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ECONOMIC FREEDOM IN TERMS OF KINDS OF GOVERNMENT ACTIONS: AN EMPIRICAL INVESTIGATION*

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This paper evaluates the Economic Freedom of the World (EFW) Index on the basis of the Hayekian concept of freedom (Hayek 1960), more precisely on that of its conceptualisation in terms of the character of government actions developed in Kapás – Czeglédi (2007a). As a result of a detailed criticism, the components of the EFW index are regrouped in freedom-related, policy and other categories. Although the EFW index is not considered a good measure of economic freedom, its components and the index itself are used in empirical investigations. In these examinations the aim is to show that using freedom-related components of the EFW index (which is more in line with authors' concept of economic freedom) instead of the index itself may lead to even more plausible propositions than those provided by the EFW index. The results provide support for this argument.

Keywords: economic freedom, government, economic policy

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1. INTRODUCTION

During the past decade the concept of economic freedom, after being for a relatively long period a subject of little interest among economists, has attracted more attention. This is due to the emergence of indexes ranking countries according to a

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scale running from the least free to the freest. Now there exist two widely accepted indices of economic freedom: the one developed by the Fraser Institute (Economic Freedom of the World Index, EFW index) and another constructed by the Heritage Foundation jointly with the Wall Street Journal (Index of Economic Freedom). These two indices are quite similar in terms of what they consider as a plus and as a minus when measuring economic freedom.[1]

Since the construction of these indices researchers have been using them quite extensively in examining the effects economic freedom has on economic performance and various measures of human welfare. So far a significant number of econometric papers have been accumulated. In another paper (Kapás – Czeglédi 2007b) we reviewed this literature and argued that this body of literature – by focusing on empirical examinations – completely neglects the discussion of what precisely is understood by economic freedom, the index of which is used so extensively. However, we think that the major problem is not that this body of the literature is not based on a coherent theory of economic freedom, but that the concept of the researchers who came up with the index (Gwartney et al. 1996; Gwartney – Lawson 2003) is formulated in such a way as to serve first of all the purpose of measuring economic freedom.

These scholars define economic freedom as follows: "Individuals have economic freedom when the following conditions exist: (1) their property acquired without use of force, fraud or theft is protected from physical invasions of others; and (2) they are free to use, exchange, or give their property to another as long as their actions do not violate the identical rights of others" (Gwartney et al. 2001: 4). Here the emphasis is on secure property rights, exclusively. However, elsewhere they broaden the concept: "The cornerstones of economic freedom are personal choice, voluntary exchange, freedom to compete, and security of privately owned property" (Gwartney – Lawson 2007: 3). However, we believe that economic freedom is a concept in its own right, and as a result it cannot be conceptualised by

[1] The Fraser's index includes five main areas, namely the extent of government intervention, the security of property rights and the rule of law, the stability of monetary system, the burdens of international trade, and the extent of regulation on different markets. By breaking down each area into several components and subcomponents, it aggregates 38 separate categories of data (Gwartney – Lawson 2006:10, see *Appendix A* for the detailed description of the index). (The reason why we do not rely on the most recent EFW index will be explained in Section 3.) The Heritage's index explicitly considers economic freedom as a composite concept encompassing various kinds of economic freedom (Kane – Holmes – O'Grady 2007). These are as follows: business freedom, trade freedom, monetary freedom, freedom from government, fiscal freedom, property rights, investment freedom, financial freedom, freedom from corruption, labor freedom.

simply adding various "good" things. Such a list can never be a theoretical concept.[2]

Accordingly, as opposed to the common criticism of the EFW index in the literature,[3] we will criticise it on conceptual grounds. Because of space limits, in this paper we will not develop an alternative means for the measurement of economic freedom; instead, by using the EFW index and its various components in our empirical investigations our aim is to highlight its weakness, and through it, to provide some first-hand evidence for our argumentation concerning how we propose to conceptualise economic freedom.

The paper is organised as follows. In Section 2 we briefly summarise our concept of economic freedom based on Hayek (1960) and our categorisation of government actions, which gives us some guidance about which government actions violate economic freedom and which do not. In Section 3 we evaluate the EFW index from the viewpoint of our understanding of economic freedom. In Section 4 we present some empirical findings. Section 5 concludes.

2. THE CONCEPT OF ECONOMIC FREEDOM AND GOVERNMENT ACTIONS

Our concept of economic freedom developed elsewhere (Kapás – Czeglédi 2007a) is based on Hayek (1960). The initial view is that since state is inevitable (Holcombe 2004; Benson 1999; Olson 1993, 2000),[4] economic freedom should be interpreted under the existence of a state (government). Bearing in mind that state has a monopoly over coercion and accordingly remains the primary threat to freedom, the crucial concept for making sense of freedom is coercion.

Clearly, freedom does not mean a total absence of coercion but the question is what kind of coercion is to be tolerated. History shows that institutionalised coercion by private (non-governmental) parties is almost never tolerated, but governmental coercion is tolerable (Klein 2007). Why are infringements of property and

2 Of course, when trying to measure economic freedom, we may draw up a list of its constituting parts as a proxy for measurement. But proxies are different from concepts.

3 The most common critiques refer to the weighting system the indexes use, what items should be included and how various policy issues should be handled (e.g., Macleod 2005; Karlsson 2005). While our concept of economic freedom, which we will explore below, by its nature excludes some of these problems, we have to admit that the weighting problem still remains. The reason why we will not deal with that is the fact that this is a second order problem. That is, it emerges only after the establishment of a conceptually well founded measure of economic freedom. Here we do not want to confuse these two separate problems.

4 For a critique see Leeson – Stringham (2005).

liberty rights by the government tolerated? The answer is that coercive power of the state is useful when it protects citizens' lives and property from outside (private) coercion.[5] However, not all means are appropriate to assure the greatest possible freedom: the only acceptable means is enforcing known rules:[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).

