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Economic Freedom and the Process of Economic Growth: An Empirical Analysis Based on a New Measure

This paper, relying on a conceptualization of economic freedom in terms of kinds of government actions, develops a new measure of economic freedom. However, this is not art for art's sake; instead, it allows us to provide an explanation for how particular institutions of economic freedom enhance economic development, a view upon which scholars agree. We develop two concepts related to economic freedom, namely the freedom-compatible and freedom-non-compatible institutions and use them as tools in an analysis of the process of economic growth, especially the relationship between economic freedom and long-run income. The major argument is that freedom-compatible institutions are primary determinants of income, while freedom-non-compatible institutions depend upon them and are partly the outcomes of the growth process itself, a fact which is explained by the Misesian theory of interventionism. Our regression analyses support our theoretical insights.

Key words: *economic freedom, institutions, rule of law, government, interventionalism*
JEL Classification: *B53, H10, O10*

Introduction

Since Adam Smith who explicitly raised the importance of system of natural liberty (in modern parlance economic freedom), the issue of economic freedom has been a subject of little interest among economists, except for *Hayek* (1960); but during the past decade the concept of economic freedom has attracted more attention. This is due to the emergence of indexes[1] ranking countries according to a scale running from the least free to the freest. The reason why more attention is paid to economic freedom is that various studies applying continually improving databases and constantly developing econometric techniques including two-stage regressions, extreme bound analysis, Granger-causality,

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Pál Czeglédi is an assistant professor at the Department of Economics, Faculty of Economics and Business Administration, University of Debrecen. Email: pal.czegledi@econ.unideb.hu where "[e]very man, as long as he does not violate the laws of justice, is left perfectly free to pursue his own interest his own way, and to bring both his industry and capital into competition with those of any other man, or order of men" (Smith 1776, Book Four, Chapter IX). See http://www.adamsmith.org/smith/won-b4-c9.htm. Accessed May 15, 2009.

[1] *These indexes are: the one developed by the Fraser Institute (Economic Freedom of the World Index; for the most recent version see Gwartney and Lawson 2009), and another constructed by the Heritage Foundation jointly with the Wall Street Journal (Index of Economic Freedom; for the most recent version see Holmes, Feulner and O'Grady 2008).*

etc., have shown that economic freedom raises long-run income or growth (*Easton and Walker 1997, De Haan and Sturm 2000, Sturm and De Haan 2001, Gwartney, Holcombe and Lawson 2004, 2006*).[2] But beyond the simple fact that economic freedom or the change in economic freedom positively affects growth, several details regarding this effect remained undiscovered.

However, despite the existence of the economic freedom indexes and their extensive use in various empirical investigations, a theory of economic freedom itself is still missing, including an explanation of how it leads to economic growth/higher income.[3] Put differently, an underlying theory has not been included in the understanding of economic freedom developed by both the Fraser Institute and the Heritage Foundation. We think the root of the above shortcoming can be found in the way the indexes measuring economic freedom were constructed: the construction was largely driven by operational and measurement considerations (see *Block 2006*), rather than a theoretical concept-driven method.[4] This is not to say that the indexes are not grounded on clear concepts, on the contrary; the EFW Index for example was developed as a result of a series of conferences in which many distinguished scholars, including Nobel Laureates, participated. Scholars at these conferences discussed thoroughly what should be integrated into an index measuring economic freedom. In this way, the concept of economic freedom embodied in the EFW Index they developed is a comprehensive concept, meaning that economic freedom is a *sum* of various factors. The problem inherent in adopting this methodology is that the list of the constituent elements can easily be questioned, as indeed is the case with the EFW Index: numerous scholars argued that particular components should be or should not be included in the index or disagreed about how much weight they should be given (see for instance *De Haan and Sturm 2000, Heckelman and Stroup 2000, 2002*). Thus, theoretical concepts should ideally stand alone, i.e., in their own right, rather than being a *sum* of numerous factors. In this spirit, elsewhere (*Czeglédi and Kapás 2009*) we have already proposed an opposite method of proceeding; that is to first develop a conceptual framework, and measure only after.

In this paper we will take some initial steps in the direction to reveal economic freedom's growth-enhancing mechanism. We will argue that the relationship between long-run income/growth and economic freedom is more complicated than a simple positive relationship between an exogenous economic freedom measure and the resulting per capita income. On the basis of the above considerations, we propose to rely on a conceptually-driven framework based on the Hayekian notion of freedom developed elsewhere (*Czeglédi and Kapás 2009*). Here we will briefly summarize the outlines of this framework, and within this framework, we will construct our own measure of economic freedom. Our aim is not to simply propose an alternative measure art for art's sake; instead it is to demonstrate that our measure provides us with a better understanding of the process of how economic freedom affects growth.

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[2] *For a detailed overview of the empirical literature on economic freedom see Czeglédi and Kapás (2009).*
[3] *As McCloskey (1999:119) put it, "[t]he deepest source of the trouble is that we do not know the connections between free economic institutions… and the flowering of human ingenuity. Not really. We have ideological faiths about it, but we do not scientifically know."*
[4] *It may come as a surprise that De Haan and Sturm (2000), who are leading scholars in empirical investigations on the effect of economic freedom, also lack a clear definition of what is meant by economic freedom.*

Our new measure of economic freedom consists of two parts, namely freedom-compatible and freedom-non-compatible institutions and we will use them as tools in an analysis of the process of economic growth. The major argument is that freedom-compatible institutions are primary determinants of long-run income, while freedom-non-compatible institutions depend upon them and are partly the outcomes of the growth process itself, a fact which is explained by the Misesian theory of interventionism. Our regression analyses support our theoretical insights.

The rest of the paper is structured as follows. In the next section we will briefly summarize our conceptual framework of economic freedom, and based on that, we will operationalize it. Then we will carry out regression analyses with our own measure in order to investigate how economic freedom affects growth. The final section concludes.

From theory to measurement

A theoretical framework

Elsewhere (*Czeglédi and Kapás 2009*) when developing a theoretical framework of economic freedom we argued for the usefulness of the Hayekian notion of freedom. Here our major argument was that since economic freedom and government are not antagonistic *per se* – lesson we drawn from the Scottish philosophers such as *Locke* (1690) and *Hume* (1739), and *Hayek* (1960) – but at the same time government represents *the* major threat to economic freedom, economic freedom is best conceptualized in terms of types of government actions.

As suggested by the idea of "limited government" of the above scholars, government *per se* is not to be condemned, unlike the view which is to a certain extent suggested by the indexes of economic freedom[5]; instead, it fulfills some positive roles that cannot be fulfilled by any other actor in a society. Thus, our argument is that economic freedom is compatible with government, but not with any kind of government. Clearly, when it comes to economic freedom it is not the size of the government that matters, as is also argued by *Hayek* (1960) and *Mises* (1949:279-287), but rather *what* government is allowed to do and *how*, accordingly, economic freedom relates to the *character* of government actions, rather than the *volume* of government actions (see *Hayek 1960*).

