can be shown to provide a *milieu* which, although formally neutral in its rules, is relatively more beneficial to the income-growth opportunities of poor people than to those of rich people, then it can also be shown to induce equality, or vice versa.

The theoretical uncertainty about whether economic freedom affects equality positively or negatively has to do with (1) the possibility but not necessity for a given level of or a change in economic freedom to actually entail equality changes in some direction directly induced by changes in the system of redistribution, and (2) two factors, motivation and capacity, the dominance of which is unclear, which makes it impossible to determine whether the gross incomes of rich or poor grow faster (under a formally non-discriminatory system). In terms of motivation, it is not unlikely that the poor person is at an advantage compared to the rich person (if, say, we believe in diminishing marginal utility of income), whereas the latter can be expected to have a higher capacity, both through personal knowledge (wealth and education are related, as is wealth and experience in handling/earning money) and from better starting positions (in terms of assets and types of jobs).

This leaves us with the following ambiguity: we can say that economic freedom and changes thereof affect the equality level, and we can specify through what channels it does so, but we cannot say in what direction the equality level goes, on net.⁸ So, even if increased economic freedom entails less redistribution (which is not certain), it is perfectly conceivable that it induces higher equality, if the poor are able to take advantage of the freer economic setting, perhaps brought about through trade liberalization or the introduction of more secure property rights, to a larger degree than the rich.

At this point, some further clarifications are needed with regard to how the variables discussed above influence each other, i.e., whether there is a problem of *endogeneity* which has not yet been specified. The argument here is that (changes in) economic freedom influences (changes in) the GDP and that (changes in) economic freedom influences how the GDP, at a given point in time, is distributed, i.e., that (changes in) economic freedom influences (changes in) equality. These lines of causality, we claim, are valid, based on the (admittedly partial) theoretical discussion of this section.

But how about other possible lines of causality? Let us take them in turn. First, does the GDP level influence the level of economic freedom? This is theoretically within the realm of the possible, if the political sector is endogenized and for some informational

⁸ One would expect a growing economy to render most people (including poor ones) wealthier over time, in an *absolute* sense, as was the case after the Industrial Revolution in England (see Lindert & Williamson, 1983).

assumptions. For instance, one could imagine that a low level of the GDP could induce poor, uninformed voters to opt for a policy platform which rapidly increases equality by means of curtailing economic freedom, a policy which GLB (1996) claim is counter-productive, even in the shorter-than-long run.

Second, we have not paid much attention to the rather vibrant discussion about how (growth in) the GDP influences equality and how equality influences (growth in) the GDP.⁹ Generally, it is theoretically possible to imagine (growth in) the GDP to influence equality, for instance by arguing for the "trickle-down" effect: that growth promotes equality eventually. Likewise, equality can be thought to affect (growth in) the GDP if the political sector is endogenized into the analysis: then a high degree of inequality can lead to pressures for growth-retarding and equality-enhancing policies.

And lastly, does the level of equality influence the level of economic freedom? Again, it is perfectly possible, with an endogenized political sector. A poor majority could, in a democracy by voting and in a dictatorship by rebelling, try to institute freedom-reducing measures if it believed that this would increase their equality situation. In all, the claim we make is that although, with a sufficiently general model of society, each variable influences all the other variables, it is still informative and valid to specify a relatively narrow model and to look, in isolation, at only some of the causal links.¹⁰

To conclude this section, we now have a theoretical idea of some vital factors which assist in determining the level of equality in a country and how economic freedom plays a rôle in affecting the outcome. As the discussion reveals a theoretical ambiguity as to what the *precise* correspondence between economic freedom and equality is, the ensuing empirical study will attempt to fill in the gaps and contribute to our getting a better grasp of the *de facto* nature of this relationship.

3 AN EMPIRICAL ANALYSIS

In trying to provide an answer to the question "How does economic freedom, or changes thereof, relate to equality?", we have now come to the empirical study, which will be

⁹ See, e.g., Persson & Tabellini (1994), Fölster & Trofimov (1996), and Deininger & Squire (1996).

¹⁰ Of course, in statistical analysis, this *could* turn out problematic, but this is not so in this study, for the following reason. An independent variable, such as economic freedom or GDP per capita, can be of two sorts: either an exogenous variable or an endogenous variable, the observations of which *predate* the observations of the dependent variable. So even if, say, economic freedom in fact is influenced by the level of equality, as well as the other way around, this problem is avoided by the freedom observations being prior in time to all of the equality observations.

conducted along the following lines. Two main methods will be used in this venture: first, data-compilation tables and second, regression analysis. In accordance with the availability of data, as many countries as possible from GLB (1996) will be included. There will be a comparison between different countries at the same point in time and between the same country at different points in time. Four definitions of equality will be put to use, viz., INC2020 (the share of incomes of the 20 % highest income earners divided by the share of incomes of the 20 % lowest income earners), INC20LO (the share of incomes of the 20 % lowest income earners), INC20HI (the share of incomes of the 20 % highest income earners), and GINI (the Gini index).¹¹ In Appendix 2, the exact specifications of all variables under study and the sources of data are presented. It bears noting that the present study makes use of new equality data of relatively high quality, produced by Deininger & Squire (1996). In Appendix 3, summary statistics of the variables are reported.