The major question is in what field(s) government monopoly over coercion is allowed and what kinds of governmental actions do not violate (economic) freedom. This implies that economic freedom relates to the character, rather than the size of government actions, which relates to the issue of efficiency, and these two do not necessarily overlap. This implies that, as opposed to what is suggested in a large part of the literature, the concept of "limited government" should not refer to the size of the government *per se,* but rather, to in what fields the state exercises its coercive power.[7]

Thus we proposed elsewhere (Kapás – Czeglédi 2007a) to conceptualise economic freedom in terms of the character of government actions. We distinguished, on the one hand, between coercive and non-coercive governmental actions, and on the other hand, between two kinds of coercive activities, those that are compatible with economic freedom (freedom-compatible coercive activities) and those that are not (freedom-non-compatible coercive activities). Based on the above written, it is clear that only coercive activities concern economic freedom.

Non-coercive government activities, referred to as services by Hayek (1960, 1973) by definition, do not concern economic freedom while they influence the size of the government. These include on the one hand those government actions that by providing the means for a better execution of individuals' plans, are necessary for a favourable institutional framework for individuals' free acts (e.g., various official governmental statistics and information, monetary system), and on the other hand, there are those where the government is only one of the (many)

5 As Hayek (1960) argued, 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, i.e., the only way to prevent one coercion is by the threat of another one.

6 Friedman (1962:15) also supports this view: "…government is essential both as a forum for determining the 'rules of the game' and as an umpire to interpret and enforce the rules decided upon".

7 It is worth noting that this serious confusion of two economic criteria, namely economic freedom and efficiency in the literature (among others Carlsson – Lundström 2002; Dawson 1998, 2003; De Haan – Siermann 1998; De Haan – Sturm 2000; Grubel 1998; Gwartney et al. 2004, 2006; Scully 2002, for an overview of the literature see Doucouliagos – Ulubasoglu 2006) is the result of a lack of a coherent understanding of the way economic freedom affects growth.

providers of goods and services. Of course, nothing guarantees that the government provides these services in an efficient way, but as mentioned above, arguing against the government on the grounds of efficiency which is a criterion in its own right, is different from arguing against it on the grounds of economic freedom.

As regards the coercive activities of a state we propose to differentiate between freedom-compatible and freedom-non-compatible coercive activities. The former being predictable are compatible with the functioning of the market because they allow individuals to make plans and realise them on the market. The essential thing is that these government activities can be accounted for. These include, on the one hand, those activities that are necessary implications of monopoly over-coercion (enforcement of contracts and property rights, national security, etc.), and on the other hand, those that encompass general rules and regulations laid down beforehand conforming to the rule of law (e.g., laws, work safety and health regulation, etc.).

Freedom-non-compatible government actions include three kinds of actions. The first is 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 other. So do, besides these regulations, all kinds of government monopolies for those goods and services which could be otherwise provided on a competitive basis. 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.

On the basis of the above categorisation of governmental actions, 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.

3. A CRITIQUE OF THE EFW INDEX

In what follows, in the context of the above framework for an understanding of government actions, we summarize the most important critiques we level against the EFW index. This index is not in harmony with our concept of economic freedom; rather, it embodies a contradiction between our theoretical notion and what is measured.

First of all, it is not obvious if mixing economic policy variables with stabler institutional variables, as the index does, make sense at all. When looking at this

problem from the perspective of growth regressions, we can come to the conclusion that there are several problems with such a method.[8] Confusion of economic policy variables with institutional variables can also be a problem, but our point is not concerned with empirics, but with the conceptual framework of economic freedom we developed. Based on this we can conclude that the EFW index is more specific than needed to measure economic freedom, because it tries to measure the content of rules and economic policy and not just whether the government follows general rules when acting as an economic player.

It may be true that following rules lead to 'better' policies, but it is questionable whether the government follows the rules, and the policies it applies are 'good'. In addition, a government that does not abide by rules in general can also follow 'good' policies. Accordingly, one should separate the content of economic policy from the way this economic policy is put into practice. While economic policy may (and probably should) be questioned on the grounds of efficiency (fairness or justice), in many cases it cannot in itself be questioned on the grounds of economic freedom. To evaluate it according to the criterion of economic freedom, one must have information about the way the government realises economic policy: one has to ask whether these policies are subject to general abstract rules laid down beforehand. By this argument we are not proposing that the content of economic policy is not important; on the contrary, it is extremely important, but from the perspective of economic efficiency. These two things, efficiency and economic freedom, are confused in the majority of cases in the literature on economic freedom.

We do not assert that the EFW index is completely futile, for at least two reasons: (1) besides economic freedom one still may be interested in measuring any specific content of economic policy and (2) not all components of the index are contradictory to the notion of economic freedom. In what follows we show that by the help of the EFW index it can be decided which or what kinds of policies are 'good' for economic growth, rather than whether the country is economically free or not.

To provide evidence for this assertion, in *Table 1* we categorise the variables of the EFW index according to whether they measure economic freedom in the sense we developed it (Kapás – Czeglédi 2007a). For this, we determined for each particular component whether it represents (1) freedom-compatible coercive activities; or (2) freedom-non-compatible coercive activities; or (3) it is not possible to

8 First, it does not provide answers for some of the most important normative and positive questions (Rodrik 2005). Second, good policies and good institutions move together across countries, which leads some researchers to say that economic policies do not have any effect on growth beyond institutions, or the institutions define the economic policy that is followed in the long run.

decide between (1) and (2); or (4) it refers to economic policy. For this categorisation we used our schema for the categorisation of government actions we sketched out in the previous section.[9]

The first group of components consists of those that embody coercive government actions and consequently do concern economic freedom ('freedom-related components'). Amongst them we can find components that refer to freedom-compatible coercive actions. These are the listed components of Area 2 which measure the quality of the rule of law. The remaining components belong to freedom-non-compatible coercive activities and accordingly reduce economic freedom. These are controls (3.D., 4.B., 4.D, 4.E., 5.C.) or transfers and subsidies (1.B.).

In the second column there are those components of the index that capture only the result of certain governmental or regulatory activities without referring to the way they are executed. Consequently, they cannot be measures of economic freedom without further qualification. In what follows we refer to these as 'other components'.

Certain measures of the size of government fall into this category, such as the scope of public property. As far as government enterprises are concerned (1.C.), the question of public versus private ownership is of great importance for efficiency, but to know whether it has something to do with economic freedom, we would need more information about the way public ownership is formed. As we explained above, we would have to know whether these state owned enterprises are monopolies or not.