Based on the above considerations, when it comes to economic freedom, one has to analyze the kinds (character) of government actions. Government actions can be categorized as coercive and non-coercive actions. In a society organized as a state, individuals must tolerate some coercion – because "without some sort of state coercion, the very ability to autonomously pursue our projects and plans seems impossible" (*Blake 2001: 280*) –, namely that of the state which protects us from the coercion of others: "As far as the government … confines the exercise of its violence and the threat of such violence to the suppression and prevention of antisocial action, there prevails what reasonably and meaningfully is called liberty" (*Mises 1949:281*). Nevertheless, a paradox is that the only means whereby the state can prevent the coercion of one individual by another is the very threat of coercion. Accordingly, freedom does not mean a total absence of coercion but the only acceptable end to which government can use its coercive power is to protect us from private coercion.

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[5] *In this respect note that the Heritage Foundation's index treats zero government spending as the ideal level, that is, government (spending) is seen as contradictory per se to economic freedom.*

Economic freedom should be thought of as a value on a continuum: under *perfect* economic freedom state coercion concerning individuals' entrepreneurial activities cannot go beyond certain limits, and the only acceptable means is enforcing general abstract rules known beforehand, where rules are understood in terms of the rule of law.[6] Thus the principle that provides us with a criterion according to which we can evaluate economic freedom is the rule of law. In this spirit, a deviation from the *ideal* of the rule of law reduces economic freedom. When seeing the *ideal* of the rule of law as the maximum of economic freedom we think of the rule of law as the container holding a set of formal institutions such as secure private property rights, an independent judiciary, a constitution, freedom of contract, etc., the better "quality" of which enhances economic freedom. Clearly these institutions are related to coercive governmental actions, but they are necessary for the functioning of the market because they allow individuals to plan their affairs with reasonable confidence that they can know in advance the legal consequences of various actions. That is why we call them freedom-compatible institutions.[7]

Furthermore, for our understanding of economic freedom, another aspect of the rule of law is also important, namely that the rule of law is associated with form, not substance, and implies that constitutional decision-making should be cast in the form of rules, which reflects the assumption that clear and determinate rules are necessary for both citizens and those in power.[8] In sum, what is emphasized in the above conceptualization of the rule of law is government's reliance on general abstract rules known beforehand.[9]

However, beside freedom-compatible government actions there are those that harm economic freedom. These include all kinds of controls such as price, quantity and wage control. Clearly, these coercive activities of the government represent the kind of infringement of the individual's private sphere which is an obstacle to individuals freely contracting with each others. So do, beside these regulations, all kinds of government monopolies for those goods and services which could be otherwise provided on a competitive basis. On potentially competitive markets, the services or goods should be supplied by the government on the same terms as anybody else, otherwise economic freedom is hurt. The third type of freedom-non-compatible coercive activities is government subsidies to particular firms (private or state) and various transfers which arbitrarily differentiate between agents. Transfers and subsidies should be seen as coercive actions because those who get particular subsidies are forced to behave not according to their plans but according to the government's will (*Hayek 1960*).

Measurement considerations

As for the measurement of economic freedom, we should keep in mind that freedom understood as the absence of coercion is defined "negatively". So in fact, what one has to measure is the absence of that coercion which relates to individuals' entrepreneurial acts.

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[6] *"Freedom demands no more than that coercion and violence, fraud and deception, be prevented, except for the use of coercion by the government for the sole purpose of enforcing known rules intended to secure the best conditions under which the individual may give his activities a coherent, rational pattern" (Hayek 1960:144).*

[7] *These institutions are the outcomes of government actions conforming to the rule of law.*

[8] *For an overview of the various ideal types of the rule of law see Fallon (1997).*

[9] *"When we obey laws, in the sense of general abstract rules laid down irrespective of their application to us, we are not subject to another man's will and are therefore free" (Hayek 1960:153), and "[s]uch a system is likely to be achieved and maintained only if all authority is limited in the exercise of coercive power by general principles" (Hayek 1973:55).*

We argue that a possible fruitful way is precisely to measure economic freedom in the same (negative) way as it is defined. This implies that we have to measure those governmental actions that reduce economic freedom, and since non-coercive government activities by definition do not hurt economic freedom, we should focus our attention only on coercive activities. Our framework suggests that the extent of economic freedom can be reduced from two sides: (1) by the deviation from an *ideal* of the rule of law (freedom-compatible government activities), and (2) by freedom-non-compatible government activities.

Of course, the character of government actions (either freedom-compatible or freedom-non-compatible) itself is not measurable; accordingly we have to give practical meaning to it. As far as the freedom-compatible actions are concerned, based on our theory, we express them in terms of the institutions of the rule of law. As for the freedom-non-compatible actions, the precise identification of these actions, namely controls, government monopolies in potentially competitive markets, and transfers and subsidies gives them practical meaning, These can be seen as regulatory institutions providing relatively stable rules constraining actors' entrepreneurial activities.

We do not use some generally accepted index of the rule of law because, on the one hand, these indexes are usually not transparent, and it is not clear which facts or data are taken into consideration when they are constructed. On the other hand, we want to measure the rule of law in a different way, which is more in line with our theory. This consists in measuring the "distance" from the *ideal* of the rule of law instead of measuring the constituting institutions of the rule of law that are aggregated into one measure. To be more precise, as for the freedom-compatible activities, what is to be measured is thus whether when acting, government relies only on rules laid down beforehand because, as argued before, under *perfect* economic freedom (ideally) the government must rely only on rules laid down beforehand. However, on the other hand, it is equally important to know whether and to what extent rules, once they exist, are followed in practice. This latter point is important because rules should not necessarily be codified; thus formal rules are not enough for us to decide whether an economy can be said to be governed according to the rule of law. We also need *de facto* practice, and in addition, we need *de facto* practice even if, as an extreme case, a country does not have any written rules. Here the problem we face is that written rules do not necessarily become effective constraints.

Clearly, here two aspects of the way governmental actions are taken are intertwined. The first aspect concerns whether the government relies on rules when acting, since coercion is admissible only when it conforms to general rules and not when it is a means of achieving a particular aim of current policy. The second aspect relates to the extent to which the government is committed to follow the rules that it itself laid down beforehand. Thus one can imagine such a situation in which *de iure* the government is bound to rules, i.e., in principle it relies on rules, but in practice it does not keep to these rules in every respect. We argue that these two aspects can be proxied, on the one hand, in the context of legal procedures, and on the other hand, in that of corruption.

As far as the legal procedures are concerned, we have to examine whether the government is in fact forced by any independent authority (such as the supreme court or the constitutional court). This is analyzed under the rubric of "judicial independence" by *Feld and Voigt* (2003), and *Hayo and Voigt* (2007)[10]. These scholars argue for a differentiation

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[10] *They see the highest court as representing the whole judicial system.*

between *de facto* and *de iure* judicial independence. As regards the formal independence of the highest court, they examine, on the one hand, those procedures and formal rules that make the judges independent from the government, and on the other hand, the importance of the highest court and the decisions it takes and the effects it has on society. Since a *de facto* index measures whether the rules become practice, it may be used as a proxy for to what extent the government relies on rules when acting.