3.1 Data-Compilation Tables

Three sets of tables will be presented in this subsection, each one trying to illuminate what the relationship is between economic freedom, or changes thereof, and some equality measures.

3.1.1 Average equality of different economic freedom grades¹²

For the year 1985, each country is rated on a scale and awarded an economic freedom grade (A, B, C, D, F, or F-).¹³ Then average equality measures for each grade are calculated, as follows.

Table 1. Average equality of different economic freedom grades

EFI GRADE ↓	INC2020	INC20LO	INC20HI	GINI
A	7.8 [1 obs.]	6.3	49.3	42.0 [1 obs.]
B	14.6 [4]	4.4	51.0	41.3 [5]
C	6.7 [6]	6.8	40.4	34.3 [7]
D	10.7 [8]	5.7	47.7	44.7 [8]
F	11.0 [20]	5.3	48.4	43.1 [22]
F-	9.8 [32]	5.9	48.0	42.4 [32]

¹¹ Note that INC2020, INC20HI, and GINI measure *inequality*, but for the sake of convenience, if they increase, it will be stated that equality decreases.

¹² Cf. GLB (1996, p. xxii)

¹³ Following GLB (1996, p. 53), the average of the three EFT's (based on the three different indices) was calculated for each country for each year; then a score of 8.00- is an A, 7.00-7.99 a B, 6.00-6.99 a C, 5.00-5.99 a D, 4.00-4.99 an F, and 0-3.99 an F-.

Looking at this table, it is difficult to specify a simple, general relationship between the economic freedom grades and equality, although one recurring feature for each variable is that grade C countries are the most equal ones.¹⁴

3.1.2 Equality situation of countries with persistently high or low EFI ratings¹⁵

Here, we look at the equality situation of two groups of countries: one group with the six countries which made an EFI grade of A or B in 1993-95 *and* which were in the top 15 during 1975, 1980, 1985, and 1990, and one group with the nine countries which had an Is1 rating always less than 4.00. The results:

Table 2a. The equality situation of countries with persistently high EFI ratings

	INC2020	INC20LO	INC20HI	GINI
Hong Kong	7.8	6.3	49.3	42.0
Switzerland	8.6	5.2	44.7	n.a.
Singapore	7.2	6.5	46.6	39.0
USA	9.5	4.6	43.8	37.6
Canada	4.4	7.8	34.7	27.4
Germany	5.8	7.0	40.6	25.2
Average	7.2	6.2	43.4	34.2
Median	7.5	6.4	44.2	37.6

Table 2b. The equality situation of countries with persistently low EFI ratings

	INC2020	INC20LO	INC20HI	GINI
Somalia	n.a.	n.a.	n.a.	n.a.
Zambia	8.9	5.6	49.7	43.5
Hungary	5.8	6.7	38.7	32.2
Romania	4.3	8.7	37.3	28.7
Brazil	32.0	2.1	67.3	59.6
Syria	n.a.	n.a.	n.a.	n.a.
Uganda	7.1	6.8	48.1	40.8
Zaire	8.9	5.6	49.7	n.a.
Zimbabwe	15.6	4.0	62.3	56.8
Average	11.8	5.6	50.4	39.3
Median	8.0	6.1	48.9	39.0

These tables show that countries with persistently high EFI ratings are *more* equal in terms of all equality variables than countries with persistently low EFI ratings, on average and in terms of medians.¹⁶

¹⁴ Nonparametric tests of the difference between distributions between the different grades indicate that the hypothesis of similar distributions cannot be rejected. (For details, see Table A2, Appendix 4.)

¹⁵ Cf. GLB (1996, p. xxiii, p. 67).

3.1.3 Changes in equality for the countries with the biggest changes in the EFI (Is1)¹⁷

This subsection looks at how the equality situation has changed in the countries which have experienced the biggest changes in the EFI (Is1) between 1975 and 1990.¹⁸ The precise results are displayed in Appendix 5 (where Table A5 corresponds to Table 3a and Table A6 to Table 3b); here, solely means and medians are presented:

Table 3a. Equality changes in the countries for which the EFI increased the most 1975-1990

	INC2020 (1ST OBS.)	INC2020 (2ND OBS.)	INC2020: PER-CENT CHANGE	INC20LO (1ST OBS.)	INC20LO (2ND OBS.)	INC20LO: PER-CENT CHANGE
Average	9.7	8.7	+0.2	5.7	6.0	+5.9
Median	7.8	7.2	-2.1	5.7	5.8	-0.8

	INC20HI (1ST OBS.)	INC20HI (2ND OBS.)	INC20HI: PER-CENT CHANGE	GINI (1ST OBS.)	GINI (2ND OBS.)	GINI: PER- CENT CHANGE
Average	46.9	46.9	+0.5	40.6	40.5	+16.8
Median	46.4	44.7	-2.6	40.6	39.3	-3.5

Table 3b. Equality changes in the countries for which the EFI declined the most 1975-1990

