Institutions and Policies of Economic Freedom: Which Effects in Which Run?

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1. Introduction

There is an abundance of empirical investigations into the question of *whether* economic freedom affects economic development. These studies have provided us with significant results; most importantly they have shown that economic freedom (measured by an index of economic freedom[1]) raises long-run income or growth (Easton and Walker 1997, De Haan and Sturm 2000, Gwartney, Holcombe and Lawson 2004, 2006). In addition, this literature has also provided empirical results on the impact of the "components" of economic freedom[2] on growth or long-run income (e.g., Carlsson and Lundström 2002, Dawson 2003, Berggren and Jordahl 2006, Justesen 2008), by shedding some light on causality. However, in our view, a shortcoming of this literature[3] is that it almost entirely ignores the *how* question, that is, the question of *how* more economic freedom leads to higher income/growth. We argue that analyzing the question of which "component" of economic freedom enhances growth, and through which channels – which is an issue in this literature – is not about addressing the *how* question, rather it is a refinement of the original *whether* question (see footnote 4).

[1] The empirical studies we will refer to in what follows measure economic freedom either by the Fraser Institute's Economic Freedom of the World (EFW) Index or the Heritage Foundation and The Wall Street Journal's Index of Economic Freedom. For the most recent versions see, respectively, Gwartney et al. (2012), and Miller et al. (2013).
[2] In the majority of cases, the areas and/or sub-areas of an economic freedom index are used as "components" of economic freedom.
[3] For a detailed overview of this literature see Czeglédi and Kapás (2009).

The *how* question requires an approach different from the Ricardian framework (see Holcombe 1998) which is the one adopted in the above-mentioned studies. Clearly, the Ricardian production function framework is useful when it comes to the question of what contributes to economic development and to what degree; and economic freedom is found to be one of the affecting factors.[4] However, one needs additional explanations when the question is *how* economic freedom contributes to development. We argue that the Smithian view of economic development offers precisely such an approach. In this perspective – as opposed to the Ricardian one – economic freedom itself is not a factor affecting development on its own; instead it can be seen as the context in which the *process* of economic development is the most likely to take place. To put it differently, here economic freedom constitutes the best conditions for productive entrepreneurship to take place, which, in turn, leads to economic development.

So, in this paper we will address the question of *how* (and *why*) more economic freedom leads to higher income/growth and provide some additional results to those found in the literature. In this endeavor, we will try to complement the Ricardian framework of economic growth with the Smithian view, in which entrepreneurship is the driver.

Entrepreneurship, however, is not completely missing from the literature on economic freedom. Recently, some scholars have analyzed how economic freedom promotes entrepreneurship. Using the Granger-causality test Kreft and Sobel (2005) showed that entrepreneurial activity, measured as the number of sole proprietorships and the number of patents, causes growth, and not vice versa, which is, in turn, positively affected by economic freedom. They conclude that economic freedom generates growth primarily because it promotes underlying productive private-sector entrepreneurial activity. Sobel et al (2007) provided additional empirical evidence: countries with more economic freedom have a larger amount of productive entrepreneurship (measured by the total entrepreneurial activity index from the Global Monitor Entrepreneurship). Campbell and Rogers's (2007) results are in harmony with the above: by using the Economic Freedom of North America index they have shown the positive direct effect of economic freedom on net business formation in the U.S.

Bjørnskov and Foss (2008) and Nyström (2008) examined the effects the components of economic freedom have on entrepreneurship. They arrived at different results, however. Nyström (2008) showed that entrepreneurship (measured by the rate of self-employment) is reduced by a bigger government, less secure property rights, and a more severe regulation of

[4] An analysis of the effects of "components" of economic freedom in the Ricardian framework is in fact about determining which "component" exercises the greatest effect on growth/income.

labor and credit markets. Bjørnskov and Foss (2008) found, at the same time, that entrepreneurship (as measured by surveys concerning individual business activity) is affected positively by a smaller government and by a sounder monetary system but is unrelated to the other components of economic freedom.

Among those papers that have clearly shown that economic freedom has a positive impact on entrepreneurship McMullen, Bagby and Palich (2008) is unique in the sense that it analyzed the possibly different effects of ten factors of economic freedom (components of the 2003 Index of Economic Freedom) on two different types of entrepreneurship: opportunity-motivated and necessity-motivated entrepreneurship, both derived from the 2002 Global Monitor Entrepreneurship. Their results have added some new insights to our understanding of the effects: various factors of economic freedom are uniquely related to either opportunity-motivated or necessity-motivated entrepreneurship. More precisely, opportunity-oriented entrepreneurship is positively associated with property rights, while necessity-oriented entrepreneurship is positively affected by fiscal and monetary freedom, and both are positively associated with labor freedom.

More recently, Bjørnskov and Foss (2012), relying on the idea that institutions (of economic freedom) and entrepreneurship influence growth because they influence total factor productivity, analyzed both the determinants of entrepreneurship and the determinants of total factor productivity. They found that entrepreneurship – measured by self-employment as a primary activity – which is itself affected by the institutions (of economic freedom), is the main predictor of total factor productivity differences across OECD countries. To measure institutions, they used the components of the EFW index. Their empirical analysis is based on the idea that "entrepreneurship is the main mediator between institutions and growth" (Bjørnskov and Foss 2012:247).

In our paper we intend to go even further towards conceptualizing entrepreneurship as "the manifest ability and willingness of individuals to perceive new economic opportunities and to introduce their ways of seizing these opportunities into the market in the face of uncertainty" (Bjørnskov and Foss 2012:249). That is, we will go beyond the traditional concept of entrepreneurship which views it in terms of self-employment and/or start-ups, and will rely on the theory of entrepreneurship originated in Kirzner (1973) and developed further by many others (e.g., Holcombe 1998, Boettke and Coyne 2003, Foss and Klein 2012). Clearly, from this perspective, it is through entrepreneurship that economic freedom deploys its beneficial effects, which is in line with some of the papers cited above (e.g., Kreft and Sobel 2005, Bjørnskov and Foss 2012).

We will argue, based on the theory of entrepreneurship, that one way to come closer to an answer to the *how* question is an analysis of the effects of economic freedom in which one separates the effects of the *institutions* of economic freedom from those of the *policies* of economic freedom because they affect entrepreneurship differently in terms of the size and the character of the effect. To test empirically our hypotheses concerning the effects of economic freedom on growth/income, we will try to adjust the Ricardian model by taking the Smithian model as a general context for the interpretation of the results, an approach which is allowed by seeing entrepreneurship as the cause of development and taking the *institutions* and *policies* of economic freedom as proxies for entrepreneurship. Of course, we are forced to use the Ricardian model too, because the Smithian framework as such cannot be econometrically specified. So, to complement the Ricardian model with the Smithian one, we will use both of the modeling strategies that have been developed in growth economics at the same time, namely the model of Mankiw et al. (1992) and that of Acemoglu et al. (2001). This procedure – by allowing us to distinguish between the effects of economic freedom on development and on growth during the convergence – will provide us with a deeper understanding of the effects, and accordingly the *how*.