Another aspect we propose to take into account as regards legal procedures concerns legal formalism. In their article *Djankov, La Porta, Lopez-de-Silanes and Shleifer* (2003) construct an "index of formalism" by which they intend to measure the extent to which the way legal disputes should be resolved is determined or regulated by the law. It is clear that our *ideal* of the rule of law is not the same as the *ideal* of their neighbor model[11], but several aspects of the latter can be used as a proxy for the former. So we use those components of the sub-indexes (dummy variables) of *Djankov, La Porta, Lopez-de-Silanes and Shleifer* (2003) that can arguably be used as components of a rule of law measure, since they refer to the generality, or the certainty or the equality of the law.[12]

As mentioned above, we think that the level of corruption is also a good proxy of the quality of the rule of law in a country. Although corruption is often used as a description of bureaucratic or institutional quality (*Paldam and Gundlach* 2008), using corruption as a component of economic freedom is not an evident choice. So we have to explore how corruption relates to economic freedom in our theoretical approach.

When it comes to understanding corruption it is useful to start with the widespread definition of the concept according to which corruption is "the misuse of public office for private gain" (*Svensson 2005:20, Bardhan 2006:341*), or in more concrete terms, "corruption takes place when public officials break the law in pursuit of their private interest" (*Khan 2006:216*), or somewhat more generally, corruption is the "illicit use of willingness to pay as a decision making criterion" (*Rose-Ackermann 2006:xvii*). As a step forward, *Hodgson and Jiang* (2007) extend the definition of corruption in a way to include private corruption, too. At the end of the day all definitions revolve around the idea that corruption means circumventing certain rules that someone else would consider would be useful if all parties followed them. One determining factor behind this rule-following is whether the rules are in line with the players' moral or value systems (*Hodgson and Jiang 2007*). Another factor is the efficiency of the enforcement by the state (*Bardhan 1997*). This is what provides the crucial importance of corruption from our viewpoint, since we have emphasized that economic freedom requires that the government abide by rules.

But the question still remains to what extent corruption can be seen as a sign of deviation from the rules (the rule of law) that assure economic freedom, since not every rule that is enforced is the basis of economic freedom. Rules or laws can be laid down arbitrarily and enforced by coercion even if they favor only those in power. Of course, circumventing these kinds of rules can hardly be considered an infringement on economic freedom, since it was the enactment of the rule itself that infringed freedom. Violation of the rules can only mean a reduction of economic freedom if the rules that are circumvented are those that

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[11] What Djankov et al. (2003) have in mind as a benchmark is the "neighbor model" resolution of a dispute. This model is the "resolution of a dispute among two neighbors by a third party, guided by common sense and customs. Such resolution does not rely on formal law and does not circumscribe the procedures that the neighbors employ to address their differences" (Djankov, La Porta, Lopez-de-Silanes and Shleifer 2003: 457).

[12] For the exact description of which sub-components we included in our measure, see Appendix A.

were formed to limit state power or to make it possible for the state to apply the rule of law. In sum, violating the rules hurts economic freedom if the government itself respects the rule of law.

It is usual to differentiate between "petty" and "grand" corruption, as does *Rose-Ackerman (2006, pp. xvii-xxi)*. Essentially, petty corruption refers to the acts of bureaucrats who breach the rules in an environment where the rule of law is respected in general, while grand corruption occurs when the government creates rules to be able to collect bribes. This is what for us rescues the concept of corruption from vagueness, since in this latter case, it is the government that is "corrupt", not the players who are trying to avoid these governmental actions.

To sum up, economists' understanding of corruption is in line with our understanding of the freedom-compatible activities of government, because it is a reflection of whether the government or the players follow the rules.[13] All in all, corruption is one crucial symptom of the absence of economic freedom, because just like economic freedom, corruption can result from the fact that government is too weak as well as from the fact that government is too strong. If government is too weak, it cannot prevent its bureaucrats becoming corrupt, which is paralleled with the general idea that a government is necessary to secure private property. If government is too strong, i.e., when it is not limited, it can become an organization for corruption, which can be paralleled with the general idea that government can easily violate the rules of private property. Corruption reflects the absence of following the rules by either the bureaucrats and the private players who cooperate with them, or by the whole structure of the government. Note however, that its measurement is made difficult by several factors including its qualitative rather than quantitative nature (see *Kaufmann et al. 2003, 2006*).

To sum up, as a deviation from the *ideal* of the rule of law we propose to take into account, on the one hand, the legal procedures which reflect whether the legal system as a whole meets the requirements of the equality, generality and certainty of the law, and on the other hand, the corruption which reflects a departure from the reliance on and commitment to rules (rule-following).

Besides the deviation from the *ideal* of the rule of law, freedom-non-compatible government activities hurt economic freedom, too. Based on the above-said, we argue that economic freedom can be reduced in three respects in this field. First, all price, quantity and wage controls reduce economic freedom. Second, government monopolies in potentially competitive areas also reduce it. And finally when government subsidizes particular firms or gives transfers, this is also against economic freedom.

What is the most problematic issue of these three is the state monopoly in potentially competitive markets because not every kind of state ownership reduces economic freedom. State ownership can reduce economic freedom only if it goes together with a monopoly in potentially competitive markets. Thus it is not enough to have a measure of state-owned enterprises; we need to have a measure related to their monopoly power in potentially competitive markets. Accordingly, we measure here state ownership together with those regulatory burdens that reduce competition.

All things considered, we think that measuring freedom-non-compatible activities is

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[13] *In addition to what has been said so far on the usefulness of the concept of corruption in our understanding of economic freedom, note that Shleifer and Vishny's (1993) model of corruption also supports our view.*

much less troublesome than measuring freedom-compatible activities. Thanks to the increasing attention devoted to the subject of regulation there are relatively well-known and widely used databases for this purpose, such as that compiled by the *Doing Business* project of the World Bank, and some components of the two economic freedom indexes can also be used.[14]

We have constructed our own measure which we call "economic freedom measure" (EFM) based on the above theoretical considerations (see Appendix A and B).

Regression analysis with the EFM

In what follows we will carry out empirical investigations to show that in some respects our economic freedom measure behaves similarly to the other indexes of economic freedom used in the literature, but in addition this analysis allows us to draw conclusions which the other indexes exclude. Particularly, we will try to show that the relationship between long-run income and economic freedom is more complicated than a simple positive relationship between an exogenous economic freedom measure and the resulting per capita income. The two concepts related to economic freedom, namely the freedom-compatible and freedom-non-compatible institutions we developed, can be seen as tools that help us analyze the process of economic growth.

In this spirit, we will investigate the economic freedom-long-run income relationship in three respects. First, in section 3.2 we will do the same analysis as that of the literature, but we will use our EFM measure instead of the EFW index. Our aim here is to show that the results with the new measure are not qualitatively different. Second, in section 3.3, we will show that the freedom-compatible institutions are primary determinants of long-run income, and are exogenous. However, the freedom-non-compatible institutions do not seem to play an important role in determining income. Consequently, in section 3.4, we will investigate the reasons for this, and our response will be that the endogenous nature of state interventions in economic development makes the overall effect of freedom-non-compatible activities insignificant. From a theoretical perspective we will argue that the apparent absence of any effect of freedom-non-compatible institutions can be understood by referring to the theory of interventionism in the mixed economy.