	INC2020 (1ST OBS.)	INC2020 (2ND OBS.)	INC2020: PER-CENT CHANGE	INC20LO (1ST OBS.)	INC20LO (2ND OBS.)	INC20LO: PER-CENT CHANGE
Average	13.4	17.2	+31.4	5.2	4.5	-11.6
Median	12.5	16.2	+13.6	4.5	4.6	-16.9

	INC20HI (1ST OBS.)	INC20HI (2ND OBS.)	INC20HI: PER-CENT CHANGE	GINI (1ST OBS.)	GINI (2ND OBS.)	GINI: PER- CENT CHANGE
Average	35.2	39.7	+4.7	45.0	48.0	+7.9
Median	44.2	38.2	-2.9	43.6	46.5	+5.7

Comparing Tables 3a and 3b, one finds that the countries for which the EFI *increased* the most 1975-1990 are *more* equal in terms of INC2020 (1st and 2nd observations), INC20LO (1st and 2nd observations), and GINI (1st and 2nd observations) than the countries for which the EFI *declined* the most 1975-1990, on average, while the opposite holds for INC20HI (1st and

¹⁶ Nonparametric tests of the difference between distributions between the different grades indicate that the hypothesis of similar distributions cannot be rejected, except possibly for the INC20HI variable. (For details, see Table A3, Appendix 4.)

¹⁷ Cf. GLB (1996, p. xxviii, pp. 98-99).

¹⁸ These years are chosen to facilitate comparisons with GLB (1996), but there is a close-to-perfect overlap in the selection of countries here and the selection which would result from looking at the countries which experienced the biggest EFI changes between 1975 and 1985.

2nd observations). Furthermore, the former group of countries experienced a development towards *more* equality (or less inequality) over time in terms of the per-cent change of INC2020 (average and median), INC20LO (average and median), INC20HI (average), and GINI (median) compared to the latter group, on average, while the opposite holds for the per-cent change of INC20HI (median) and GINI (average). In fact, the group of countries with the highest EFI declines 1975-1990 display a clear *reduction* in equality in terms of seven out of eight measures, while this holds for four out of eight measures for the other group.¹⁹

3.2 Regression Analysis

A potential problem with the preceding analysis is that there is no controlling for the possible influence of other relevant variables, in addition to economic freedom. In order to incorporate such aspects, we proceed by means of regression analysis, using the OLS method. Four regression equations will be presented, each with a different dependent variable related to the concept of equality. The task: to see what the effect of economic freedom, or changes thereof, is on equality, as defined in Table 4, on average, holding everything else constant.

Table 4. Results of the four regressions

Dependent variables →	INC2020	INC20LO	INC20HI	GINI
Explanatory variables ↓	Est. coeff. values (t values)	Est. coeff. values (t values)	Est. coeff. values (t values)	Est. coeff. values (t values)
Constant	11.5 (3.8***)	4.7 (5.5***)	51.6 (15.3***)	46.7 (11.9***)
ECFRE ₈₅	1.3 (2.3**)	-0.2 (1.6)	1.5 (2.6**)	1.5 (2.1**)
ECFR ₇₅₋₈₅	-3.1 (3.0***)	0.6 (2.1**)	-2.1 (2.0**)	-3.4 (2.8***)
RGDPCH	-0.0008 (3.7***)	0.0002 (3.6***)	-0.002 (6.2***)	-0.002 (5.5***)
ILLITERA	-0.09 (2.0*)	0.03 (2.6**)	-0.1 (2.3**)	-0.1 (2.2**)
Adjusted R ²	24 %	19 %	42 %	39 %
Durbin-W.	1.9	1.7	1.5	1.6
No. of obs.	57	59	59	66

Note: *=significant on the 10 % level, **=significant on the 5 % level, and ***=significant on the 1 % level.

These regressions yield quite similar, significant results: the lower the level of the EFI for a country (for three of the regressions), and the higher the absolute increase in the EFI, the

¹⁹ Nonparametric tests of the difference between distributions between the different grades indicate that the hypothesis of similar distributions cannot be rejected, except possibly for the INC2020 (2), INC20LO (2), INC20HI (1,2), and GINI (2) variables. (For details, see Table A4, Appendix 4.)

higher the equality. It can also be noted that the higher the RGDPCH, the higher the equality, and the higher the ILLITERA, the higher the equality.²⁰

3.3 Statistical Comment to the Regressions

Here, a comment is presented which qualifies and discusses the quality of the regression results obtained above. First, as for *autocorrelation*, the Durbin-Watson test statistics of Table 4 reveal, in conjunction with established decision rules, that there is no evidence of this in any of the regressions at the 5 % level of significance - and in the INC2020 regression, there is evidence that there is no autocorrelation. Second, as for *multicollinearity*, it is not present in any of the regressions, as was detected by means of dividing the maximum and minimum Eigenvalues and getting quotients less than 100. Third, as for *heteroscedasticity*, Glejser's test - where the absolute values of the standardized residuals are regressed on the independent variables of the original equation- has been used, which led to the detection of problems in INC2020. However, Weighted-Least-Squares transformations resulted in finding the heteroscedasticity problem qualitatively unimportant in this instance.