Our empirical results basically reaffirm what we have hypothesized: the *institutions* of economic freedom are of primary importance in economic development and they matter both in the long run and during the catching up period, while the effects of economic freedom *policies* (monetary and fiscal) matter only while catching up, with the fiscal policy having a more straightforward effect.

The rest of the paper is organized as follows. In Section 2 we will elaborate on the relationship between entrepreneurship, economic freedom and economic development. Section 3 will present the empirical analysis, and Section 4 will conclude.

2. Entrepreneurship, growth and economic freedom

There is no single theory of entrepreneurship, but the most developed and influential theories are that of Austrian economics originating from Kirzner (1973) and that of Schumpeter (1912[1934]). These two have traditionally been contrasted with one other, but Holcombe (1998) and Kirzner himself (Kirzner 1999) brought together the Kirznerian and Schumpeterian views by showing that a Schumpeterian innovation creates new profit opportunities that are exploited by Kirznerian entrepreneurs, provided that entrepreneurs are free to act. On the basis of this theory, it is possible to understand how markets work and

create wealth, which is precisely the theme of the Smithian growth process. So, a Smithian understanding of development and the Austrian theory of entrepreneurship are inherently interconnected.

For our concerns the major message of this theory is that economic freedom is a precondition for entrepreneurship, which in turn, leads to development. While the theory of entrepreneurship itself has developed relatively strong arguments for how and why entrepreneurship enhances growth, the question of how and why economic freedom promotes entrepreneurship is left rather implicit in the theory. In what follows we briefly summarize what the literature says on the entrepreneurship–development issue (section 2.1); then we turn to elaborate on the economic freedom–entrepreneurship relationship (section 2.2).

2.1. How entrepreneurship leads to development

As opposed to the Ricardian approach, the Smithian is concerned with processes, in which increasing division of labor is the key, which is the result of the activities of entrepreneurs. As explained by Boettke and Coyne (2003), entrepreneurs fulfill two roles in development. On the one hand, entrepreneurial discoveries may push the economy towards the production possibilities frontier (PPF), and on the other hand, they may shift the PPF out. Since there are always profit opportunities left unexploited (see Kirzner 1973, Holcombe 2003a), the economy is never at the frontier of its production possibilities: entrepreneurs acting upon these profit opportunities are bringing the economy closer to equilibrium. But why does not the economy come to rest reaching its equilibrium after a while? Or to put it differently, why do not profit opportunities run out?

Holcombe (1998, 2003b), by extending Kirzner's theory, gives an explanation for the origin of profit opportunities. As he points out, the main source of profit opportunities lies in the activities of other entrepreneurs.[5] The first reason is that technological changes depend on each other: one innovation induces others. As an example Holcombe (2003b) argues that the computer mouse could not have been developed if the computer had not been invented. Second, since market is a process of trial and error, entrepreneurs make errors that are realized by other entrepreneurs. By discovering the mistakes of other entrepreneurs another can make success of the same innovation. Third, entrepreneurial actions can make the old technology obsolete, so entrepreneurship can also destroy profit opportunities. But "new opportunities

[5] Two other factors that create profit opportunities are as follows: (1) factors that disequilibrate the market, (2) factors that enhance production possibilities (Holcombe 2003b).

created must make better use of resources then the old opportunities, because if they did not, the old opportunities would still be potentially profitable" (Holcombe 1999:76).

Relying on the above insights, Holcombe (1998, 2003a) clearly argues for seeing entrepreneurship as leading to economic growth. Here profit opportunities are not seen as a fixed stock; instead they are constantly arising as a result of past entrepreneurial acts, that is, they do not run out: "entrepreneurship creates an environment that makes more entrepreneurship possible" (Holcombe 1998:51).

The numerous empirical studies investigating the impact of entrepreneurship on economic growth rely inevitably on a well-specified, narrow concept of entrepreneurship in order to keep it measurable and use it in various regression analyses (for an overview of these works see Carree and Thurik 2010). While the positive impact of entrepreneurship is documented in these works, in our framework these results are not convincing because of the measurement biases due to a restricted conceptualization of entrepreneurship itself. Since entrepreneurship as we understand it is not measurable, we propose to proxy it by economic freedom. Thus, entrepreneurship is the most likely to occur under the condition of economic freedom: what entrepreneurs need in order to be able to discover, and make use of, the profit opportunities they perceive are, on the one hand, institutions, and on the other hand, government policy. So, economic freedom has two dimensions from the viewpoint of the entrepreneurs: *institutions* and *policies*. Having said that, the question is how and why does the *institutions* and the *policies* of economic freedom enhance entrepreneurship?

2.2. Economic freedom as a prerequisite for entrepreneurship

First of all, an answer to this question needs a clarification of what kind of entrepreneurship (in the sense of Baumol 1990), leads to development. This question is crucial because entrepreneurship itself, as defined in Austrian economics, is omnipresent and can flourish under various institutional settings. Baumol (1990) differentiates between three kinds of entrepreneurship: productive, unproductive and destructive. The type of entrepreneurship which is related to development is *productive* entrepreneurship, while unproductive entrepreneurship is an effort spent on the redistribution of wealth (e.g., rent-seeking, tax evasion), and destructive entrepreneurship is not only redistributive but also reduces total wealth (e.g., crime). Thus the question is how the unproductive/destructive type can be restricted and the productive type stimulated?

Baumol's (1990) answer centers around the institutions: some institutional environments are more supportive than others to the flourishing of productive entrepreneurial activities. He argues that the institutional environment determines the relative pay-offs attached to various entrepreneurial activities, and accordingly directs entrepreneurial activity toward those areas where pay-off is relatively high. Where institutions produce a net benefit to productive opportunities entrepreneurs will exploit those opportunities resulting in economic development. There is a common agreement in the literature that appropriate institutions include those securing property rights, enforcing contracts, creating free entry to different markets, reducing rent-seeking and expropriation risks, etc.[6] These institutions, by reducing both the transaction cost of carrying out, and the risk of undertaking, entrepreneurial activities, stimulate entrepreneurship (Bjørnskov and Foss 2012).

Combining Baumol's (1990) and Kirzner's (1973) theories of entrepreneurship suggests that productive entrepreneurship cannot be defined independently of the institutional environment in which entrepreneurship occurs. Productive entrepreneurship is the type that creates value. But the question as to what kinds of creative actions create value cannot be decided without observing the institutional environment in which they occur. The only way we know that entrepreneurial acts are productive is that they are profitable in an economically free environment.

To sum up, one way for economic freedom to enhance productive entrepreneurship is through institutions. But, in addition to this, everything that distorts price signals reduces the chance of entrepreneurial activities being productive. This includes, of course, economic policy, usually understood as separate from the institutions that are seen as more fundamental determinants of development. One commonly used variable of distortionary economic policy is inflation. Those authors who examine the role of inflation as a factor in economic growth tend to show that the negative effect of inflation is small (Easterly 2005, Barro 1997, Acemoglu et al 2003). This is surprising from an entrepreneurial point of view, since contrary to traditional arguments on the costs of inflation (Briault 1995, Dowd 1994), these costs can be theorized not (only) as static, but as dynamic ones as well (Horwitz 2000, 2003).