The model, data, and sample

Here, following the literature (e.g., *Easton and Walker 1997, Heitger 2004*) we will include our economic freedom measure into the human capital-augmented Solow-model (*Mankiw et al. 1992*). Using the well-known conditional convergence argument (*Mankiw et al. 1992:421-424, Barro* and *Sala-i-Martin 2003:59-61*), this breaks down to a testable equation in the following form:

$$\ln(GDP\text{percapita})_i = const + \gamma_1 \ln(I/GDP)_i + \gamma_2 \ln(school)_i + \gamma_3 \ln(n_i + g + \delta) +$$
$$+ \gamma_4 \ln(EFM)_i + e_i$$

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[14] It must be noted here that the most recent version of the two economic freedom indexes are already making use of the *Doing Business* data (Gwartney and Lawson 2008, Holmes et al. 2008).

The variables refer to the following: *I/GDP* is the share of investment within GDP, *school* is the average years of schooling, *n* is the average growth of the labor force, while *EFM* is the economic freedom measure, e_i is the error term. In addition, $g+\delta$ is assumed to be 0.05 as in *Mankiw, Romer and Weil* (1992).

Our source for GDP per capita, investment and population is the Penn World Table of *Heston, Summers and Aten* (2006). More precisely it is real GDP data based on purchasing power parity and a chain-link method, the growth of the labor force (computed from data on labor force and GDP per worker)[15], and investment rates that we used from *Heston Summers and Aten* (2006). Investment in human capital, for data availability reasons, is proxied by the average years of schooling instead of secondary schooling years between 1980 and 2000 in the whole population beyond the age of fifteen from *Barro and Lee* (2001)[16]. EFM is constructed from different sources and with the method described in the previous section and in Appendix A[17].

Investment variables are averages between the years 1980 and 2003, while GDP per capita is measured in 2003. The bottleneck data that reduce our sample are the data on judicial independence form *Hayo and Voigt* (2003). All in all, we have 45 countries[18] that can be described with the variables we used to measure economic freedom together with the variables of economic development.

The effect and exogeneity of economic freedom

The OLS regression shows (Table 1, column 1) that the EFM is statistically significant when controlling for physical and human capital investment and population growth. As the coefficient of the EFM indicates, a one percent increase in the economic freedom measure would cause a more than a one percent increase in long-run income. This effect is larger than two of the other three factors affecting income. Our result is not very different from the conclusion of the literature examining the effect of economic freedom as measured by the EFW index on income or growth (e.g., *Easton and Walker 1997*, *De Haan and Sturm 2000*).

We also investigated the exogeneity of economic freedom. We accept the argument of *Acemoglu* (2005:1040-1041), according to which the first stage regression needs a theoretical explanation: one must have some theoretical reasons to choose a particular instrument, and the technical conditions (as regards the correlation of the instruments) are not enough. Appropriate instruments can possibly be found among those variables that affected the evolution of the law. The reason behind that is that the rule of law is a crucial concept in our understanding of economic freedom which is, to a large extent, rooted in the history of a country. Thus it seems obvious to use as an instrument the legal origin of a country. In

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[15] *The only exception is Taiwan in which case we use the growth of the population because of the lack of GDP per worker data. As the participation rate is almost constant during the whole period, this is only a minor discrepancy.*
[16] *Available: http://www.cid.harvard.edu/ciddata/ciddata.html.*
[17] *The data available to us is limited as regards which year the data we use originate from. Different databases we used provide data for different time spans and different country groups, and we had to make compromises in this respect. Our database must be refreshed and improved in the future, even if the institutional data we used do not change drastically over time. This constant nature particularly characterizes the institutional data embodied in our freedom-compatible measure, on the role of which we put great emphasis.*
[18] *Although in Appendix B we have 47 countries, for the regression analysis as it is usual we dropped two oil exporting countries, Venezuela and Kuwait.*

addition, we chose certain variables of religion; expressing adherence to certain religions measured as a share of the population that can be associated with religion in general (that is, the relative size of each religious group within the total number of religiously-inclined people). Although the characteristics of the religious groups people belong to in a country may not affect the formal law, they certainly have an effect on informal institutions that characterize the *de facto* behaviour of the players; and the rule of law is a *de facto* category. However, since we have a considerable number of transition economies, we included a transition dummy in the set of instruments: there is no doubt that transition countries share common historical features.[19] Furthermore, we also included the size of the population as an explanatory variable in the first stage regression[20], a decision which can be justified based on what the rule of law means in our theory: the rule of law is a characteristic of the government's behaviour, something which is not only a matter of history. Whether the government will try to break the rules laid down beforehand and intervene in the economy by discretionary regulation is also determined by the political benefits and costs of this action. In our theoretical framework this intervention may lead to the establishment of new kinds of regulation which are freedom-non-compatible activities. But, on the other hand, this may also lead to a deviation from the rule of law: more regulation could mean more corruption, and if the government has the political incentives to intervene in an *ad hoc* way, it can hurt the independence of the courts. We rely on the argument provided by *Mulligan and Shleifer* (2005) who show theoretically and empirically that the political costs and benefits of regulation are determined in such a way that a larger population leads to more regulatory burdens ceteris paribus. This explains why we included population as an instrument.

As shown in Table 1 all the religion variables, with the exception of the share of Jews, are significant and positive. It may seem to be strange that every religion variable has a positive effect. Note however, that these are only partial effects: for instance, the share of Muslims raises the level of economic freedom, taking the other religion and other variables as given. This may show the effect of religiosity in general, or that of a multireligional environment.[21] The transition dummy is also significant and negative as was expected. The population variable is also significant and has the expected sign.

It also may be puzzling that only one of the legal origin dummies is significant (with the expected sign) – the effect of the Scandinavian legal origin is, we think, the result of the large welfare states in these countries – since a huge literature on legal origin (e.g., *Botero et al. 2004, Djankov et al. 2002, La Porta et al. 2008*) shows that legal origin has a considerable effect on different measures of regulation. We will try to solve this puzzle later in section 3.4.

We do not drop the insignificant variables because dropping them does not change the result, and in this way it is easier to compare the freedom-compatible and the freedom-non-

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[19] *There are nine transition countries in the sample: Bulgaria, Croatia, the Czech Republic, Estonia, Georgia, Hungary, Lithuania, Russia, and Slovenia. Note that our transition dummy is not identical to the socialist legal origin dummy, because the legal systems of several transition (post-communist) countries originated before the socialist era.*

[20] *The population variable is one tenth of the logarithm of the population (Population= Ln[number of inhabitants]/10). Population data comes from Heston, Summers and Aten (2006) and are averaged over the years from 1980 to 2003.*

[21] *Note what Voltaire writes in his "Letters on the English": "If one religion only were allowed in England, the Government would very possibly become arbitrary; if there were but two, the people would cut one another's throats; but as there are such a multitude, they all live happy and in peace". Available: http://www.bartleby.com/34/2/6.html. Accessed May 15, 2009.*

compatible explanatory variables. Using these eleven variables as instruments (see Table 1, column 2), the coefficients do not change to a great extent, as is corroborated formally by the omitted version of the Hausman test (*Maddala 1992:510-513*) (column 4), according to which the hypothesis of the exogeneity of economic freedom cannot be rejected at the usual significance level, since the residual from the first stage regression does not prove to be a statistically significant (at a 10 percent level) variable on the second stage.

So far we have seen that economic freedom as measured by the EFM has an exogenous and positive effect on income even if one controls for other variables. In the following we will show that this new index helps us to point to a mechanism through which economic freedom may affect income – a mechanism that is excluded when using the two usual indexes of economic freedom, and consequently which does not appear as an explanatory factor in the empirical literature on economic freedom dealing with how economic freedom affects growth (e.g., *Gwartney, Lawson, and Holcombe 2004, 2006*).