Fourth, as for a possible problem of endogeneity and possibly omitted variables, this is probably minor, as is indicated by the Durbin-Watson test statistics, by visual inspection of the relationship between the standardized predicted values and the standardized residuals of each regression (with no specific patterns), by the independent variables all predating the dependent ones (no endogeneity problem), and - lastly - by the specification of quite a few alternative regression models, where the qualitative results in general hold quite well, when adding, deleting and recombining different variables.

Fifth, as for outliers driving the results, there is no strong indication of this, based on visual inspection of the relationship between ECFRE₈₅, ECFR₇₅₋₈₅, on the one hand, and the dependent variables, on the other (admittedly, some observations appear to be outliers, but it turns out that they are not included in the regressions, due to missing data), and based on Cook's distance test and a study of the size of the studentized residuals. For instance, in no case does the latter exceed 3, and when the most important observations (although not formal outliers) are deleted in the regressions, the qualitative results continue to hold.

Sixth, what happens if one divides the original group of countries into two different groups - on the idea that societal "structures" or ways of functioning may differ considerably, depending on, say, the income level and the development level? The model above has been run on three divisions: (1) that between non-OECD and OECD countries, (2)

²⁰ Running an alternative specification of the model, with the *per-cent changes* in economic freedom, GDP per capita, and illiteracy between 1975 and 1985 as independent variables, the freedom variable affects equality positively in all cases, albeit only significantly in the INC2020 and GINI regressions.

that between countries with an RGDPCH below average (\$4,833) and countries above the average, and (3) that between countries with an RGDPCH below the median (\$3,137) and countries above the median. To summarize:

Table 5. Significance results of regressions with division of countries^a

Group of countries→	"Less-developed ^b "	"Less-developed"	"Developed ^b "	"Developed"
Variable→	ECFRE ₈₅	ECFR ₇₅₋₈₅	ECFRE ₈₅	ECFR ₇₅₋₈₅
Division (1)	2020 ^c , GINI	2020, 20LO, GINI	-	-
Division (2)	GINI	2020, 20LO, 20HI, GINI	-	2020, 20HI, GINI
Division (3)	2020	2020, GINI	-	2020, GINI
Significance share ^d	33 %	75 %	0 %	42 %

Notes: a In each case, the signs are the same as in Table 4.

b "Less-developed" refers to the non-OECD countries (division (1)), the countries with a GDP per capita below average (division (2)), and the countries with a GDP per capita below the median (division (3)), respectively; and "Developed" refer to the other countries in each division.

c Interpretation: For division (1) and for non-OECD countries, ECFRE₈₅ turns out significant in the INC2020 and GINI regressions.

d This measure denotes the share of the twelve regressions (three divisions, four equality variables) for which the freedom variable (ECFRE₈₅ or ECFR₇₅₋₈₅) turned out significant (on the 10 % significance level or lower).

Seventh, the quality of the data used is generally high and the best available, both for the equality variables and the dependent ones.²¹

3.4 Evaluation of the Results

Given what has been stated previously in this section, how can the empirical results be assessed and interpreted? Let us begin with *the data-compilation tables* (Tables 1-3), which constitute different ways of identifying the equality status of various countries in relation to their respective degrees of economic freedom. No clear result was obtained from observing simple EFI grades at a single point in time - aside from the finding that countries with a middle position in terms of the EFI are more equal than others (Table 1). However, when one looks at countries which persist in maintaining high or low EFI ratings over time (Table 2), *all* equality variables have more equal values in high-EFI countries than in low-EFI countries. If one then looks at changes in the EFI over time (Table 3), it is clear that the countries which increased their EFI the most are more equal in terms of most (six out of eight) studied variables than the countries where the EFI declined the most. Furthermore,

²¹ For a discussion of various quality and comparability aspects of the equality data, see Deininger & Squire (1996, pp. 578-583).

the former countries also experienced a more equal development over time than the latter group in six out of eight cases.

The data-compilation tables, then, lead us to conclude the following. It appears as if countries with lasting high levels of economic freedom and with positive changes in economic freedom not only succeed better on *this* count than other countries, but that they also are able to obtain and sustain this without sacrificing equality. In fact, it seems possible that the freedom-oriented policies of these countries are *conducive* to their degree of equality. However, these results should be interpreted with some care, since nonparametric tests (see Appendix 4) indicate that it is difficult in many cases to show that the distributions differ significantly. But the *tendency* is nevertheless quite clear, in accordance with the above-stated conclusion. To get a better grasp of the extent to which this holds, let us now turn to the results of the four regressions, where we can control for other possible influences.

As for *the regressions*, let us begin by interpreting Table 4 as it is and then introduce some additional aspects in making an overall inference. Table 4 reveals that the absolute, single-point-in-time EFI measure is significant and positively related to the equality variables (in three out of four cases), and that the change-in-the-EFI measure is significant and negatively related to the equality variables (in all cases). In other words, an increase in $ECFRE_{85}$ leads to lower equality a short period of time afterwards, on average and *ceteris paribus*, while an increase in $ECFR_{75-85}$ leads to higher equality a short period of time afterwards, on average and *ceteris paribus*. How can this be explained in terms of the theoretical framework developed above? Generally, economic freedom provides part of the environment which affects the determinants of equality, namely the redistribution system and the growth rates of gross incomes for rich and poor.