The effect of inflation on development is more fundamental in Austrian economics because of the fundamental role market prices play in transforming productive activities into profitable opportunities. The "right" prices are, on the one hand, needed to perceive profit opportunities

[6] Here it is worth noting that Sobel (2008) when testing Baumol's conjecture finds that productive entrepreneurship is in a significant positive relationship with "good" institutions (of economic freedom) such as secure property rights, a fair and balanced judicial system and contract enforcement.

reflected by price discrepancies and, on the other hand, to determine whether the entrepreneurial action turned out to be profitable. Profit provides the incentive to exercise the alertness, judgement, creativity, and will to formulate and carry out plans that capture monetary profit. Manipulating money revealed in inflation will make profit opportunities depart from productive activities. Since entrepreneurial discoveries are based on market prices and entrepreneurship is self-generating, this will lead to a misallocation of resources, which is embodied in an unsustainable capital structure. In sum, inflation hinders productive entrepreneurship.

A further reason why the "right" prices are of importance is that the calculative role of money cannot be replaced by any other institution. As far as monetary policy has control over money, monetary policy can promote productive entrepreneurship by maintaining sound money. The claim that good monetary policy is a result of good institutions (Banaian and Luksetich 2001) does not mean that sound money can be substituted by good institutions. All in all, monetary policy – a type of economic freedom policy – may have a positive role in enhancing entrepreneurship.

It is important to note, however, that the traditional measure of inflation does not necessarily coincide with price distortions. Changes in the price level are not equivalent to distortions in prices. Even if the aggregate price level is stable, relative prices including the interest rate might be distorted by an increasing or decreasing money supply.[7] Prices are distorted if they do not reflect the "underlying real factors" (Horwitz 2000:100) of the economy. As a result, stable prices can reflect distorted prices if the real factors should require prices to change. Accordingly, a stable price level is a poor measure of whether the entrepreneurial process is misdirected by price distortions caused by monetary policy. Based on the above, while it is clear that the "right" prices are primordial for entrepreneurship, it is somewhat ambiguous whether monetary policy regulating inflation has anything to do with enhancing entrepreneurship.

As far as fiscal policy is concerned, the standard view in the literature on economic freedom is that state-owned enterprises can crowd out, and government-leveled entry barriers reduce, private entrepreneurial activities. In the same manner, large government associated with a high level of publicly financed provision of various services (e.g., health care, education) also reduces the incentives to engage in entrepreneurial actions. However, according to various well established findings, the relationship is not so clear. First, the

[7] As Horwitz (2000:1000) puts it: "Supply side changes in prices will not be problematic because the increase in productivity will be reflected in a new constellation of relative prices, including intertemporal ones."

quality of government is at least as important as its size (see also La Porta et al. 1999). Up to a certain point the quality of the institutions of economic freedom (such as secure property rights, independent judiciary, etc.) depends on fiscal policy variables: the better the quality of these institutions, the more taxes are needed. Accordingly, the size of the government seems to be positively related to economic development. Secondly, even if a bigger government of the same quality leads to more inefficient allocation of resources it is less clear that it retards the pace of development as well: some authors (e.g., Carlsson and Lundström 2002, Dawson 2003, Justesen 2008) came to vague if not controversial conclusion concerning government size when the other components of economic freedom are controlled for.

While all the above-mentioned arguments against "unfree" fiscal policies are in line with the Austrian view, the theoretical understanding of how fiscal policy affects economic growth differs from these arguments. In the Austrian view the effect of fiscal policy on growth is more straightforward than that of monetary policy, but the causality has a reversed direction, too. On the one hand, fiscal policy clearly distorts prices, especially the interest rate. Garrison (2001:84-106) demonstrates the Austrian conclusion that (short-run) growth induced by fiscal expansion – especially any kind of debt accumulation – is unsustainable, since it causes a distortion in the intertemporal structure of capital compared to what would be the case on a free market. Since deficit financing and deficit spending shifts resources from long-term projects towards short-term ones, the rate of potential growth will be reduced. On the other hand, the Austrian theory also describes a relationship between government intervention and growth with the reversed direction. The theory of interventionism (Mises 1940[1998], Ikeda 1997) suggests that interventionism as a process – and accordingly, big government – can be seen as a side effect of the entrepreneurial process.

In sum, in the Austrian theory government interventions – both monetary and fiscal – distort prices and, as a result, the entrepreneurial process. Interventionist policies make unproductive discoveries profitable and let the unproductive discoveries accumulate, which finally result in slower economic growth. But the growth process itself provokes interventionism, i.e., interventionist policies are not only growth reducing but partially endogenous.

To conclude, based on the above we hypothesize that the institutions of economic freedom exercise a larger effect, because they influence entrepreneurship on their own (see Boettke and Coyne 2003, Baumol 1990), and at the same time, they serve as a hotbed for capital and human capital accumulation. Consequently, we not only expect that the effect of economic freedom *institutions* on growth/income will be larger but will be both direct and indirect, and

they matter both for long-run income and growth. We also expect that monetary policy may have an effect, although probably smaller. Some ambiguity concerning the effect of monetary policy comes from the fact that in an entrepreneurial interpretation of the growth process, price level stability is not the ideal monetary policy; in other words, zero inflation is not necessarily the freest monetary policy. As far as fiscal policy is concerned, while its effect on entrepreneurship is more straightforward, it may be endogenous because of the interventionist process. Policies, on the other hand, will probably have an indirect effect because by distorting prices they change the intertemporal structure of human and physical capital. In sum, we expect that the *institutions* and *policies* of economic freedom exercise different effects, both in terms of their size and working mechanisms. (Figure 1 summarizes our understanding of how *institutions* and *policies* affect entrepreneurship and economic development.)

As shown above, the Austrian theory of entrepreneurship suggests that by revealing the different effects of the *institutions* and the *policies* of economic freedom and by interpreting the empirical results in this framework, one can come closer to an understanding of *how* economic freedom promotes development, since both affect entrepreneurship in a different way. To be able to adjust the Ricardian framework with the Smithian one, we will apply both of the empirical modeling strategies that are commonly used in the literature.

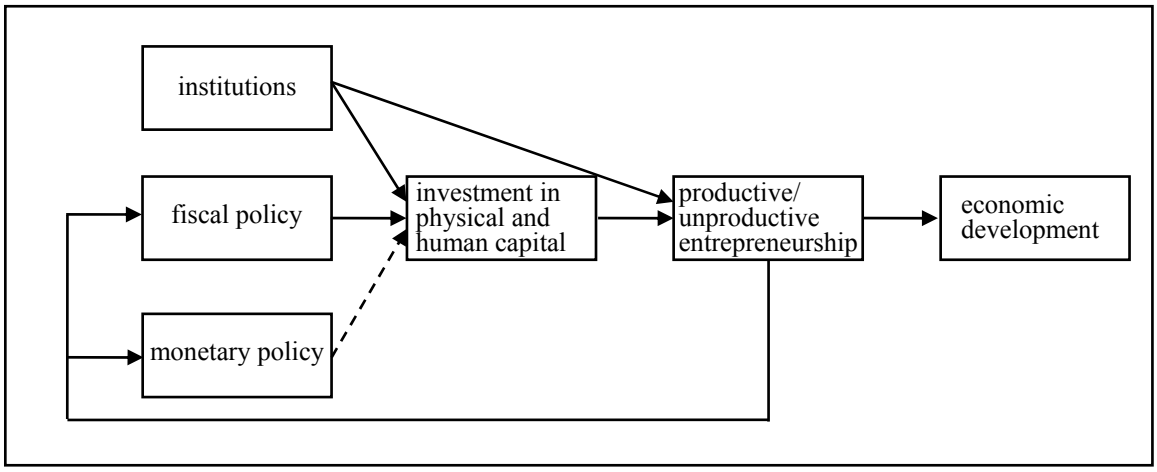

Figure 1. The role of the *institutions* and *policies* of economic freedom in the development process