The other four components (4.A., 4.C., 5.A., 5.B.) in this column are those which have at least one such subcomponent that cannot be used to measure the reduction in economic freedom. For instance credit market regulations (5.A.) cannot be clearly categorised in the first (freedom-related) column because some of its subcomponents (ownership of banks, extension of credit) refer to the size of the private sector in banking which is important, but does not necessarily relate to

9 In our analysis we rely on the EFW index of Gwartney – Lawson (2006), and not the most recent one (Gwartney – Lawson 2007). The reason for this is that the GDP data needed for the regressional analysis is not available for the years after 2003, and the new EFW index is not calculated back to years before 2004. However, using the old index does not attenuate our main propositions which we develop in the next section. On the contrary, we think if our propositions hold with the old index they hold to an even greater extent with the new index because the new index contains the same policy components as the old one, and among the freedom-related components we find two additional subcomponents in area 2 and three additional subcomponents in 5.C. The remaining modifications in the index do not change our categorisation of the components. So, in all likelihood, the components referring to the rule of law have a greater weight, as do business regulation (5.C.), an approach which is more in line with what we argue.

Table 1

Components of the EFW index according to their relevance to economic freedom[10]

Components concerning economic freedom 'Freedom-related components'	Components not necessarily concerning economic freedom 'Other components'	Components concerning economic policy 'Policy components'
1. B. Transfers and subsidies as a percentage of GDP	1. C. Government enterprises and investment as a share of total investment	1. A. General government consumption spending as a percentage of total consumption
2. A. Judicial independence: the judiciary is independent and not subject to interference by the government or parties in disputes	4. A. Taxes on international trade	1. D. Top marginal tax rate (and income threshold at which it applies)
2. B. Impartial courts: a trusted legal framework exists for private businesses to challenge the legality of government actions or regulations	4. C. Actual size of trade sector compared to expected size	3. A. Average annual growth of the money supply in the last five years minus average annual growth of real GDP in the last ten years
2. C. Protection of intellectual property	5. A. Credit market regulations	3. B. Standard inflation variability during the last five years
2. D. Military interference in the rule of law and the political process	5. B. Labour market regulations	3. C. Recent inflation rate
2. E. Integrity of the legal system		
3. D. Freedom to own foreign currency bank accounts domestically and abroad		
4. B. Regulatory trade barriers		
4. D. Difference between official exchange rate and black-market rate		
4. E. International capital market controls		
5. C. Business regulations		

economic freedom (see above), while other subcomponents which evaluate credit and interest rate controls refer to a reduction of freedom.

In the third column we listed those components which do not measure economic freedom; rather the content of policy and whether the government follows

[10] For the details in labelling and classifying see *Appendix A*.

'good' policies ('policy components'). The level of government spending (1.A.), and taxes (1.D.) are such kinds of measures. Government spending in itself does not affect economic freedom, because it does not exclusively concern coercive activities, although it has an effect on efficiency.

As regards taxes, what one should avoid is to count some components twice when measuring economic freedom. As far as freedom-compatible coercive and non-coercive activities are concerned, it is erroneous to regard the taxes financing these actions as violating economic freedom. As far as the freedom-non-compatible government actions are concerned, these reduce economic freedom *per se,* consequently taking into account taxes too is a duplication. Put differently, asking how much tax revenue the government needs in order to finance the freedom-compatible coercive and non-coercive activities is a matter of efficiency, not of economic freedom. Conclusively, the EFW index cannot solve the problem of duplication by taking into account both taxes and those components (e.g., various controls) that reduce economic freedom.

The last three components in this column focus on monetary policy (3.A., 3.B., 3.C.). There is no question that bad monetary policy and inflation can cause great social efficiency losses, but, again, reducing efficiency is not reducing freedom. These measures do not show whether monetary policy is conducted on the basis of certain rules. Even the growth of money supply does not tell us whether its slow growth was the result of a rule or just an accidental event of an arbitrary monetary policy.

In sum, the mere fact that a particular country follows a different economic policy compared to another country does not imply that the two countries differ in terms of economic freedom, even if the economic policy of one country may be 'better' (more efficient).

As shown above there are several problems with the EFW index: policy variables are mixed with institutional variables, numerous components do not necessarily refer to economic freedom, there is a duplication, etc. Despite these shortcomings, here we do not intend to propose an alternative measure, but as a step in this direction, we only intend to show that using the freedom-related components of the EFW index instead of the index itself may lead to even more plausible results than those provided by the index.

4. EMPIRICAL ANALYSIS: THE EFFECT OF FREEDOM-RELATED AND POLICY MEASURES ON INCOME IN A CROSS-SECTION OF COUNTRIES

Although above we argued against the EFW index, saying that it should not be considered a good measure of economic freedom, here we will use this index

and/or its various components in our empirical investigations. By doing so, our aim is to highlight its weaknesses and to provide some first-hand evidence for our argumentation concerning how we propose to conceptualise economic freedom. Our hypothesis is that the freedom-related components of the EFW index could be regarded as rough measures for economic freedom, probably better, or at least not worse, than the original index itself. This also means that although we have levelled several critiques against the index, we do not think that it is completely futile. We do think, however, that the index is confusing different concepts. The reasons why we use the index and its components in our empirical investigations are as follows. First, we have to compare our results with those based on the original aggregate index, and second, some components of the original index are able to capture some aspects of economic freedom.

In our empirical investigations we follow the empirical literature on economic freedom, in the sense that we examine the effect of economic freedom on income, which is the core question in the literature on economic freedom (for instance Easton – Walker 1997). More precisely we investigate whether the different categories[11] of the EFW index have different effects on economic growth or income. Clearly, this kind of empirical analysis is not directly about what economic freedom means; such an empirical investigation is impossible. However, based on our results we are able to provide an answer to the question of why economic freedom affects income, which is somewhat disputed in the empirical literature on economic freedom (Kapás – Czeglédi 2007b). More precisely, we will be able to point to an alternative 'channel' through which economic freedom affects income, one which is not identified in the literature. And as we argued elsewhere (Kapás – Czeglédi 2007a), an explanation how economic freedom affects growth is an issue that is part of the theory of economic freedom.