The first result (the negative sign of $ECFRE_{85}$) can be understood as saying that if one changes policy such that the EFI increases, and if this leads to lower equality shortly afterwards, then this is because the redistribution system has been altered in favor of the rich (i.e., τ_1^R and T_1^P have been reduced). Reasonably, the gross rates of incomes have not had time to be affected by other possible changes in the EFI which, if allowed to work for a longer period of time, would entail other effects, possibly beneficial for the poor via x_1^P .

However, the second result (the positive sign of $ECFR_{75-85}$) fills in much of this picture. If one changes policy over a fairly long period of time and if one does so in a way that gradually increases the EFI, then equality increases - probably because $x_1^R < x_1^P$, which is an effect which can be expected to emerge with a lag of a number of years. Perhaps this comes about because of some liberalization which increases the EFI and favors the poor relatively much. Of course, it is possible that the redistribution system was changed during the period under study to disfavor the poor, in which case the growth advantage of this group was large enough to compensate for this particular policy change. Moreover, note that the results of Table 3 are in line with this reading of the second regression result: the equality situation of the poor develops better overall, from the point of view of the poor, in countries

with high increases in the EFI than in countries with high reductions of the EFI. So again, this can primarily be explained as a result of the poor taking relatively better advantage of economic freedom than the rich: in the group with increases in the EFI, x_1^P / x_1^R is plausibly higher than in the other group.

Hence, of central importance for understanding the ostensible tension between the two results is to note that the latter result emanates from gradual increases and from a period of ten years, while the former result is based on a much shorter time period during which many of the effects of policy changes which are interrelated with the EFI do not have time to burgeon and where only one-shot increases of the EFI level are involved.

But let us place the regression results of Table 4 in a wider perspective (noting first, on the basis of subsection 3.3, that no major statistical problems seem to be present) by invoking the data-compilation results, the results of conducting a regression with the independent variables being on per-cent form, and the results of Table 5, where the countries are divided into two groups depending on their level of "development". First, the division of the countries into different groups gives rise to two tentative observations: that the results appear to hold better for less-developed than for developed countries, and that $ECFR_{75-85}$ appears to be more valid as an explanatory factor than $ECFRE_{85}$. Thus, *two "simpler" conclusions* may be warranted: that positive and increasing changes over time in economic freedom improves the equality situation of less-developed countries and that, to the extent that economic freedom plays a rôle in developed countries, its influence is positive and comes about through its being gradually changed over a fairly long period of time. The latter conclusion, applied to the whole set of countries, is also largely supported by the data-compilation tables and the per-cent regression.

The following caveat should be noted. All conclusions presented here apply for the ranges of economic freedom which have been in place during the time scope of the study. This means that outside of these boundaries, the relationships between the central variables *may* look quite different. E.g., it is not implausible to argue that a totally free *laissez-faire* economy, with no defense force or judicial system, represents a different societal *structure* than that which is characteristic of the countries examined here, rendering it subject to different correspondences between economic freedom and equality.

In all, based on the entirety of the results, it is asseverated that the more plausible interpretation is that in countries with distinct, increasing, and enduring positive changes in economic freedom, equality is favored: under these circumstances, formula (5) is vindicated in its present formulation. Meanwhile, there are some indications to the effect that isolated and short-term increases in economic freedom, probably by means of less redistribution, is detrimental for equality. Consequently, the long-term approach to increasing the EFI seems advantageous, should one value equality.

Lastly, how do these empirical findings relate to other such findings? First of all, it should be stressed that no one has analyzed the equality effects of economic freedom prior

to this study; hence, there is no directly similar study to refer to. But there are studies, such as those mentioned above, that deal with related topics, such as Persson & Tabellini (1994). The present paper does take rather a different tack, however, e.g., by reversing the causality: instead of looking at what a certain equality level leads to in a political process and then economically, we ask what the resulting effects are on equality of (changes in) economic freedom.

But there is an interesting connection. We show that increases in economic freedom over time lead to higher equality. This primarily comes about through gross incomes of poor people growing faster than gross incomes of rich people, on average (since the other possible factor for achieving higher equality, redistribution, almost by definition, is decreasing in economic freedom). Persson & Tabellini (1994) affirm that higher equality in gross incomes is, through the workings of the political system, growth-enhancing. Thus, our results together with those of Persson & Tabellini (1994) give a *double* argument for why increased economic freedom can be expected to lead to growth: first, by lower taxation and less regulation to begin with, and second, by leading to gross-income equality²², which means that popular demand for growth-retarding redistribution is made more or less redundant. The policy implication: should one happen to want economic growth *and* equality, one should increase, in a continual and stable manner, economic freedom.