3. Empirical analysis

The first line of modeling strategy is applied, for instance, in the path-breaking paper of Acemoglu, Johnson and Robinson (2001). Here it is supposed that current income per capita

is a good proxy for growth in the very long run, and only few dependent variables are used as additional explanatory factors beyond institutions, such as geographical, macroeconomic policies, religion, or human capital variables. The other kind of empirical research strategy (Mankiw et al. 1992) grew out of the convergence literature and applies the framework of the (augmented) Solow-model. Here the dependent variable is growth rate.

Using, at the same time, these two specifications developed in the literature, and accordingly examining the effects both on income and growth makes it possible to discover the possibly different effects of economic freedom *institutions* and *policies*, which enriches our understanding of *how* and *why* economic freedom leads to development. Since the Smithian view of development cannot be used in a quantitative empirical investigation because it cannot be specified econometrically, we have to rely on the usual growth regression techniques. In this respect, the results arising from the use of both of the techniques allow us, to a certain extent, to adjust the Ricardian framework of growth with a Smithian explanation (see also the introductory section).

3.1. Data and sample

The measures of economic freedom *policies* and *institutions* are derived from the EFW index (Gwartney, Lawson and Hall 2012) by categorizing the components of the index as institutions and policy variables. For a categorization, while admitting that there is a multitude of definitions in the literature, we stay with the definition of institutions that captures the main feature of an institution upon which scholars agree, namely that institutions are rules: rules "refer to prescriptions commonly known and used by a set of participants to order repetitive, interdependent relationships. Prescriptions refer to which actions (or states of the world) are required, prohibited or, permitted. Rules are the result of implicit or explicit efforts by a set of individuals to achieve order and predictability within defined situations" (Ostrom 1986:5). In this spirit, in Table 1 we categorize the components of the EFW index as *institutions* and *policies*.

When deriving the *institutions* and *policies* variables we ensured that the weighting schema of the components and sub-components of the EFW index fulfil the following three requirements[8]: (1) the weights of the different components be equal to those of the original EFW index; (2) components be comparable, which means that all components' values should

[8] The exact computation is available upon request.

run between 0 and 10; (3) the aggregate index calculated based on our two measures be equal to the original index.

***Institutions* components**	***Policy* components**
2. Legal system and property rights 3. D. Freedom to own foreign currency bank accounts domestically and abroad 4. Freedom to trade internationally 5. Regulation	***Fiscal policy***
	1. Size of government
	Monetary policy
	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

Table 1. Institutions and policy variables of the EFW index
Note: The numbers refer to the area; the letters do to the subarea of the EFW index of Gwartney, Lawson and Hall (2012)

To obtain our *institutions* and *policy* measures we calculated one average for the 80's, the 90's and 2000's, then we considered the average of these three decade measures as our measure of *institutions*, *monetary*, and *fiscal policy* even if this score is missing for one or two decades. Unfortunately, there are relatively few cases (countries) for which data for all the three decades are fully available. We used the chain-linked version of the EFW index areas where possible. The component 3.D. is "discounted" by the chain-linked index of area 3, as well as the other components within area 3.

Our source for GDP per capita, investment and population is the Penn World Table 7.1. of Heston, Summers and Aten (2012). 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), and investment rates that we used from Heston, Summers and Aten (2012). Investment in human capital is proxied by the average years of secondary schooling between 1980 and 2010 in the whole population beyond the age of fifteen from Barro and Lee (2010)[9]. Geographical variables come from the database created by Gallup, Sachs and Mellinger (1999)[10], except for some countries[11] whose location in the tropical zone was easily checked with the help of a map. The data on the land area of these countries come from The World Factbook[12]. As instruments, we also use the measure of ethnic, linguistic and

[9] Available at: http://www.barrolee.com/
[10] Available at: http://www.cid.harvard.edu/ciddata/geographydata.htm
[11] Barbados, Fiji, Hong Kong, Mauritius, Singapore.
[12] Available at: https://www.cia.gov/library/publications/the-world-factbook/

religious fractionalization from Alesina et al. (2003), and the index of political rights as measured by Freedom House (2013).[13]

As a compromise between availability of data on as many countries as possible and the length of the time period, our data cover the years between 1980 and 2010; accordingly, our investigations are cross-country regressions over this period. The bottleneck here was the economic freedom *institutions* and *policies* variables derived from the EFW index, and, in some cases, the variables we used to instrument them.

3.2. The effect of institutions and policies of economic freedom on income

The first empirical approach mentioned above means testing our hypotheses in the form suggested by, for example, Acemoglu, Johnson and Robinson (2001:1378):

$$\ln(GDP\ per\ capita)_i = const + \beta_1 \ln(institutions)_i + \boldsymbol{X}'\beta_2 + \varepsilon_i ,$$

where the variable *institutions* is the measure of economic freedom institutions, while the vector $\boldsymbol{X}$ includes some control variables (human capital investment, economic freedom policies, geography variables). The results are presented in Table 2.

The effect of the institutions is significant at the one percent level and its explanatory power is large. As is shown by the simple two variable regression (column 1), the (log of) the institutions variable accounts for roughly the two thirds of the variance of the (log of) the income variable. Monetary and fiscal policy variables are insignificant in every case, sometimes with a "wrong" sign.

We also included geographical variables in the regression because one line of research finds a direct relationship between geographical variables and growth and income (e.g., Sachs 2003), while others argue that geography affects income indirectly, that is, via institutions (Acemoglu and Johnson 2005)[14]. Trying to use the clearest and most objective data we chose the land area of a country and the proportion of a country's land area lying in the tropics. We found only the tropical area[15] to be statistically significant, showing that tropical countries tend to be poorer *ceteris paribus*. Finally, we also added the variable of human capital

[13] Some databases, including the Freedom House (2013) do not provide data for Germany before 1990, only for West and East Germany. In these cases we used the population-weighted averages of the two Germanys' data.

[14] Note that this literature is in contrast with the one arguing the primacy of institutions (Hall and Jones 1999, Acemoglu, Johnson and Robinson 2001, Rodrik, Subramanian and Trebbi 2004, Easterly and Levine 2003) that states that geography matters only through institutions. As a compromise, Gwartney, Holcombe and Lawson (2004) show that the geography vs. institutions explanations for economic growth do not necessarily exclude each other.