4.1. The model of Mankiw – Romer – Weil (1992)

We use the Mankiw – Romer – Weil (1992) specification to examine how the freedom-related and policy components of the EFW index affect growth, as compared to the EFW index itself. Mankiw – Romer – Weil (1992) estimates a human capital augmented Solow-model, in which human capital is treated very similarly to physical capital.[12] Thus the production function becomes

[11] We dropped the 'others' category because this measure cannot give us enough information about whether the actions they measure concern freedom.

[12] This method is frequently used in the economic growth literature, and in the literature on economic freedom and growth as well. See e.g., Heitger (2004); Easton – Walker (1997).

$$Y = F(K, H, AL) = K^{\alpha} H^{\beta} (AL)^{1-\alpha-\beta}, \text{ where } \alpha + \beta < 1. \quad (1)$$

In the equation Y means real GDP, K is physical capital, H is human capital and AL is effective labour.

Assuming that human capital is accumulated in a similar way to physical capital and making some algebraic manipulation with the model we arrive at the following final testable equation for the steady state per capita income:

$$\ln\left(\frac{Y}{L}\right) = \ln(A_0) + gt + \frac{\alpha}{1-\alpha-\beta}\ln(s_k) + \frac{\beta}{1-\alpha-\beta}\ln(s_h) - \\ -\frac{\alpha+\beta}{1-\alpha-\beta}\ln(n+g+\delta) \quad (2)$$

where s_k and s_h are the rates of savings (investment) in physical and human capital respectively, and $A_t = A_0 e^{gt}$ is the level of labour-augmenting technology.

In a particular year the first two terms on the right hand side are constant (e.g., $t = 0$) and, as Mankiw – Romer – Weil did, we also suppose that the constant is subject to country specific shocks. This assumption, together with the one claiming that savings in human and physical capital are independent of these shocks, makes it possible to estimate the above equation with ordinary least squares.[13]

4.2. Data and sample

As follows from the above equation we need data for GDP per capita, investment in physical and human capital, and population growth. Our source for GDP per capita, investment and population is the Penn World Table of Heston – Summers – Aten (2006). Although the database covers the years from 1950 until 2004, GDP data for a large number of countries is not available for 2004. Thus, we use the GDP data for 2003 and the real GDP data based on purchasing power parity and a chain link method. We measure population growth as the (geometrical) average growth rate of the whole population between 1980 and 2003. Data on investment as a share of GDP comes from Heston – Summers – Aten (2006) as well, and represents the average rate between 1980 and 2003.

[13] Note that there is an alternative specification to the equation (2) which includes the level of human capital instead of its investment rate (Mankiw – Romer – Weil 1992: 418). Our results, for two reasons, do not depend on which specification we use. First, we do not intend to test the validity of the "neoclassical" model; we do not apply parameter restrictions. Second, the literature is unclear as to whether the usual educational variables should be used as a proxy for the level of human capital or the investment in it (see footnote 15).

Our source of data on human capital investment is the database on different schooling measures of Barro – Lee (2001).[14] This database provides educational data for 5-year intervals between 1960 and 2000. In our regressions investment in human capital is proxied by the average years of secondary schooling between 1980 and 2000 in the whole population over the age of fifteen.[15]

1980 is the initial year, because EFW index data is very scarce for the years before. In what follows we examine the effect of our freedom-related and policy measures on income by adding these measures to the Mankiw – Romer – Weil (1992) equation described above following the work of Easton and Walker (1997). Since we disaggregate the aggregate EFW (chain-linked) index, we have to face more data limitations.

In the sample those countries are included which have data for our freedom-related and policy variables constructed in the way described in *Appendix B*. The availability of human capital data places some more limitations on the database and in some cases so does the availability of GDP data. Eventually we arrived at a sample of 84 countries.[16]

4.3. Results for the freedom-related and policy measures

In our first regressional analysis we want to show that our freedom-related measure has a positive relationship with income and we would like to compare its effect with that of the policy variable. To reach this goal we run regressions for three

[14] Available at http://www.cid.harvard.edu/ciddata/ciddata.html.

[15] In using secondary education as a proxy for human capital formation we follow the tradition of the literature inspired by Mankiw – Romer – Weil (1992), and Barro (1991). The papers using the method outlined in the text (such as Heitger 2004, or Easton – Walker 1997) also use secondary education for this purpose. It is clear, however, that there are serious concerns about using average years of different kinds of formal education as proxies for human capital investment as elaborated by Dinopoulus – Thompson (1999). On the other hand, Földvári – Leeuwen (2008) argue that average years of education is a proxy of the growth rate of the human capital stock, rather than that of the stock itself. For reasons mentioned in footnote 13 this debate does not have much to do with our conclusions. In addition, we ran the same regressions as those in the text by using primary and higher education, and average years of education in the total population, and the results are very similar to those that we achieved with the secondary school variable.

[16] Because of the lack of GDP data we had to drop Haiti and Myanmar. As usual in growth regressions, oil exporting countries (Bahrain, Iran, Kuwait and Venezuela) are excluded. In the case of the Republic of Congo, there are only four observations of the schooling variable, and so we took the mean of these four (as opposed to the five observations with the other countries).

equations: (1) for the original Mankiw – Romer – Weil (1992) equation, (2) for the equation with the EFW index and (3) for an equation in which we substitute the EFW index with our freedom-related and policy measures. Thus, the three equations to estimate are:

$$\ln(GDP)_i = \text{const} + \alpha_1 \ln(I/GDP)_i + \alpha_2 \ln(SCHOOL)_i + \\ + \alpha_3 \ln(n_i + g + \delta) + u_i, \tag{3}$$

$$\ln(GDP)_i = \text{const} + \pi_1 \ln(I/GDP)_i + \pi_2 \ln(SCHOOL)_i + \pi_3 \ln(n_i + g + \delta) + \\ + \pi_4 \ln(EFW)_i + v_i, \tag{4}$$

$$\ln(GDP)_i = \text{const} + \gamma_1 \ln(I/GDP)_i + \gamma_2 \ln(SCHOOL)_i + \gamma_3 \ln(n_i + g + \delta) + \\ + \gamma_4 \ln(FR)_i + \gamma_5 \ln(Pol)_i + e_i. \tag{5}$$

The variables refer to those defined above: *I/GDP* is the proportion of investment within GDP, *SCHOOL* is the average years of schooling, *n* is the average growth of population, *EFW* is the original (chain-linked) EFW index, while *FR* is the measure of freedom-related activities and *Pol* is our policy variable, while u_i, v_i, and e_i are the error terms. In addition, $g + \delta$ is assumed to be 0.05 as in Mankiw – Romer – Weil (1992).