4 SUMMARIZING AND CONCLUDING REMARKS

The aim of the present analysis was the following: to provide an answer to the question of how economic freedom relates to equality. This was done first by specifying theoretically that economic freedom corresponds to an institutional setting, which influences the nature and scope of economic activities and, ultimately, the level of national income. The latter term is necessarily distributed in some way, and a perfectly equal distribution was defined as a situation where the disposable incomes between individuals are equal. It was argued that how this distribution changes is determined by the tax-and-transfer system and by the growth in gross incomes. A positive change in economic freedom entails lower taxes, fewer regulations, and higher economic growth and national incomes (as shown by GLB, 1996). Reduced progressiveness in the redistribution system reduces equality, but the income growth may enhance it (if the incomes of poor people grow at a faster pace than those of rich people). The net effect is theoretically unclear.

²² A careful interpretation is recommended, since only about 60 % of the income measures are gross and the rest net. As noted by Deininger & Squire (1996, p. 580), though, the difference between gross and net can be expected to be small in less-developed countries.

The empirical study of this issue, conducted by means of data-compilation tables and regression analysis, indicate that sustained and gradual increases in economic freedom influence equality measures positively. It thus appears that the relatively strong income-growth effect of poor people relative to rich people outweighs the decrease in equality brought about by lower redistributive taxes, to the extent that taxes have been cut (as the EFI can be reduced for other reasons). Furthermore, the absolute level of economic freedom appears to be negatively related to equality in some cases, which means that an increase in economic freedom shortly before looking at the equality level primarily has come about through reduced redistribution, without there being enough time for poor people's incomes to grow enough in the new and freer economic milieu. However, the inclusive empirical results render this latter effect somewhat uncertain. Rather, the results point in a clear direction: that economic freedom - as a dynamic concept - appears to go together not only with general wealth and growth, but also with equality. That is to say, economic freedom and equality seem to evolve on rather friendly terms, and they are clearly not foes, in a longer temporal perspective.

APPENDIX 1

Components of the Index of Economic Freedom and Their Weights

I. Money and Inflation (Protection of money as a store of value and medium of exchange)

- A. Average annual growth rate of the money supply during the last five years minus the potential growth rate of real GDP; 4.7
- B. Standard deviation of the annual inflation rate during the last five years; 5.3
- C. Freedom of citizens to own a foreign currency bank account domestically; 3.0
- D. Freedom of citizens to maintain a bank account abroad; 2.7

II. Government Operations and Regulations (Freedom to decide what is produced and consumed)

- A. Government general consumption expenditures as a percent of GDP; 6.2
- B. The rôle and presence of government-operated enterprises; 6.5
- C. Price controls - the extent that businesses are free to set their own prices (this variable is included in only the 1990 and 1995 Indexes); 7.1
- D. Freedom of private businesses and cooperatives to compete in markets (this

variable is included only in the 1995 Index); 6.7

E. Equality of citizens under the law and access of citizens to a nondiscriminatory judiciary (this variable is included only in the 1995 Index); 4.7

F. Freedom from government regulations and policies that cause negative real interest rates; 3.4

III. Takings and Discriminatory Taxation (Freedom to keep what you earn)

A. Transfers and subsidies as a percent of GDP; 10.9

B. Top marginal tax rate (and income threshold at which it applies); 12.7

C. The use of conscripts to obtain military personnel; 3.6

IV. Restraints on International Exchange (Freedom of exchange with foreigners)

A. Taxes on international trade as a percent of exports plus imports; 6.7

B. Difference between the official exchange rate and the black market rate; 6.2

C. Actual size of trade sector compared to the expected size; 3.7

D. Restrictions on the freedom of citizens to engage in capital transactions with foreigners; 5.9

Note: The component weights sum to 100.

Source: GLB (1996, p. 16, p. 38)

APPENDIX 2

The variables used in the data-compilation tables and the regression analysis of subsections 3.1-3.2, and the sources of the data, are the following:

$ECFR_{75-85}$ = the absolute change in the EFI between 1975 and 1985, index Is1; source: GLB (1996, App. 1).

$ECFRE_{85}$ = the EFI in 1985, index Is1; source: GLB (1996, App. 1).

GINI = the Gini index, a summary measure of the extent to which the actual distribution of income or consumption differs from a hypothetical uniform distribution in which each person or household receives an identical share; source: Deininger & Squire (1996).

ILLITERA = share of the total adult population which is illiterate; source: World Bank.

INC20HI = percentage share of income or consumption of the highest 20 % of income earners or consumers; source: Deininger & Squire (1996).

INC20LO = percentage share of income or consumption of the lowest 20 % of income earners or consumers; source: Deininger & Squire (1996).

INC2020 = the percentage share of income or consumption of the highest 20 % of income earners or consumers divided by the percentage share of income or consumption of the lowest 20 % of income earners or consumers; source: Deininger & Squire (1996).

RGDPCH = real GDP per capita, 1985 international prices, chain index; Source: Heston & Summers (1991).