[15] Note that we use the natural log of the share of the tropical area plus 1 as an explanatory variable.

expressing the average years of secondary education. The coefficient of the institutions variable is reduced by adding these additional variables, but it is still the highest one. The change in the coefficient of institutions between column 3 and 4 (Table 2) may mirror the indirect effect of the institutions, through stimulating investment in human capital. We ran the same regression with the EFW index, too, for the sake of comparison (Table 2, column 5).

	dependent variable: log per capita GDP in 2010				
	1.	2.	3.	4.	5
constant	1.568 (2.75)[a]	1.941 (2.07)[b]	3.336 (3.54)[a]	4.515 (5.26)[a]	3.832 (4.27)[a]
ln(EFW)					3.002 (6.83)[a]
ln(institutions)	4.280 (14.21)[a]	4.230 (11.56)[a]	3.572 (9.88)[a]	2.476 (7.24)[a]	
ln(monetary)		0.008 (0.03)	-0.0194 (-0.09)	0.091 (0.48)	
ln(fiscal)		-0.178 (-0.65)	0.352 (1.37)	0.087 (0.39)	
ln(area)			-0.057 (-1.40)	-0.040 (-1.32)	-0.038 (-1.16)
ln(tropical)			-1.200 (-4.28)[a]	-0.582 (-2.32)[b]	-0.926 (-3.89)[a]
ln(school)				0.818 (7.49)[a]	0.877 (7.56)[a]
R^2	0.670	0.672	0.730	0.822	0.791
adj. R^2	0.667	0.662	0.716	0.811	0.783
N	108	108	108	108	108

Table 2. OLS regressions on log per capita GDP in 2010
Heteroskedasticity robust t-statistics are in parentheses. Letters in the upper index refer to significance: a: 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.

In Table 3 we repeated the regressions estimating the effect of *institutions* of economic freedom by using data on religious adherence as instruments.[16] The main idea upon which we base this instrumenting strategy is institutional stickiness: formal institutions can only be rooted in a society if they are in harmony with the informal institutions of the country (Boettke, Coyne and Leeson 2008, North 2005). Although the informal institutions such as norms, habits or trust are not only of religious origin, religious data seems to be a relatively good proxy, bearing in mind that there is no first best measure for informal institutions. We do not propose that there are some religions that allow formal institutions and policies of economic freedom to "stick" better. Our claim, instead, is that data on religions and religiosity reflect the cultural history of a country including the depth of the European impact, and

[16] The first stage results are presented in the Appendix.

different cultural histories lead to different abilities to absorb the *institutions* and *policies* of economic freedom.

	dependent variable: log per capita GDP in 2010		
	1.	2.	3.
constant	3.991 (3.95)[a]	2.726 (2.45)[b]	1.016 (1.24)
ln(institutions)	2.934 (5.85)[a]	4.084 (8.79)[a]	4.600 (10.18)[a]
ln(area)	-0.033 (-1.06)	-0.042 (-1.06)	
ln(tropical)	-0.482 (-2.20)[b]	-0.880 (-3.28)[a]	
ln(school)	0.741 (5.49)[a]		
R^2	0.818	0.718	0.666
N	108	108	108
Hansen J stat (p-value)	5.140 (0.273)	5.162 (0.271)	5.048 (0.283)
Hausman test (p-values)	0.77 (0.943)	1.56 (0.668)	0.69 (0.404)

Table 3. 2SLS (second stage) regressions with log per capita GDP as a dependent variable and instrumented log institutions variable, and the Hausman test for exogeneity[17]

Heteroskedasticity robust t-statistics are in parentheses. Letters in the upper index refer to significance: a: 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.

Institutions are, of course, not only determined by culture or religion, as is documented by Mijiyawa (2013) who finds that political determinants are the most important, although cultural (religious) and historical explanations cannot be rejected, either. Berggren and Bjørnskov (2013) also argue that "religiosity"[18] is a determinant of property rights institutions but, surprisingly, they show that greater religiosity implies weaker property rights.

The instrumental-variables estimation of the coefficient of the institutions variable is larger than in the OLS case, and highly significant, showing that our OLS result is not a consequence of reverse causation. This is supported formally by the Hausman tests in Table 3 which do not reject (at the usual significance level) that the *institutions* can be seen as an exogenous variable. Note that our result that there is no reverse causality between the economic freedom *institutions* and income runs counter to some arguments which maintain

[17] Our first stage equation consists of the variables of religious adherence from Barro's dataset (http://scholar.harvard.edu/barro/publications/religion-adherence-data). See Table 6 in the Appendix for the first stage results of the two-stage regression.

[18] Their measure of religiosity is the share of people in a country for whom religion is important in daily life (Berggren and Bjørnskov 2013:161, 168). This means, of course that their measure does not differentiate between religions which, given that different religions imply different market ethics (Arruñada 2010), may be a shortcoming of their analysis.

that property rights as an important part of institutions and development develop together in a virtuous circle (or deteriorate in a vicious one).[19] A possible explanation for our result may be that our institutions variable includes more than property rights, most importantly regulatory variables which may degrade the positive effects of the property rights. In this light the results are in line with those theories proposing that regulatory and property rights institutions are determined by factors independent of economic development, such as historical accident, colonization through the colonizers' identity, or culture (Shleifer et al. 2008).

In sum, as regards long-run income, the effect of the institutions of economic freedom is significant, and what is more, this effect is the largest even when compared with that of human capital or geographical factors, and it is exogenous. Economic freedom policies, however, seems to be insignificant in the long run.

3.3. The effect of the institutions and policies of economic freedom on growth

3.3.1. Simple OLS regressions

Conforming to the second modeling strategy, we include the institutions and policy variables into the human capital-augmented Solow-model (Mankiw et al. 1992). Using the well-known conditional convergence argument (Mankiw et al. 1992:421-424), the model breaks down to a testable equation in the following form:

$$\ln(growth)_i = const + \alpha_1 \ln(GDP\ per\ capita_{1980})_i + \alpha_2 \ln(I/GDP)_i + \alpha_3 \ln(school)_i$$
$$+ \alpha_4 \ln(n_i + g + \delta) + \alpha_5 \ln(institutions)_i + \boldsymbol{X}'_i\, \alpha_6 + u_i$$

The variables are the following: *growth* is the average yearly growth rate of per capita GDP (rgdpch in PWT 7.1) between 1980 and 2010, *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 *institutions* is the measure of economic freedom institutions, and $\boldsymbol{X}$ includes some control variables which we used above with special attention to monetary and fiscal policy variables. The sum of the long-run growth rate of technology and the amortization rate ($g + \delta$) is supposed to be 0.05 as in Mankiw et al. (1992:413).