The analysis of the effects of the two main components of economic freedom

As a refinement of the previous analysis we will take a step further and investigate the effects of the two main components of the EFM: freedom-compatible and freedom-non-compatible measures. Here we hypothesize that freedom-non-compatible institutions are partly endogenous primarily because as freedom-compatible institutions become better, governments' incentives to apply freedom-non-compatible institutions will change, and they will tend to use more transfers and subsidies but less regulation on prices and quantities. Thus our conjuncture is that (1) freedom-compatible institutions are exogenous with a positive effect in the economic freedom-long-run income relationship, while (2) freedom-non-compatible institutions are partly endogenous but their effect is indeterminate, because particular elements, according to our hypothesis, move together with income in different directions. The rest of this section will be devoted to examining the effects of the components while the next section will deal with the endogeneity of the freedom-non-compatible institutions.

Column 1 in Table 2 shows the results for the simple OLS regression with the usual variables and the two components of the economic freedom measure. The result is clear: the measure of freedom-compatible institutions is significant while the measure of freedom-non-compatible institutions is not (p-value is 0.217) although it has a negative sign. Having obtained these results, we dropped the freedom-non-compatible measure and tested whether the freedom-compatible measure is exogenous, with an expectation that it is. Column 2 in Table 2 shows the results for a simple OLS regression in which we omitted the freedom-non-compatible measure. This specification is backed by the regained significance of population growth which should be expected based on a Solow-model. In column 3 we used the 2SLS method to estimate the same specification, by instrumenting the freedom-compatible variable with the same variables we used above. Although the pure comparison of the coefficients of in columns 2 and 3 in Table 2 might be enough to conclude that the freedom-compatible measure is truly exogenous, we run the same formal test as above as well (for results see Table 3).

We first run the first stage regression with the same variables we used for instrumenting the economic freedom measure above (column 1 in Table 3). More or less the same variables are significant as in the case of the economic freedom measure, with the notable exception

that none of the legal origin variables is significant this time. This means that religion variables dominate in determining the freedom-compatible variable.

It must be noted, however, that all religion variables have a positive sign again; meaning that given the share of other religion variables, a country with a higher level of one religion variable is expected to have a higher level of freedom-compatible institutions. As in the case of all regression results the question of causality arises; namely that those governments that behave in a freedom-compatible way will attract people of different religions to live there, or those living there will not be shy about expressing their faith. Maybe both types of causality are true, and these results express a form of the effect of a historical evolution. On the one hand, economic freedom is a result of historical evolution, in which the religious freedom of the rulers' subjects may have been one of the driving forces. On the other hand, according to the *Hayek* (1944[1971]) and *Friedman* (1962), once economic freedom is in place, it is a means of sustaining political and civil freedom, of which freedom of expression is not an insignificant element. But our aim here, which is to show the exogeneity of the freedom-compatible institutions, is independent of the types of causality.

Column 2 in Table 3 shows the result for the test of exogeneity of the freedom-compatible variable. As is clear the residuals are highly insignificant (with a p-value of 0.848), which allows us to conclude that the freedom-compatible measure is exogenous in the economic freedom-long-run income relationship. To put it in a simple way, it is not wealth which makes government behave in a freedom-compatible way; rather historical-cultural factors play an important role in shaping freedom-compatible institutions. In addition, the effect of the freedom-compatible measure is comparable with human and physical capital investment: a country with a ten percent higher quality of freedom-compatible institutions will have a 7.46 percent higher long-run income.

The co-evolution of freedom-compatible and freedom-non-compatible institutions

Above we found that the freedom-non-compatible institutions have a negative but insignificant effect on long-run income. How can we interpret the "behavior" of this variable? It is a compelling question because many argue (e.g., *Djankov et al. 2002, Djankov, McLiesh and Ramalho 2006*) that regulatory variables matter for growth and other welfare measures, which clearly opposes our result. Our argument here is that the insignificance of the freedom-non-compatible institutions is a result of the fact that they are partially endogenous and the endogenous effect has the opposite sign as compared to the exogenous one.

More precisely, we propose that freedom-non-compatible institutions are partially shaped by the freedom-compatible ones, because "good" fundamental institutions cannot make an institutional structure consistent with the freedom-non-compatible ones, resulting from interventionism. This argument is based on the Misesian notion of interventionism. As elaborated by *Mises* (1940[1998], 1929[1996]) and *Ikeda* (1997:91-195) the process of interventionism accompanies the entrepreneurial market process: interventionist acts are reactions to entrepreneurial acts. Any intervention into the market process will lead to further interventions by which the government tries to cure the unintended effects of previous interventions. However, the spiral of interventions will reach a point at which the government must deregulate, otherwise "they [the governments] will find eventually that they have adopted socialism" (*Mises 1940[1998]:91*). What we are arguing is that the

point at which the interventionist process has to stop and turn back and be followed by a deregulation process (*Ikeda 1997:137-142*) is dependent on the quality of the freedom-compatible institutions.

But the process of interventionism as analyzed by these authors is modeled in an environment with perfect market institutions, that is, in an environment where the players follow the rules formulated by the regulators. To put it another way, the interventionist process is imagined in a world of perfect enforcement of the rules. When this is not the case, the unintended consequences of regulation that create demand for new regulation is less severe from the regulators' viewpoint. As a result, the unsustainable nature of the process is less evident. The conclusion is that the more secure the institutional condition of entrepreneurship is in a country, the sooner deregulation will come, since the unintended consequences originate from the entrepreneurial actions, which, in turn, are stimulated by freedom-compatible institutions. As a result, interventionism will be more extended in those countries which are more developed but whose freedom-compatible institutions are poorer.

The above feature of the data is also demonstrated in Figure 1; a simple scatterplot between income and the freedom-non-compatible measure: the performances of countries with less freedom-non-compatible activities (a higher level of the measure) are much more diverse than those of countries with more. Or to put it another way, when considering the levels of freedom-non-compatible activities, developed economies are much more diverse than developing countries.

This feature again provides support for our hypothesis that the high level of intervention has resulted from an interventionist process that is just the byproduct of the market process, since it shows that rich countries have a high level of freedom-non-compatible activities. Or to put it differently, there seems to be (from the evidence of these 45 countries) no countries with a low level of freedom-non-compatible activities and low income. Our explanation for this fact is that there should be relatively sound freedom-compatible institutions in place to begin the road to an interventionist state, and only rich countries have these, since having them made them rich. Of course, we do not think that the interventionist process explanation is overwhelming. Even from Figure 1 it becomes clear that there are other variables in addition to GDP that are apparently needed to explain the diversity of freedom-non-compatible institutions, mainly among developed countries. Our data makes it possible for us to give some more robust empirical corroboration of what we propose in this section. We run regression on the freedom-non-compatible measure (see Table 4).