The results for these equations are presented for our sample of 84 countries in *Table 2*. These, on one hand, reaffirm the results of various papers (e.g., Heitger 2004), and on the other hand, they add some additional insights. They reaffirm that investment in both kinds of capital and population growth is significant and that the former two coefficients range somewhere between 0.5 and 1 in the original Mankiw – Romer – Weil – equation, while that of the population growth plus the rate of technological change and amortisation is well above one (with a negative sign). As compared to Heitger's result our coefficient (see *Table 2*) is even larger (above two), which may be attributable to the fact that we use the growth rate of the overall population instead of that of the working age population.

As regards our results one interesting thing is that the coefficient of the EFW index ln(*EFW*), in column 2) is much higher than for example in Easton – Walker's (1997), whose estimation is less than one (0.61, Easton – Walker 1997: 331). Our result implies that a country that has a one percent higher EFW index than another one which has otherwise the same characteristics concerning investment in human and physical capital and population growth, will have about 1.67 percent higher per capita GDP. However, this estimation does not seem to be ex-

Table 2

Results for equations (3), (4) and (5)

	1.	2.	3.	4.	5.	6.
Constant	0.183	–1.208	0.357	0.076	0.219	0.022
	(0.13)	(–0.95)	(0.25)	(0.06)	(0.16)	(0.02)
ln(*I/GDP*)	0.526	0.312	0.365	0.372	0.529	0.368
	(3.12)[a]	(1.90)[c]	(2.35)[b]	(2.40)[b]	(3.09)[a]	(2.46)[b]
ln(*SCHOOL*)	0.639	0.525	0.495	0.492	0.638	0.493
	(6.71)[a]	(6.27)[a]	(5.45)[a]	(5.50)[a]	(6.63)[a]	(5.59)[a]
ln($n + g + \delta$)	–2.595	–2.268	–2.247	–2.280	–2.596	–2.278
	(–4.70)[a]	(–5.00)[a]	(–4.77)[a]	(–4.86)[a]	(–4.65)[a]	(–4.91)[a]
ln(*EFW*)		1.666				
		(3.53)[a]				
ln(*FR*)			0.906	0.913		0.913
			(4.18)[a]	(4.30)[a]		(4.34)[a]
ln(*Pol*)			–0.107	–0.039	–0.026	
			(–0.33)	(–0.16)	(–0.10)	
SD(*Pol*)			–0.035			
			(–0.37)			
R^2	0.816	0.851	0.861	0.860	0.816	0.860
adj. R^2	0.810	0.844	0.850	0.851	0.807	0.853
AIC[17]	127.468	111.589	110.344	108.465	129.456	106.503
N	84	84	84	84	84	84

Notes: 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.

aggerated when compared with the results of Gwartney – Lawson (2004: 42).[18] Thus, this difference may be due to the difference in the sample and the time span.

The estimation of equation (5) (columns 3–6) gives some new results in addition to the previous ones. Our results with the freedom-related measure turned out to be significant with the expected sign. In addition, the coefficients of the two investment variables become smaller, which means that economic freedom has a direct and indirect effect as well, and the latter works through capital accumulation (and this indirect effect makes the coefficients smaller in columns 2, 3, 4 and 6 as opposed to those in column 1). We can conclude that the equation in column 6 is

17 Akaike Information Criterion. Note that this criterion cannot be used to compare the specification of column 2 with those of columns 3–6, because the variable ln(*EFW*) includes the variables ln(*FR*) and ln(*Pol)*.

18 They apply a different specification, where the index is included in square. For example in the case of Spain their results would imply that a one percent change in the EFW leads to a more than two percent change in GDP per capita.

the most appropriate specification of the four (columns 3–6).[19] From a theoretical standpoint this means that the Mankiw – Romer – Weil model augmented with our freedom-related measure provides the best explanation for the end-of-period income among the six models.

Another striking feature of the results *(Table 2)* is that the coefficient on the EFW index is not lower than that of our freedom-related measure. Thus, holding all the other variables constant, the direct effect of institutions and policies incorporated in the EFW index is greater than that of the freedom-related measure. However, since the other coefficients have changed as well, this refers only to the direct effect. At first glance this may seem to be surprising since we have been arguing for the importance of freedom-related institutions, but this result does not contradict it. First, our argument was about what we mean by economic freedom, not about the effect of economic freedom on growth. Second, this result does not indicate the unimportance of freedom-related institutions. Instead, it shows that there are other components within the EFW index which move together with income.

However, these latter components are not those which we associated with policy as shown in column 3–5. The policy variable is insignificant and it does not seem to have an indirect effect either because the coefficients of the other variables do not change after adding the policy variable. Surprisingly, these results do not change substantially when including a measure for the variability of economic policy (*Table 2,* column 3): in this case, both the policy measure and its standard deviation expressing the volatility of economic policy are insignificant, although the latter has the "expected" sign. This is, we think, attributable to the fact that our policy variable, as well as its standard deviation, masks systematic relationships behind the data: a country with a steadily rising score for economic policy can have the same standard deviation as a country with a drastically oscillating one.

Having said that, it seems to be straightforward to investigate whether separating policy variables into fiscal and monetary policy let us draw some more telling conclusions about the effect of economic policy. However *Table 3,* which shows the result for an equation which is the same as equation (5) with the exception that we replaced the policy variable with its two subcomponents (fiscal and monetary policy), does not tell us more than the results in *Table 2* do. Column 1 in *Table 3* is the same as column 6 in *Table 2* and then we add the two policy variables in columns 2–4. As is clear, neither of them is significant statistically, irrespective of whether they are added separately or together. What is more, fiscal policy has the

[19] This conclusion is confirmed formally by looking at adjusted R^2 and the Akaike Information Criterion (AIC).