The results are shown in Table 4. As far as the institutions are concerned, the result is what we had expected, since its coefficient is significant and its size is two or three times higher

[19] For instance Gradstein (2004) provides a theoretical, and Heitger (2004) an empirical, proposal saying that property rights can be endogenous and are partially mutually determined by income, because higher income provides the government with a larger revenue that it can spend to secure property rights.

than those of physical and human capital investment. Contrary to what we saw when the dependent variable was the level of income, the policy variables are also significant at the 10 percent level in those cases when the "proximate causes" of economic development or the non-significant geography variable (area) are dropped. Columns 4 and 5 show that dropping the accumulation variables does not change the coefficient of the institutions variable significantly, while that of the monetary and fiscal policy becomes significant. These results suggest that the institutional determinants of economic freedom have direct channels, while the effect of monetary and fiscal policy is largely indirect.[20]

	dependent variable: average growth of GDP per capita between 1980 and 2010				
	1.	2.	3.	4.	5.
constant	-0.044 (-1.26)	-0.037 (-1.04)	-0.076 (-1.85)	-0.051 (-1.35)	-0.024 (-1.49)
$\ln(GDP_{1980})$	-0.008 (-4.10)[a]	-0.012 (-5.36)[a]	-0.012 (-5.20)[a]	-0.006 (-3.40)[a]	-0.006 (-3.17)[a]
ln(I/GDP)	0.019 (4.52)[a]	0.018 (4.54)[a]	0.017 (4.12)[a]		
ln(school)	0.011 (3.71)[a]	0.010 (3.33)[a]	0.010 (3.25)[a]		
$\ln(n+g+\delta)$	-0.026 (-2.54)[b]	-0.017 (-1.65)	-0.021 (-2.04)[b]	-0.012 (-1.31)	
ln(area)	-0.000 (-0.37)	0.000 (-0.36)	0.000 (0.23)	-0.000 (-0.18)	
ln(tropical)	-0.005 (-0.99)	-0.005 (-0.99)	-0.006 (0.94)	-0.013 (-2.68)[a]	-0.015 (-2.94)[a]
ln(institutions)		0.030 (3.76)[a]	0.028 (3.82)[a]	0.031 (3.95)[a]	0.034 (4.71)[a]
ln(monetary)			0.006 (0.94)	0.012 (1.96)[c]	0.010 (1.89)[c]
ln(fiscal)			0.009 (1.61)	0.010 (1.77)[c]	0.011 (1.79)[c]
R^2	0.370	0.461	0.483	0.293	0.281
Adj. R^2	0.328	0.420	0.431	0.239	0.243
N	100	100	100	100	100

Table 4. OLS regressions with the growth rate as dependent variable
Heteroskedasticity robust t-statistics are in parentheses. Letters in the upper index refer to significance: a: 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 missing direct effect of fiscal policy does not surprise us, for two reasons. First, in the spirit of the theory, the higher volume of government activities does not necessarily retard development; it is rather the *character,* and not the *size,* of governmental acts that matters when it comes to economic freedom (see Hayek 1960). Furthermore, the results of different authors (Justesen 2008, Dawson 2003) as regards the relationship between government size

[20] This finding refines what has been shown by others (e.g. Gwartney, Holcombe and Lawson 2006) as well.

and economic growth are also controversial and do not allow us to reach a clear understanding concerning the causality and even the sign of the effect. Second, interventionist policies may be endogenous side effects of the entrepreneurial process, which, as mentioned in section 2, are described by the Austrian theory of interventionism. The insignificant direct effect of monetary policy seems, at first glance, to contradict the Austrian theory of entrepreneurship, since this theory strongly emphasizes the role of "right" prices in the entrepreneurial discovery process. However, this is not the case: as we explained in section 2.2, sound money (low inflation) does not necessary go hand in hand with the "right" prices; it can easily be accompanied by price distortion as well. Our results support rather the presence of indirect effects for both policies (columns 4 and 5 in Table 4), which is indeed in line with the theory (see section 2.2).

3.3.2. 2SLS regressions

Similarly to the case with the income level one can ask whether there is reverse causality beyond the effect that runs from institutions to growth. This is important for two reasons. First, the theory of entrepreneurship predicts that economic policies should also matter in economic growth, accordingly the simple OLS method does not provide us with fully satisfying results. Secondly, we want to exclude the possibility that the co-movement of the two variables is simply the result of reverse causation.

To instrument the institutions and the policy variables at the same time we had to change, to some extent, our instrumenting strategy, since we have now many more exogenous variables that should be included in the first stage and two variables to be instrumented. The conditional convergence framework requires us to include investment, population growth, and, most importantly, initial income in the first stage as well. As the initial income moves together with the income of 2010, our instruments will probably correlate with income in 1980, reducing the explanatory power of the excluded instruments.

Thus we added some other instruments. Sticking with the idea that economic freedom is, to a large extent, the result of a historical evolution in which informal institutions play an important role, we continue to use the religion adherence data. In addition, we make use of those arguments that say that political and economic freedom evolve together (Friedman 1962). Including political rights as an instrument of our two components of economic freedom receives support from those studies that do not find a direct effect running from political rights to income or growth (Dawson 1998, Durham 1999, Ali and Crain 2002, Wu

and Davis 1999), and from those that find that economic freedom is advanced by political freedom (De Haan and Sturm 2003).

An additional problem is that we now want to instrument three freedom variables (the institution variable, and the two policy variables), not just one. This requires us to use instruments that possibly affect these three in different ways. That is why we added the measures of ethnic, linguistic, and religious fragmentation (as reported by Alesina et al. 2003) to the list of instruments.[21] Although it is hard to believe that policies, and not just institutions, are formed by long-term history as reflected in religious adherence data, there are political economic reasons to believe that a fragmentation of the polity leads to a lower quality economic policy.[22] The fragmentation of political life can easily result from the fragmentation of the society on these dimensions.

Table 5 shows the estimations using the above instrumental variables.[23] The fact that the institutions variable is significant with a positive sign has not changed. The size of the coefficient, however, has changed compared with the OLS estimation. This shows that the positive correlation between the growth rate and the institutions does not only result from a reverse causation. The significance and the size of the effects of the policy variables have changed substantially. Now the coefficient of the fiscal policy is larger – roughly the same as that of the institution variable – and significant at the five percent level. More importantly, the direction of this effect is as expected: smaller government leads to faster economic growth, *ceteris paribus*. The effect of monetary policy loses its significance; however, the size of its effect is much smaller, and its direction is against our theory, too.

The increase of the coefficients in Table 5 as compared to those in Table 4 suggests that there is some reverse causality. The larger coefficients of the instrumented institutions and policy variables indicate that the effect of growth on them is negative: a faster growth tends to provide incentives to cut back on the freedom level of institutions and policies.