Besides the initial income (measured as GDP per capita in 1990)[22] and the freedom-compatible measure we included the legal origin variables since they were insignificant in the regression on the freedom-compatible measure. This is aimed at minimizing the potential of a multicollinearity between the freedom-compatible institutions and the other explaining factors of the freedom-non-compatible institutions. We also included some additional variables which may have an effect on what is captured by the freedom-non-compatible institutions. Thus we added a variable to account for the ideology of the

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[22] Initial incomes are GDP per capita in 1990 except for those countries whose 1990 data are not available in Heston, Summers and Aten (2006). In these cases we used the first year for which income data is provided. These are: Bulgaria (1991), Georgia (1992), Lithuania (1993).

government – the number of years during which the governing party has been left-wing[23]. Ideology may shape a government's overall approach to economic policy and thus may have an effect on regulation and welfare transfers. We also added a variable that tries to express the level of political freedom,[24] to account for the effect of political institutions through median voter logic.

Now our hypothesis seems to hold: initial income affects the freedom-non-compatible measure negatively while the freedom-compatible institutions affect it positively. That is, holding some other historical-cultural features constant, those countries that have firmer freedom-compatible institutions apply less freedom-non-compatible regulations. The fact that this mechanism seems to work besides that which goes through legal origin is important because it suggests that the mechanism through which we explain the "behavior" of freedom-non-compatible institutions can be a complementary (not a substitute) of the legal-origin explanations elaborated in for example *Djankov et al.* (2002) or *Botero et al.* (2004). To put it simply, it is not only the legal origin that determines the level of regulation but also whether the government is able to behave in a freedom compatible way by respecting and securing the rule of law. Although above, at least explicitly, we were not theorizing about the role of legal origin in shaping freedom-non-compatible institutions, the closely connected development of common law and federalism (*Weingast 1995*) enables us to explain this relationship. Thus the positive effect of English legal origin (which is equivalent to the negative sign of the other legal origins) may come from the market-preserving federalist system of the Anglo-Saxon countries.

The conclusion of this section is that a lower level of freedom-non-compatible regulations can lead to higher income, but some elements tend to move in step with economic development. These two effects together are responsible for the results we obtained before (Table 2); namely that the freedom-non-compatible measure is not significant.

Furthermore, the regulatory authorities have incentives to go on building up freedom-non-compatible institutions, while they also have some incentives to let economic growth happen, a process which would require the elimination of these institutions. What we are proposing is that freedom-compatible institutions influence these incentives: the more secure they are the more evident and direct are the effects of the interventions.

Conclusions

The major conclusion we can draw is that the relationship between economic freedom and economic development is not simple, contrary to what is very often claimed in literature. Some elements of economic freedom, namely freedom-compatible institutions, are shaped by factors outside the process of development, and they have a significant effect on long-run income, and this effect is exogenous. On the other hand, some elements, such as those we refer to as freedom-non-compatible institutions, seem to be the result of development itself, i.e., they are partly endogenous: as countries get richer, they are more prone to apply regulations that hurt freedom (transfers and subsidies), but they are also prone to eliminate

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[23] *This variable comes from the Database of Political Institutions compiled by Beck et al. (2001) and is available at http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0,,contentMDK:20649465~pagePK:64214825~piPK:64214943~theSitePK:469382,00.html*
[24] *The source of this variable is Freedom House (2007). "Political rights" is the average of the same variable of the Freedom House over the years 1980 and 2003.*

some others (controls). As a result, there seems to be no causal relationship running from these institutions to income. However, this overall effect may hide some partial effects, and this being so, it does not mean that improving freedom-non-compatible institutions would not lead to growth: for instance applying less controls given a level of transfers, or vice versa, of course, increases economic freedom, and will cause growth.

Having said that, the question of what conditions are required for the above to take place arises. Our proposition here is that it is the quality of freedom-compatible institutions that determines the extent to which freedom-non-compatible institutions can be improved, but the whole process can be understood in terms of the theory of interventionism. The complexity of the relationships between economic freedom and income is shown in Figure 2.

Put simply, both our theory and empirical results suggest that freedom-compatible institutions which we think reflect the quality of the rule of law play a crucial role in economic freedom: (1) they alone affect long-run income, (2) being exogenous they are determined by historical-cultural factors outside the development process, and (3) they also determine the way and the extent to which the government rely on controls and transfers (freedom-non-compatible institutions).

The above provides us with some additional insights as regards the relationship between economic freedom and its two parts, and development. First, since freedom-compatible institutions are to a relatively large extent shaped by various cultural-historical features, freedom-non-compatible institutions are much easier to manipulate, and they are manipulated by interest groups on the grounds of politics or social welfare considerations. Consequently, it is easier to raise the level of economic freedom by reducing the volume of freedom-non-compatible activities than by developing the tools that ensure that the government's activities are compatible with the rule of law.

Second, development works, to some extent, against economic freedom through the interventionist process. Our argument above concerning interventionism implies that the expansion of freedom-non-compatible institutions is a side effect of development but better freedom-compatible institutions stimulate deregulation.

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Tables

Regression results for the economic freedom measure

	1	2	3	4
	Dependent variable:			
	ln(GDP)	ln(EFM)	ln(GDP)	ln(GDP)
	OLS	OLS	2SLS	OLS
constant	2.152 (1.63)	-0.846 (-2.66)[b]	2.260 (1.86)[c]	2.260 (1.73)[c]
ln(I/GDP)	1.027 (4.61)[a]	-0.040 (-0.66)	1.004 (4.93)[a]	1.004 (4.85)[a]
ln(school)	0.464 (2.41)[b]	0.148 (2.49)[b]	0.432 (2.10)[b]	0.432 (1.95)[c]
ln(n+g+δ)	-1.446 (-3.29)[a]	-0.200 (-1.42)	-1.495 (-3.52)[a]	-1.495 (-3.30)[a]
ln(EFM)	1.366 (2.49)[b]		1.650 (3.24)[a]	1.650 (2.97)[a]
Share of Catholics		0.110 (1.99)[c]		
Share of Protestants		0.300 (1.94)[c]		
Share of Jews		0.099 (1.12)		
Share of Muslims		0.250 (3.71)[a]		
Share of Hindus		0.306 (4.58)[a]		
Share of Buddhists		0.403 (3.15)[a]		
French legal origin		-0.051 (-1.11)		
German legal origin		-0.458 (-0.88)		
Scandinavian legal origin		-0.191 (-2.46)[b]		
Transition dummy		-0.196 (-3.33)[a]		
Population		-0.348 (-4.12)[a]		
Residuals from first stage regression				-0.659 (-0.69)
R^2	0.812	0.670	0.811	0.814
adj. R^2	0.794	0.516		0.790
N	45	45	45	45

Heteroskedasticity robust t-statistics are in parentheses. Letters in the upper index refer to significance: a: significance at 1 percent, b: 5 percent, c: 10 percent. T-values without an index mean that the coefficient is not significant even at the 10 percent level.

Regression results for the two components of the economic freedom measure

	1	2	3
	Dependent variable: ln(GDP)		
	OLS	OLS	2SLS
constant	4.446 (2.61)[b]	3.502 (2.44)[b]	3.418 (2.60)[a]
ln(I/GDP)	0.853 (4.23)[a]	0.914 (4.26)[a]	0.924 (4.75)[a]
ln(school)	0.588 (2.98)[a]	0.504 (2.61)[b]	0.509 (2.63)[a]
ln(n+g+δ)	-0.607 (-1.03)	-1.020 (-2.33)[b]	-1.028 (-2.54)[b]
ln(freedom-compatible)	0.799 (3.26)[a]	0.781 (3.17)[a]	0.746 (3.38)[a]
ln(freedom-non-compatible)	-0.879 (-1.24)		
R^2	0.839	0.834	0.834
adj. R^2	0.818	0.817	
N	45	45	45

Heteroskedasticity robust t-statistics are in parentheses. Letters in the upper index refer to significance: a: significance at 1 percent, b: 5 percent. T-values without an index mean that the coefficient is not significant even at the 10 percent level.