"wrong" sign showing that richer countries have a lower score for fiscal policy; however this relationship is insignificant (the p-value of the fiscal policy variable in column 4 is 0.459).

Table 3

Results for the equations with policy subcategories

	1.	2.	3.	4.
Constant	0.022	0.443	–0.003	0.409
	(0.02)	(0.33)	(–0.00)	(0.30)
ln(*I/GDP*)	0.368	0.373	0.360	0.365
	(2.46)[b]	(2.50)[b]	(2.38)[b]	(2.41)[b]
ln(*SCHOOL*)	0.493	0.485	0.492	0.485
	(5.59)[a]	(5.43)[a]	(5.58)[a]	(5.42)[a]
ln($n + g + \delta$)	–2.278	–2.190	–2.261	–2.177
	(–4.91)[a]	(–4.44)[a]	(–4.76)[a]	(–4.35)[a]
ln(*FR*)	0.913	0.896	0.910	0.894
	(4.34)[a]	(4.15)[a]	(4.33)[a]	(4.15)[a]
ln(*fiscal*)		–0.105		–0.102
		(–0.79)		(–0.74)
ln(*mon*)			0.051	0.0453
			(0.37)	(0.34)
R^2	0.860	0.861	0.861	0.862
adj. R^2	0.853	0.852	0.852	0.851
AIC	106.503	107.903	108.335	109.770
N	84	84	84	84

Notes: 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.

The insignificance of the policy variable may, at first glance, seem to be puzzling even within our framework. While we argue that the content of economic policy does not affect economic freedom, it may matter from the viewpoint of economic efficiency and through efficiency it could affect income. However, we think the mechanism through which policy may influence income is not so simple: economic policy affects income only when various institutional arrangements are also in place and support the policy. If so, this underpins our argument that, primarily, freedom-related institutions have an impact on income and policy alone does not. This conclusion is to some extent in line with the one drawn by Easterly – Levine (2003) who find that macroeconomic policy variables (such as inflation, real exchange overvaluation, and openness) do not affect growth if we take into account the effect of institutions (including the rule of law and the regulatory burden).

However, the conclusion about the effect of economic policy does not mean that the actions of governments do not affect economic growth, for at least two reasons. First, our definition of what belongs to the area of economic policy is constrained by the economic freedom index, that is, the index itself does not necessarily contain all elements of economic policy. Thus our economic policy category may not include every aspect of what is usually deemed to be a "country's economic policy". Second, because freedom-related institutions reflect the character of the long term behaviour of governments and even if they are rooted in history, governments can easily destroy them. As a result even the finding that the policy variable is also not significant when both freedom-related and policy components are included in the regression – meaning that a country with the same freedom-related institutions but applying better policy will not have higher income – does not undermine our argument. Instead, this may also point to the fact that only those 'good' policies affect income which are accompanied by 'good' freedom-related institutions.

4.4. The exogeneity of economic freedom

A usual problem in growth econometrics is the possible endogeneity of the variable in question, which makes the estimation of the variable inconsistent. In what follows we examine the endogeneity of the freedom-related variable. Technically, this means that the residuals from the equation of column 6 in *Table 2* correlate with the freedom-related measure. What this means intuitively is that it is not only true that the freedom-related institutions increase income, but it may also be true that higher income leads to an improvement in freedom-related institutions. Another possible explanation for the endogeneity is that there is a third factor (in addition to GDP and freedom-related institutions) that explains the evolution of both.

The usual way to handle the problem of endogeneity is to use instrumental variables or a two-stage regression. The basic idea is to find so called "instruments" that correlate (partially) with the endogenous variable, but do not correlate with the residuals from the structural (second stage) equation. Thus, a good instrument is a variable that does not explain the dependent variable directly, only indirectly through the potential endogenous variable.

A crucial task here is thus to select a good instrument. 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.

Our view is that one has to provide theoretical reasons that support both crucial assumptions of the two-stage least squares model. That is, we need instruments, which the concept of economic freedom we presented before, do not directly explain income, but only through their contribution to economic freedom.

Appropriate instruments can possibly be found among those variables that affected the evolution of law. The reason behind is that the most important constituent part of economic freedom is the rule of law[20] which is rooted in the history of a country to a large extent. The rule of law is a concept which has evolved in the common law tradition and has a different connotation or means at least "less" in the civil law tradition. How this difference arose is brilliantly shown by Glaeser – Shleifer (2002). They argue that the historical design of legal systems in France and England as far back as the 12th and 13th centuries has had long-lasting effects on how these two legal systems operate. Both France and England opted for different levels of control that the sovereign exercised over judges, and these historical choices account for many distinctive features of the legal systems we observe today.[21] The historically different paths of both countries led to different degrees in the stability and generality of the law, i.e., different commitment to the rule of law.

Based on the above, it seems obvious to use the legal origin of a country as an instrument (which may be English, French, Scandinavian, German or socialist). In 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 characterise the de facto behaviour of the players; and the rule of law is a *de facto* category.

20 The rule of law embodies the principles of certainty, generality and equality of the law (Hayek 1960). The implication is that governmental actions are bound to rules laid down beforehand.

21 The important thing is that both countries opted for a system that was more efficient for each country at the time. As the English king commanded greater power over his subjects than the French king did, it was more efficient in England to leave the adjudication of disputes to well-informed local decision makers, such as juries, than to delegate it to less well-informed and possibly biased state-employed judges who were more insulated from bullying as in France. Put differently, France chose to rely on state-employed judges precisely because local feudal lords were too powerful: there was no possibility of effective local justice where these lords' interests were involved. England, in contrast, had weaker local lords, and its courts of justice were less vulnerable to subversion. As a consequence, it could afford the luxury of entrusting adjudication to local courts.