[21] Although including so many instruments may weaken the strength of our argument, the formal statistics of the instruments suggest otherwise, since the usual formal tests say that our instruments are relevant and valid. The first stage regressions and the instruments validation statistics are available upon request.
[22] See, for example, the famous model of Alesina and Tabellini (1990).
[23] For the first stage results, see Table 7 in the Appendix.

	dependent variable: average growth of GDP per capita between 1980 and 2010			
	1.	2.	3.	4.
constant	-0.026 (-0.63)	-0.101 (-0.96)	-0.082 (-1.43)	-0.097 (-1.25)
ln(GDP_{1980})	-0.018 (-5.73)[a]	-0.012 (-2.51)[b]	-0.011 (-2.47)[b]	-0.016 (-3.95)[a]
ln(I/GDP)	0.016 (3.57)[a]			0.020 (3.42)[a]
ln(school)	0.009 (2.31)[b]			0.007 (2.03)[b]
ln(n+g+δ)	-0.004 (-0.33)	-0.019 (-1.00)		-0.022 (-1.55)
ln(area)	-0.000 (-0.23)	-0.001 (-0.41)		-0.000 (-0.31)
ln(tropical)	-0.006 (-0.81)	-0.034 (-2.60)[a]	-0.034 (-2.83)[a]	-0.022 (-1.83)[a]
ln(institutions)	0.079 (5.04)[a]	0.071 (2.54)[b]	0.072 (2.74)[a]	0.066 (3.40)[a]
ln(monetary)		-0.028 (1.24)	-0.017 (-0.79)	-0.027 (-1.51)
ln(fiscal)		0.069 (2.35)[b]	0.067 (2.27)[b]	0.045 (2.01)[a]
R^2	0.226	-0.786	-0.555	-0.129
N	100	98	98	98
Hansen J stat (p-value)	6.895 (0.331)	4.400 (0.623)	4.674 (0.586)	4.6326 (0.593)
Hausman test (p-values)	9.63 (0.211)	8.88 (0.262)	8.20 (0.145)	13.39 (0.146)

Table 5. 2SLS (second stage) regressions with the growth rate as a dependent variable and instrumented log institutions variable, and the Hausman test for exogeneity

Heteroskedasticity robust t-statistics are in parentheses. Letters in the upper index refer to significance: a: 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.

In column 4 of Table 5 investment variables are also added. In this case fiscal policy is still significant at the five percent level although the coefficient is reduced somewhat compared to the other three cases. This shows two things. The first is that fiscal interventionism is endogenous and it is not only true that more interventionist policies harm growth but also that faster-growing economies are inclined to apply more interventionist policies. These two effects together can explain the missing effect in Table 4, column 3. Second, the effect of fiscal policy operates partially through investment variables – hence the reduction of the coefficient – but it has a direct effect, too.

3.4. Interpretation of the empirical results

Table 6 illustrates what we found by using OLS regressions and instrumental variables. When it comes to the need to explain income as a variable, it is only institutions that we found matter and their effect is exogenous and has an indirect channel, too, running through human capital accumulation. When it comes to economic growth in the 30-year long period we examined, the picture is more complicated. Institutions are still the most important variable (of the three), but they seem to have an effect that is rather direct. In addition, economic policies seem to matter, too. We found that the fiscal policy variable has a direct and indirect effect, but these effects are difficult to see, because interventionist fiscal policies are endogenous and fast growth inspires bad fiscal policy. Results relating to the monetary policy variable are much less convincing, although we found some very weak evidence that it has an indirect effect on growth.

	direct	**indirect**	**exogenous**	**direct**	**indirect**	**exogenous**
	effect on long-run income			**effect on economic growth**		
institutions	+	+	+	+	-	+
monetary policy	-	-	-	-	+	-
fiscal policy	-	-	-	+	+	-

Table 6. Summary of the regression results

As we claim that the Smithian view of economic growth completes the Ricardian one, we also propose that the Smithian (entreprenerial) view gives us a more complete interpretation of the regression results than that drawn by institutionalist scholars who apply (only) the Ricardian framework. These authors, while putting great emphasis on the role of institutions, often come to the (implicit) conclusion that economic policy does not matter when good institutions are in place (e.g., Easterly and Levine 2003, Acemoglu et al. 2003).

Although they do not claim that economic policies do not matter at all, their argumentation suggests, too, that economic policies will be determined by the institutional structure and that the effect of good policies can be attributed to good institutions. While we admit the above views, we argue that our results are complementary to these by pointing out that economic

policy and institutions affect development through different channels even though the former may be determined by the latter.[24]

First of all, as we argued in concert with a number of authors (Baumol 1990, Bjørnskov and Foss 2008, Nyström 2008, Holcombe 1998), it is entrepreneurship through which the effect of economic freedom on growth takes place. The *institutions* of economic freedom are necessary conditions of productive entrepreneurship. But this does not imply that economic policy does not have a role in promoting (or retarding) development. The institutional conditions of economic freedom make it possible for entrepreneurs to be willing to seize opportunities they are alert to. However, to induce growth these opportunities must prove to be efficient, which requires undistorted prices, as already argued above. This is why we think our results are more or less in line with the Austrian theory of what constitutes sustainable growth (Garrison 2001). Although this theory is concerned with booms and busts, the fact that it places the time structure of capital at the centre of its approach makes it suitable to understand growth in the longer run. Since interventionist fiscal polices – especially those financed by government borrowing – lead to the misallocation of capital, and recovery takes time, a fiscal policy that is more interventionist (more "expansionary") means capital will be "captured" by unproductive entrepreneurial discoveries for a longer period of time, and this capital cannot, of course, be put to work to realize productive discoveries. The productive entrepreneurial process is further retarded by the uncertainty regarding possible future interventions fuelled by the government debt (Garrison 2001:119). Since this theory is an explanation of "malinvestments" not overinvestment, the result that the fiscal policy's effect is partially direct is in line with the theory.

The fact that monetary policy is less significant is a puzzle from the vantage point of this theory; a problem which we think can be solved by realizing that "inflation" is not the same as bad price signals, as we explained briefly in section 2. The weakness of the effect of monetary policy is probably caused by the fact that the ideal monetary policy reflected by the economic freedom measure is that which ensures price stability, while the "entrepreneurial ideal" of monetary policy is not a stable price level but prices that "translate" productive entrepreneurial discoveries into profitable investment possibilities and unproductive entrepreneurial discoveries into unprofitable investment possibilities, something which does not imply a stable price level.

[24] One reason for the different results can be found in what constitutes our institutions and economic policy variables: since they are derived from the EFW index, they are constrained at the same time by the index in the

The question still can be raised as to why we did not find a similar effect for fiscal policy when it is income which needs to be explained. A possible explanation lies in the persistence of institutions as opposed to policies. Institutions of economic freedom are the results of an evolution which may have been initiated hundreds of years ago (see Hayek 1960), and this is what our instrumenting strategy suggests. Even though in the period of convergence there seems to be some reverse causation running from higher growth to a lower level of economic freedom, in the long run institutions are exogenously determined. This stickiness of institutions suggests that today's good institutions are good proxies of good institutions in the past. The same cannot be said as regards economic policy. A country with bad economic policy can have good economic policy in the near future much more easily than it can change its institutions of economic freedom. Thus, good economic policy in the past 20 years does not mean good economic policy in the past 200 years. But as income differences today reflect the differences of growth performance between countries in the past 200 rather in the past 20 years, monetary policy will not be among its determinants.[25]

Nevertheless, this conclusion does not imply that economic policy is an insignificant determinant of economic performance. On the contrary, and in line with the theory of entrepreneurship, we argued that distorted prices will lead to inefficient entrepreneurial discoveries and slower growth.

4. Conclusions

In this paper we have aimed at providing additional results regarding the problem of *how* and *why* economic freedom induces economic development. In this endeavor, we have proposed to focus on the entrepreneurial market process itself which, au fond, generates development, an idea which is central in Austrian economics (see e.g., Holcombe 1998, Harper 2003). In this context our starting point has been the idea that economic freedom, by allowing more (productive) entrepreneurship to occur leads to economic development.