APPENDIX 3

Table A1. Summary statistics of variables

VARIABLE	MEAN	STD DEVIATION	MINIMUM	MAXIMUM	NO. OF OBS.
INC2020	10.2	6.8	3.3	32.5	69
INC20LO	5.7	2.9	2.0	10.9	71
INC20HI	47.5	8.4	34.0	67.3	71
GINI	41.2	9.7	24.6	62.3	79
ECFRE ₈₅	4.3	1.4	1.1	9.5	102
ECFR ₇₅₋₈₅	0.1	0.9	-4.6	2.1	93
RGDPCH	4833.2	4602.5	356	18339.0	98
ILLITERA	29.1	25.3	3.0	88.0	91

APPENDIX 4

Summary of the results of nonparametric tests of independent samples:

Table A2. Nonparametric tests of Table 1: significance levels

TESTS ↓	INC2020	INC20LO	INC20HI	GINI
Kruskal-Wallis	26 %	25 %	25 %	21 %
Median	17 %	22 %	59 %	43 %

Table A3. Nonparametric tests of Table 2: significance levels

TESTS ↓	INC2020	INC20LO	INC20HI	GINI
Mann-Whitley	52 %	67 %	4 %	14 %
Kolmogorov-Smirnov	66 %	95 %	24 %	50 %

Table A4. Nonparametric tests of Table 3: significance levels

TESTS ↓	INC 2020 (1)	INC 2020 (2)	INC 2020 (%)	INC 20L O (1)	INC 20L O (2)	INC2 0LO (%)	INC 20HI (1)	INC 20HI (2)	INC 20HI (%)	GINI (1)	GINI (2)	GINI (%)
Mann-Whitley	21 %	9 %	21 %	52 %	8 %	15 %	9 %	3 %	45 %	12 %	4 %	28 %
Kolmogorov-Smirnov	54 %	12 %	46 %	82 %	19 %	15 %	30 %	12 %	27 %	30 %	37 %	31 %

APPENDIX 5

Table A5. Equality changes in the countries for which the EFI increased the most 1975-1990

COUNTRY (EFI CHANGE) ↓	INC2020 (1ST OBS.)	INC2020 (2ND OBS.)	INC2020: PER-CENT CHANGE	INC20LO (1ST OBS.)	INC20LO (2ND OBS.)	INC20LO: PER-CENT CHANGE
Chile (2.9)	12.2 (1971)	17.0 (1989)	+39.3	4.3	3.7	-24.0
Jamaica (2.0)	12.3 (1975)	9.6 (1989)	-22.0	4.1	5.1	+24.4
Iceland (2.0)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Malaysia (2.0)	17.4 (1976)	11.7 (1989)	-32.8	3.3	4.6	+39.4
Pakistan (1.9)	4.8 (1979)	4.7 (1991)	-2.1	8.6	8.4	-2.3
Turkey (1.8)	16.1 (1973)	9.6 (1987)	-40.4	3.5	5.2	+48.6
Egypt (1.8)	n.a.	4.7 (1991)	n.a.	n.a.	8.7	n.a.
Portugal (1.7)	8.1 (1973)	7.4 (1990)	-8.6	5.7	5.7	0
Japan (1.7)	7.3 (1975)	7.1 (1982)	-2.7	6.0	5.9	-1.7
Singap. (1.7)	7.2 (1980)	7.2 (1988)	0	6.5	6.5	0
Mauriti. (1.7)	5.6 (1980)	7.7 (1986)	+37.5	7.1	5.9	-16.9
New Z. (1.7)	6.4 (1977)	7.3 (1989)	+14.1	6.1	5.8	-4.9
UK (1.6)	3.6 (1975)	4.9 (1989)	+36.1	10.4	8.1	-22.1
Thailand (1.4)	11.9 (1981)	13.8 (1990)	+16.0	4.3	4.0	-7.0
Indonesia (1.4)	5.6 (1978)	4.6 (1990)	-17.9	8.0	9.2	+15.0
USA (1.4)	7.8 (1977)	9.5 (1987)	+21.8	5.3	4.6	-13.2
Costa R. (1.4)	19.6 (1977)	12.7 (1989)	-35.2	2.8	4.0	+42.9
Average	9.7	8.7	+0.2	5.7	6.0	+5.9
Median	7.8	7.2	-2.1	5.7	5.8	-0.8

Note: The years which apply to INC2020 also apply to INC20LO, INC20HI, and GINI unless otherwise noted.

Table A5 (cont.). Equality changes in the countries for which the EFI increased the most 1975-1990