Thus, our first stage equation consists of variables of legal origin from the *Doing Business in 2004* and of religious adherence from Robert Barro's dataset.[22] Of these 15 possible instruments[23] we found five significant (at the 5 percent level): English legal origin dummy, French legal origin dummy, the share of Catholics, share of Protestants, and the share of other Eastern religions. *Table 4* shows the results for the simple OLS estimation of the structural equation (column 1), for the first stage equation (column 2), and for the 2SLS estimation (column 3).

Table 4

Results for the 2SLS estimation

	1	2	3
		Dependent variable:	
	ln(GDP)	ln(FR)	ln(GDP)
	OLS	OLS	2SLS
Constant	0.022	–0.063	–0.046
	(0.02)	(–0.10)	(–0.04)
ln(*I/GDP*)	0.368	0.142	0.301
	(2.46)b	(1.71)[c]	(1.97)[b]
ln(*SCHOOL*)	0.493	0.120	0.431
	(5.59)[a]	(2.00)[b]	(3.98)[a]
ln($n + g + \delta$)	–2.278	–0.322	–2.144
	(–4.91)[a]	(–1.31)	(–4.79)[a]
ln(*FR*)	0.913		1.299
	(4.34)[a]		(3.48)[a]
English legal origin		0.192	
		(2.13)b	
French legal origin		0.263	
		(2.18)[b]	
Share of Catholics		0.232	
		(2.39)[b]	
Share of Protestants		0.645	
		(4.51)[a]	
Share of other eastern religion		0.984	
		(3.78)[a]	
R^2	0.860	0.584	0.852
adj. R^2	0.853	0.540	0.844
N	84	84	84
Hausman specification test		χ^2 (4) = 1.32 p = 0.859	

Notes: 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.

22 http://www.economics.harvard.edu/faculty/barro/data.html. For a brief discussion of these data, and an example for their use see McClearly – Barro (2006).

23 English, French, Scandinavian, German and socialist legal origin, share of Catholic, Protestant, Orthodox adherents, share of Jews, Muslims, Buddhists (including Shinto for

The formal (Hansen J-) test of our instruments cannot reject what we have established theoretically, namely that the instruments are orthogonal to residuals from the equation of column 3.[24] Comparing the coefficients of column 1 and column 3 would suggest that the coefficients did not change a lot which is confirmed by the formal test. According to the Hausman specification test, the null of exogeneity cannot be rejected at the usual significance level *(Table 4)*. This means that in our regression there is no sign of the fact that higher income leads to greater economic freedom, that is, the freedom-related measure is exogenous in the economic freedom – income relationship.

5. CONCLUSIONS

The major tension between our concept and the way the EFW index measures economic freedom can be found in the fact that numerous components of the index are policy variables which, in our view, do not concern economic freedom.

Although we do not consider the EFW index a good measure of economic freedom, we did some empirical investigation with this index and its components. In these examinations we only wanted to show that using the freedom-related components of the EFW index (which is more in line with our concept of economic freedom) instead of the index itself may lead to even more plausible propositions than those provided by the index. The results provide support for our argumentation.

First of all we have found a positive significant relationship between our freedom-related measure and income while such a relationship was not found between policy components and income. Furthermore, we have shown that the freedom-related institutions are exogenous in the economic freedom – income relationship, which means that even if freedom-related institutions are not the only ones that can raise the income of a country, the higher income in itself will not improve the freedom-related institutions.

The former findings lead us to the following conclusions. If the original EFW index is in a positive significant relationship with income while policy components are not this may mean two things: (1) economic policy affects income only when appropriate (in our interpretation freedom-related) institutions are already in place, (2) freedom-related institutions even alone are capable of positively af-

Japan), Hindus, other Eastern religions, other Christians, and other religions in the population of believers.

24 The test statistics is χ^2 (4) = 1.337 with a p-value of 0.855, thus the null of orthogonality cannot be rejected.

fecting income. This latter implies that as regards the channels through which economic freedom affects income not only those operate that were identified in the literature, namely those working through efficiency: freedom-related components are in themselves beneficial because they alone can induce income. What our empirical results point to is precisely the fact that there exist mechanisms other than those identified in the literature[25] through which economic freedom (freedom-related institutions) may affect income. However, revealing this mechanism requires further theoretical and empirical investigations.

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[25] Various channels, such as investment in human and physical capital, property rights, changes in inequality, social capital, and trust have been identified by different scholars. See Kapás – Czeglédi (2007b) for details.

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APPENDIX A

THE COMPONENTS OF THE ECONOMIC FREEDOM OF THE WORLD INDEX

(Gwartney – Lawson 2006)

Area 1: Size of government: expenditures, taxes, and enterprises

1. A. General government consumption spending as a percentage of total consumption
1. B. Transfers and subsidies as a percentage of GDP
1. C. Government enterprises and investment as a share of total investment
1. D. Top marginal tax rate (and income threshold at which it applies)
   i. Top marginal income tax rate (and income threshold at which it applies)
   ii. Top marginal income and payroll tax rate (and income threshold at which the top marginal income tax rate applies)

Area 2: Legal structure and security of property rights

2. A. Judicial independence: the judiciary is independent and not subject to interference by the government or parties in disputes
2. B. Impartial courts: a trusted legal framework exists for private businesses to challenge the legality of government actions or regulations
2. C. Protection of intellectual property
2. D. Military interference in the rule of law and the political process
2. E. Integrity of the legal system

Area 3: Access to sound money

3. A. Average annual growth of the money supply in the last five years minus average annual growth of real GDP in the last ten years
3. B. Standard inflation variability during the last five years
3. C. Recent inflation rate
3. D. Freedom to own foreign currency bank accounts domestically and abroad

Area 4: Freedom to trade internationally

4. A. Taxes on international trade
   i. Revenue from taxes on international trade as a percentage of exports plus imports
   ii. Mean tariff rate
   iii. Standard deviation of tariff rates
4. B. Regulatory trade barriers
   i. Non-tariff trade barriers
   ii. Compliance costs of importing and exporting
4. C. Actual size of trade sector compared to expected size
4. D. Difference between official exchange rate and black-market rate
4. E. International capital market controls
   i. Foreign ownership/investment restrictions
   ii. Restriction on the freedom of citizens to engage in capital market exchange with foreigners