**First stage regression results for, and test for exogeneity of the
freedom-compatible measure**

	1	2
	Dependent variable:	
	ln(freedom-compatible)	ln(GDP)
	OLS first stage regression	OLS test for exogeneity
constant	-3.409 (-4.77)[c]	3.418 (2.42)[b]
ln(I/GDP)	0.0178 (0.14)	0.924 (4.40)[a]
ln(shool)	0.247 (1.93)[c]	0.509 (2.45)[b]
ln(n+g+δ)	-1.017 (-3.34)[a]	-1.028 (-2.35)[b]
ln(freedom-compatible)		0.746 (3.15)[a]
Share of Catholics	0.300 (2.83)[a]	
Share of Protestants	0.605 (1.98)[b]	
Share of Jews	0.357 (1.94)[c]	
Share of Muslims	0.564 (3.50)[a]	
Share of Hindus	0.796 (4.15)[a]	
Share of Buddhists	0.658 (2.80)[a]	
French legal origin	-0.046 (-0.39)	
German legal origin	0.004 (0.03)	
Scandinavian legal origin	-0.287 (-1.45)	
Transition dummy	-0.485 (-4.15)[a]	
Population	-0.761 (-3.58)[a]	
Residuals from first stage regression		0.076 (0.19)
R²	0.702	0.834
adj. R²	0.563	0.812
N	45	45

*Heteroskedasticity robust t-statistics are in parentheses. Letters in the upper index refer to significance: a: significance at
1 percent, b: 5 percent. T-values without an index mean that the coefficient is not significant even at the 10 percent level.*

Regression results for the freedom-non-compatible measure

	Dependent variable: ln(freedom-non-compatible)
constant	0.364 (1.87)[c]
ln(freedom-compatible)	0.084 (1.88)[b]
ln(initial income)	-0.049 (-2.28)[b]
French legal origin	-0.080 (-3.07)[a]
German legal origin	-0.112 (-3.08)[a]
Scandinavian legal origin	-0.077 (-1.97)[c]
Years for the chief executive's party is left-wing	-0.004 (-2.14)[c]
Political rights	-0.058 (-0.97)
R^2	0.514
Adj. R^2	0.422
N	45

Heteroskedasticity robust t-statistics are in parentheses. Letters in the upper index refer to significance: a: significance at 1 percent, b: 5 percent, c: 10 percent. T-values without an index mean that the coefficient is not significant even at the 10 percent level.

Figures

Figure 1

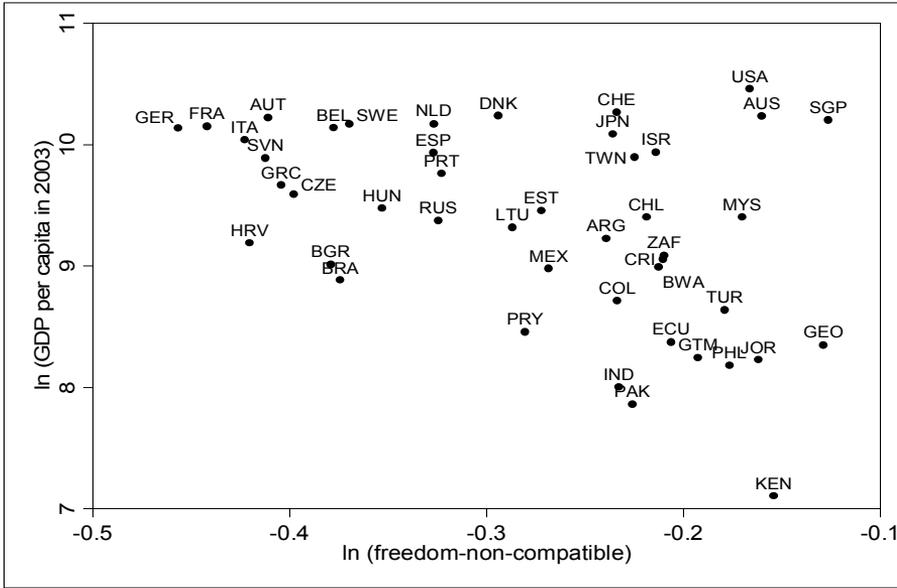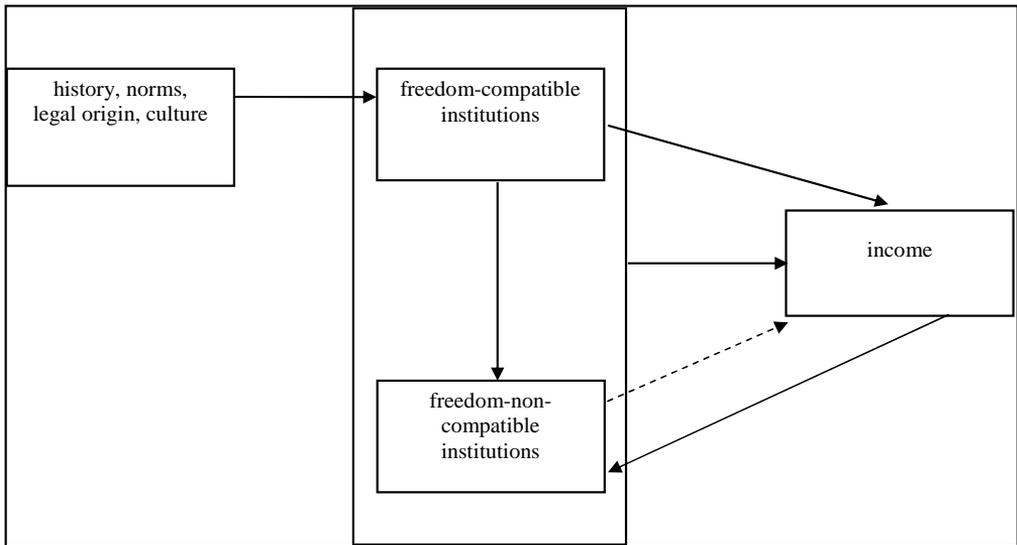**Scatterplot between log GDP per capita and the freedom-non-compatible measure**

Figure 2

The effects between economic freedom and long-run income

Appendix A

Calculation of and data used for the economic freedom measure (EFM)