COUNTRY (EFI CHANGE) ↓	INC20HI (1ST OBS.)	INC20HI (2ND OBS.)	INC20HI: PER-CENT CHANGE	GINI (1ST OBS.)	GINI (2ND OBS.)	GINI: PER-CENT CHANGE
Chile (2.9)	52.3	63.0	+10.7	46.0	57.9 (1989)	+26.9
Jamaica (2.0)	50.3	49.0	-2.6	44.5	43.5 (1989)	-2.2
Iceland (2.0)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Malaysia (2.0)	57.3	53.7	-6.3	53.0	48.3 (1989)	-8.9
Pakistan (1.9)	41.3	39.7	-3.9	32.3	31.4 (1988)	-2.8
Turkey (1.8)	56.5	49.9	-11.7	51.0	44.1 (1987)	-13.5
Egypt (1.8)	n.a.	41.1	n.a.	38.0 (1975)	32.0 (1991)	-15.8
Portugal (1.7)	46.4	42.4	-8.6	40.6	36.8 (1990)	-9.4
Japan (1.7)	43.3	41.8	-3.5	34.4 (1975)	35.0 (1990)	+1.7
Singap. (1.7)	46.6	46.6	0	40.7 (1980)	39.0 (1989)	-4.2
Mauriti. (1.7)	39.9	45.7	+14.5	45.7	39.6 (1986)	-13.3
New Z. (1.7)	39.2	42.1	+7.4	33.0	40.2 (1990)	+21.8
UK (1.6)	37.3	39.8	+6.7	23.3	31.2 (1989)	+33.9
Thailand (1.4)	51.1	58.5	+14.5	43.1	51.5 (1992)	+17.2
Indonesia (1.4)	45.3	41.9	-7.5	38.6	33.1 (1990)	-14.2
USA (1.4)	41.4	43.8	+5.8	35.0	37.6 (1987)	+7.4
Costa R. (1.4)	55.0	50.7	-7.8	50.0	46.1 (1989)	-7.8
Average	46.9	46.9	+0.5	40.6	40.5	+16.8
Median	46.4	44.7	-2.6	40.6	39.3	-3.5

Table A6. Equality changes in the countries for which the EFI declined the most 1975-1990

COUNTRY (EFI CHANGE) ↓	INC2020 (1ST OBS.)	INC2020 (2ND OBS.)	INC2020: PER-CENT CHANGE	INC20LO (1ST OBS.)	INC20LO (2ND OBS.)	INC20LO: PER-CENT CHANGE
Nicaragua (-4.4)	n.a.	13.1 (1993)	n.a.	n.a.	4.2	n.a.
Somalia (-1.8)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Iran (-1.8)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Honduras (-1.4)	n.a.	14.8 (1992)	n.a.	n.a.	3.8	n.a.
Venezuela (-1.4)	9.9 (1976)	16.2 (1990)	+63.6	4.8	3.6	-25.0
Congo (-1.2)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Zambia (-1.1)	15.3 (1976)	8.9 (1991)	-41.8	3.7	5.6	+51.4
Tanzania (-1.0)	18.5 (1969)	25.7 (1991)	+38.9	3.2	2.4	-25.0
Algeria (-.8)	n.a.	6.8 (1988)	n.a.	10.2	6.8	-33.3
Morocco (-.7)	7.0 (1984)	7.0 (1991)	0	6.6	6.6	0
Panama (-.7)	12.5 (1980)	29.9 (1989)	+139.2	4.2	2.0	-52.4
Syria (-.5)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Greece (-.5)	5.9 (1981)	6.7 (1988)	+13.6	6.8	6.2	-8.8
El Salvador (-.4)	10.6 (1977)	n.a.	n.a.	5.0	n.a.	n.a.
Sierra Leone (-.3)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Brazil (-0.3)	24.7 (1978)	26.3 (1989)	+6.5	2.5	2.5	0
Average	13.4	17.2	+31.4	5.2	4.5	-11.6
Median	12.5	16.2	+13.6	4.5	4.6	-16.9

Note: The years which apply to INC2020 also apply to INC20LO, INC20HI, and GINI unless otherwise noted.

Table A6 (cont.). Equality changes in the countries for which the EFI declined the most 1975-1990

COUNTRY (EFI CHANGE) ↓	INC20HI (1ST OBS.)	INC20HI (2ND OBS.)	INC20HI: PER-CENT CHANGE	GINI (1ST OBS.)	GINI (2ND OBS.)	GINI: PER- CENT CHANGE
Nicaragua (- 4.4)	n.a.	n.a.	n.a.	n.a.	50.3	n.a.
Somalia (-1.8)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Iran (-1.8)	n.a.	n.a.	n.a.	42.3 (1972)	42.9 (1984)	+1.4
Honduras (- 1.4)	50.0	47.9	-4.2	54.9	52.6	-4.2
Venezuela (- 1.4)	34.2	33.2	-2.9	43.6	53.8	+23.4
Congo (-1.2)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Zambia (-1.1)	46.4	34.2	-12.2	51.0	43.5	-14.7
Tanzania (- 1.0)	35.6	46.5	+30.6	42.0	59.0	+40.5
Algeria (-.8)	n.a.	31.7	n.a.	n.a.	38.7	n.a.
Morocco (-.7)	25.4	30.5	+20.1	34.2 (1984)	39.2 (1991)	+14.6
Panama (-.7)	44.2	42.1	-4.8	47.5	46.5	-2.1
Syria (-.5)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Greece (-.5)	n.a.	n.a.	n.a.	33.3	35.2	+5.7
El Salvador (- .4)	n.a.	n.a.	n.a.	48.4	n.a.	n.a.
Sierra Leone (-.3)	n.a.	n.a.	n.a.	49.0 (1976)	n.a.	n.a.
Brazil (-0.3)	46.2	51.3	+11.0	56.0	59.6	+6.4
Average	35.2	39.7	+4.7	45.0	48.0	+7.9
Median	44.2	38.2	-2.9	43.6	46.5	+5.7

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