Area 5: Regulation of credit, labour and business

5. A. Credit market regulations
   i. Ownership of banks – percentage of deposits held in privately owned banks
   ii. Competition – domestic banks face competition from foreign banks
   iii. Extension of credit – percentage of credit extended to private sector
   iv. Avoidance of interest rate controls and regulations that lead negative real interest rates
   v. Interest rate controls – interest rate controls on bank deposits and/or loans are freely determined by the market
5. B. Labour market regulations
   i. Impact of minimum wage
   ii. Hiring and firing practices – hiring and firing practices of companies are determined by private contract

iii. Share of labour force whose wages are set by centralised collective bargaining
iv. Unemployment benefits – the unemployment benefits system preserves the incentive to work
v. Use of conscripts to obtain military personnel

5. C. Business regulations
i. Price controls – extent to which businesses are free to set their own prices
ii. Burden of regulation
iii. Time with government bureaucracy – senior management spends a substantial amount of time dealing with bureaucracy
iv. Starting a new business – starting a new business is generally easy
v. Irregular payments – irregular, additional payments connected with import and export permits, business licenses, exchange controls, tax assessments, police protection, or loan applications are very rare

APPENDIX B

COMPUTATION OF THE MEASURES USED IN REGRESSION ANALYSIS

Here we summarise the exact computation of the freedom-related measure we use in our empirical investigations. The meaning of the EFW index components and subcomponents indicated by a number and a capital letter can be found in *Appendix A*. Our aim is to regroup the components of the original EFW index in a way which fits our concept. Thus, when formulating our categories we require that

(1) the final index of economic freedom implied by the method be equal to the original index;
(2) the weights of the different components be equal to those of the original EFW index;
(3) components be comparable, which means that all components' values should run between 0 and 10.

These three requirements determine exactly how different components and subcomponents should be weighted when constructing our measures. Based on

the three groups of components *(Table 1),* the following regrouped components meet these criteria.

Freedom-related measure

$$(\text{rule of law}) = \frac{2.\text{A.}+2.\text{B.}+2.\text{C.}+2.\text{D.}+2.\text{E.}}{5}$$

(transfers and subsidies) = 1.B.

(controls) =

$$\frac{300}{71}\left[\frac{3.\text{D.}}{20}+\frac{4.\text{B.}+4.\text{D.}+4.\text{E.}}{25}+\frac{5.\text{C.}}{15}\right]=\frac{15}{71}(3.\text{D.})+\frac{12}{71}(4.\text{B.}+4.\text{D.}+4.\text{E.})+\frac{20}{71}(5.\text{C.})$$

(freedom – related) =

$$\frac{300}{146}\left[\frac{1}{5}(\text{rule of law})+\frac{1}{20}(\text{transfers and subsidies})+\frac{71}{300}(\text{controls})\right]$$

(freedom – related) =

$$\frac{60}{146}(\text{rule of law})+\frac{15}{146}(\text{transfers and subsidies})+\frac{71}{146}(\text{controls})$$

Policy measure

$$(\text{fiscal})=\frac{1.\text{A.}+1.\text{D.}}{2}$$

$$(\text{monetary})=\frac{3.\text{A.}+3.\text{B.}+3.\text{C.}}{3}$$

$$(\text{policy})=\frac{20}{5}\left[\frac{1.\text{A.}+1.\text{D.}}{20}+\frac{3.\text{A.}+3.\text{B.}+3.\text{C.}}{20}\right]=\frac{1.\text{A.}+1.\text{D.}}{5}+\frac{3.\text{A.}+3.\text{B.}+3.\text{C.}}{5}$$

$$(\text{policy})=\frac{2}{5}(\text{fiscal})+\frac{3}{5}(\text{monetary})$$

Other measures

$$(\text{others}) = \frac{300}{79}\left[\frac{1.C.}{20} + \frac{4.\text{A.}+4.\text{C.}}{25} + \frac{5.\text{A.}+5.\text{B.}}{15}\right] =$$

$$= \frac{15}{79}(1.\text{C.}) + \frac{12}{79}(4.\text{A.}+4.\text{C.}) + \frac{20}{79}(5.\text{A.}+5.\text{B.})$$

Finally, the implied EFW index becomes the weighted average of our three main categories:

$$\text{EFW} = \frac{146}{300}(\text{freedom} - \text{related}) + \frac{75}{300}(\text{policy}) + \frac{79}{300}(\text{others}).$$

Some modifications in practice

What was said above means that our implied EFW index is exactly the same as the original chain-linked index. However, because of the lack of some data we made some modifications so that we would not drop too many countries out of the analysis. The main problem is that when one or more data are missing the formulas worked out above cannot be applied in an unchanged form. Our general method was that when one or more data that we had to sum were missing, we used the mean of the rest and scaled it up. Thus for example, instead of the sum of x_1, x_2, x_3, we used the value of 3×(the mean of x_1, x_2, and x_3). The result of the two methods is, of course, the same when all the three data are available, but if some are missing, it will cause a difference between the original and our implied EFW index.

We follow a general rule according to which, when we should sum at least three subcomponents (as in the case of the controls component), there must be at least two values so that we can compute their means. However, taking the mean of one value is technically not impossible, in this case we treat that observation as not available.

Another problem arises from the fact that in some cases we cannot even compute the mean for a component, that is, we would have to compute the freedom-related measure from just two subcomponents of the three. In cases where only one of the three subcomponents of the freedom-related measure is missing, we follow the general rule of sticking to the original relative weights of the components and scale the weighted average up to be between 0 and 10. Thus, for example, in the

absence of data for controls components, we arrive at the freedom-related measure as follows:

$$(\text{freedom} - \text{related}) = \frac{146}{75}\left[\frac{60}{146}(\text{rule of law}) + \frac{15}{146}(\text{transfers and subsidies})\right],$$

where the first ratio's role is to ensure that the measure runs between zero and ten. We proceed in a similar way when either the rule of law or the transfers and subsidies are missing; however, of course, in these latter cases the scaling factor is different. In those cases when two components are missing we do not compute the freedom-related measure.