Variable	Data	Sources of the data	Method of calculation
Economic Freedom Measure			average of the freedom-compatible and the freedom-non-compatible measures
1. Freedom-non- compatible measure			average of controls, state monopoly, and transfers and subsidies
1.1. Controls			average of price, quantity, and wage
1.1.1. Price			average of the rescaled values of price control and weighted average tariff rate
	price control	Kane et al. (2007)	rescaled with x_{imax}=20 x_{imin}=0
	weighted average tariff rate	Kane et al. (2007)	rescaled with x_{imax}=55.8 x_{imin}=0
1.1.2. Quantity			average of the rescaled values of the six variables in: trading across borders"
	documents for export (number)	Doing Business 2007	rescaled with x_{imax}=16 x_{imin}=2
	time for export (days)	Doing Business 2007	rescaled with x_{imax}=105 x_{imin}=3
	cost to export ($ per container)	Doing Business 2007	rescaled with x_{imax}=4300 x_{imin}=265
	documents for import (number)	Doing Business 2007	rescaled with x_{imax}=20 x_{imin}=2
	time for import (days)	Doing Business 2007	rescaled with x_{imax}=139 x_{imin}=3
	cost to import ($ per container)	Doing Business 2007	rescaled with x_{imax}=4565 x_{imin}=333
1.1.3. Wage			average of the rescaled values of the difficulty of hiring and the rigidity of hours indexes
	difficulty of hiring (index)	Doing Business 2007	rescaled with x_{imax}= 100 x_{imin}= 0
	rigidity of hours (index)	Doing Business 2007	rescaled with x_{imax}= 100 x_{imin}= 0

1.2. State monopoly			average of the rescaled values of the flowing five variables
	revenues from state owned-enterprises and government ownership of property as a percent of total government revenues	Kane et al. 2007	rescaled with $x_{imax} = 100$ $x_{imin} = 0$
	procedures needed to start a business (number)	Doing Business 2007	rescaled with $x_{imax} = 20$ $x_{imin} = 2$
	time needed to start a business (days)	Doing Business 2007	rescaled with $x_{imax} = 694$ $x_{imin} = 2$
	cost of starting a business (% of income per capita)	Doing Business 2007	rescaled with $x_{imax} = 1194.5$ $x_{imin} = 0$
	minimum capital required to start a business (% of income per capita)	Doing Business 2007	rescaled with $x_{imax} = 4233.5$ $x_{imin} = 0$
1.3. Transfers and subsides	transfers and subsidies as a share of GDP (index)	Gwartney, J., Lawson, R. (2006)	rescaled with $x_{imax} = 10$ $x_{imin} = 0$
2. Freedom-compatible measure			average of legal procedures and rule-following
2.1. Legal procedures			average of independent and trial
2.1.1. Independent	de facto independence of courts (index)	Feld, L. P., Voigt, S. (2003)	in original form
2.1.2. Trial			average of the values of the following variables
	whether complaints must be legally justified	Djankov, S., La Porta, R., Lopez-de-Silanes, F., Shleifer, A. (2003)	equals 1 if the answer is no, 0 otherwise
	whether the judgment must expressly state the legal justification for the decision	Djankov, S., La Porta, R., Lopez-de-Silanes, F., Shleifer, A. (2003)	equals 1 if the answer is yes, 0 otherwise
	whether the judgment may be motivated on general equity grounds, or if it must be founded on the law	Djankov, S., La Porta, R., Lopez-de-Silanes, F., Shleifer, A. (2003)	equals 1 if the answer is yes, 0 otherwise
	whether the judge is forbidden by the law to freely request or take evidence that has not been requested, offered, or introduced by the parties	Djankov, S., La Porta, R., Lopez-de-Silanes, F., Shleifer, A. (2003)	equals 1 if the answer is no, 0 otherwise
	whether it is forbidden by the law to admit statements of fact that were not directly known, or perceived by the witness but only heard from a third person	Djankov, S., La Porta, R., Lopez-de-Silanes, F., Shleifer, A. (2003)	equals 1 if the answer is no, 0 otherwise
	whether issues of both law and fact (evidence) can be reviewed by the appellate court	Djankov, S., La Porta, R., Lopez-de-Silanes, F., Shleifer, A. (2003)	equals 1 if the answer is no, 0 otherwise
2.2. Rule-following – Corruption	control of corruption (index)	Kaufmann, D. – Kraay, A. – Mastruzzi, M. (2007)	rescaled with $x_{imax} = 2.574$ $x_{imin} = -1.767$

Appendix B

Economic freedom, freedom-compatible and freedom-non-compatible ranks and scores
for 47 countries
Source: literature mentioned in Appendix A

EFM rank	Country	EFM score	Freedom-non-compatible score	Freedom-non-compatible rank	Freedom-compatible score	Freedom-compatible rank
1	Australia	0.7862	0.8518	4	0.7205	8
2	Switzerland	0.7840	0.7913	21	0.7767	2
3	Singapore	0.7586	0.8811	1	0.6362	15
4	Japan	0.7577	0.7897	22	0.7257	7
5	Denmark	0.7553	0.7452	28	0.7654	4
6	Austria	0.7539	0.6629	40	0.8448	1
7	Israel	0.7336	0.8073	15	0.6598	10
8	Sweden	0.7323	0.6909	34	0.7736	3
9	Georgia	0.7308	0.8790	2	0.5827	23
10	United States	0.7305	0.8466	6	0.6143	17
11	Jordan	0.7229	0.8505	5	0.5953	22
12	Taiwan, China	0.7121	0.7987	17	0.6255	16
13	South Africa	0.7100	0.8107	12	0.6094	18
14	Costa Rica	0.7058	0.8102	13	0.6013	20
15	France	0.6971	0.6427	44	0.7515	5
16	Chile	0.6922	0.8034	16	0.5810	24
17	Turkey	0.6918	0.8359	9	0.5477	26
18	Portugal	0.6887	0.7241	29	0.6533	11
19	Germany	0.6834	0.6334	46	0.7333	6
20	Estonia	0.6825	0.7617	25	0.6033	19
21	Netherlands	0.6807	0.7213	31	0.6401	14
22	Hungary	0.6761	0.7024	33	0.6498	12
23	Belgium	0.6668	0.6853	36	0.6483	13
24	India	0.6578	0.7921	19	0.5235	28
25	Kuwait	0.6550	0.6335	45	0.6764	9
26	Spain	0.6455	0.7210	32	0.5701	25
27	Colombia	0.6397	0.7915	20	0.4879	32
28	Italy	0.6272	0.6552	43	0.5993	21
29	Botswana	0.6254	0.8083	14	0.4424	35
30	Lithuania	0.6208	0.7505	27	0.4910	31
31	Mexico	0.6149	0.7645	24	0.4652	33
32	Philippines	0.6140	0.8380	8	0.3901	40
33	Malaysia	0.6102	0.8434	7	0.3771	41
34	Pakistan	0.5958	0.7978	18	0.3939	39
35	Croatia	0.5942	0.6568	42	0.5316	27

36	Argentina	0.5933	0.7871	23	0.3994	38
37	Guatemala	0.5845	0.8247	10	0.3442	43
38	Greece	0.5830	0.6674	39	0.4985	30
39	Slovenia	0.5810	0.6620	41	0.5001	29
40	Paraguay	0.5789	0.7553	26	0.4025	37
41	Brazil	0.5715	0.6876	35	0.4555	34
42	Ecuador	0.5675	0.8135	11	0.3216	44
43	Kenya	0.5588	0.8571	3	0.2605	47
44	Czech Republic	0.5415	0.6717	38	0.4114	36
45	Bulgaria	0.5203	0.6844	37	0.3562	42
46	Russia	0.4987	0.7229	30	0.2745	45
47	Venezuela	0.4390	0.6118	47	0.2661	46