Our empirical results support what we have hypothesized concerning the effects of institutions and policies of economic freedom. We have found that the institutions of economic freedom have a positive significant effect both on long-run income and growth, and

sense that the index itself does not necessarily contain all elements which are usually thought of as constituting these institutions and economic policy.

[25] Somewhat akin to this argument is that of Rodrik, Subramanian and Trebbi (2004:156). But theirs is a purely methodological one which is based on the claim that the policy variable is a flow, while institutions are a stock.

this effect has a direct and an indirect channel as well, while economic policy takes effect only during the catch-up process and this effect is indirect. In this way, our results provide empirical evidence with some refinement for what is argued by many within Austrian and institutional economics, namely that institutions have first-order effects, whereas policies only have second-order effects (Boettke and Fink 2011:501). That is, economic freedom *institutions* by providing incentives for individuals to engage in productive entrepreneurship determine long-run performance, while *economic policies* of economic freedom are responsible for short-run fluctuations in the economy. In addition, our results suggest that economic policies have an effect, at least when it comes to fiscal policy, on the growth rate during the convergence period.

Thus institutions can be seen as the accumulation of policies in the past and, as a result, they contain the same information.

Appendix

	dependent variable: log of *institutions* variable		
	1	2	3
constant	1.856 (14.90)[a]	2.041 (16.33)[a]	1.732 (54.37)[a]
ln(area)	-0.013 (-1.35)	-0.017 (-1.73)[c]	
ln(tropical)	-0.189 (-2.81)[a]	-0.332 (-5.82)[a]	
ln(school)	0.123 (2.98)a		
Share of Jews	-0.045 (-0.97)	0.010 (0.20)	0.187 (2.99)[a]
Share of Protestants	0.321 (5.78)[a]	0.347 (6.17)[a]	0.468 (7.23)[a]
Share of other Christians	-0.290 (-1.62)	-0.231 (-1.31)	-0.607 (-3.15)[a]
Share of Muslims	-0.157 (-1.96)[c]	-0.222 (-2.89)[a]	-0.241 (-3.23)[a]
Share of other Eastern religion	0.461 (3.43)[a]	0.608 (4.16)[a]	0.558 (4.34)[a]
R^2	0.583	0.521	0.327
Partial R^2 of excluded instruments	0.252	0.337	0.327
N	108	108	108

Table 6. First stage regressions for the second stage results in Table 3
Heteroskedasticity robust t-statistics are in parentheses. Letters in the upper index refer to significance: a: 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.

	first stage for column 1	first stage for column 2			first stage for column 3		
	dependent variable:						
	log of institutions	log of institutions	log of monetary policy	log of fiscal policy	log of institutions	log of monetary policy	log of fiscal policy
constant	1.007 (2.03)[b]	0.919 (2.10)[b]	2.973 (3.99)[a]	3.256 (5.76)[a]	1.187 (4.93)[a]	1.703 (5.67)[a]	1.810 (7.50)[a]
$\ln(GDP_{1980})$	0.079 (2.48)[a]	0.079 (3.46)[a]	0.038 (1.32)	-0.012 (-0.49)	0.081 (3.52)[a]	0.044 (1.57)	-0.015 (-0.61)
ln(I/GDP)	-0.003 (-0.06)						
ln(school)	0.011 (0.33)						
$\ln(n+g+\delta)$	-0.091 (-0.68)	-0.107 (-0.88)	0.274 (1.16)	0.460 (2.57)[b]			
ln(area)	0.002 (0.20)	-0.001 (-0.08)	-0.037 (-2.40)[b]	-0.017 (-1.35)			
ln(tropical)	-0.059 (-0.86)	-0.120 (-1.71)[c]	-0.233 (-2.41)[b]	0.183 (1.89)[c]	-0.130 (-2.10)[b]	-0.113 (-1.04)	0.276 (3.05)[a]
French legal origin	-0.060 (-2.11)[b]						
Political rights 1980-2010	-0.058 (-4.18)[a]	-0.070 (-5.34)[a]	-0.018 (-0.77)	-0.022 (-1.26)	-0.072 (-5.44)[a]	-0.011 (-0.51)	-0.011 (-0.70)
Share of Orthodox	-0.123 (-2.70)[a]	-0.126 (-2.60)[b]	0.006 (0.05)	0.084 (1.14)	-0.107 (-2.16)[b]	0.036 (0.47)	0.044 (0.47)
Share of Jews	-0.126 (-2.18)[a]	-0.147 (-2.75)[b]	-0.850 (-9.34)[a]	-0.650 (-7.06)[a]	-0.172 (-5.38)[a]	-0.688 (-11.36)[a]	-0.496 (-6.21)[a]
Share of Buddhists	-0.289 (-3.45)[a]	-0.272 (-3.96)[a]	0.176 (1.61)	0.218 (2.57)[b]	-0.251 (-4.02)[a]	0.117 (1.20)	0.125 (1.73)[c]
Share of other Eastern religions	0.657 (5.12)[a]	0.702 (5.16)[a]	0.152 (0.83)	0.373 (1.97)[c]	0.695 (5.32)[a]	0.287 (2.01)[b]	0.461 (2.49)[b]
Share of nonreligious population	0.211 (1.81)[c]	0.203 (1.79)[c]	0.057 (0.18)	-0.046 (-0.12)	0.248 (2.26)[b]	-0.115 (-0.46)	-0.267 (-0.65)
Ethnic fractionalization		-0.011 (-0.16)	-0.380 (-2.89)[a]	0.050 (0.35)	-0.024 (-0.28)	-0.451 (-3.18)[a]	0.042 (0.29)
Linguistic fractionalization		0.111 (1.44)	0.402 (3.49)[a]	-0.023 (-0.19)	0.109 (1.39)	0.404 (3.40)[a]	-0.015 (-0.11)
Religious fractionalization		0.140 (2.30)[b]	0.072 (0.52)	-0.102 (-1.05)	0.149 (2.31)[b]	0.081 (0.62)	-0.123 (-1.27)
R^2	0.760	0.792	0.287	0.363	0.789	0.238	0.305
Partial R^2 of excluded instruments	0.356	0.442	0.171	0.145	0.467	0.171	0.125
N	100	98	98	98	98	98	98

Table 7. First stage regressions for the second stage results in Table 5

Heteroskedasticity robust t-statistics are in parentheses. Letters in the upper index refer to significance: a: 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.

For Haiti and El Salvador there are no fractionalization data. That is why there are only 98 countries in those cases in which these variables are used as excluded instruments.

As for the nonreligous share of the population the dataset does not provide data for Germany, only for East and West Germany for 1970. We took the population-weighted share of these latter two to get the data we need.

	first stage for column 4		
	dependent variable:		
	log of institutions	log of monetary policy	log of fiscal policy
constant	0.861 (1.75)[c]	2.383 (2.81)[a]	3.613 (6.25)[a]
$\ln(GDP_{1980})$	0.077 (2.61)[b]	0.016 (0.45)	-0.027 (-0.76)
ln(I/GDP)	0.016 (0.36)	0.152 (1.83)	-0.066 (-0.95)
ln(school)	0.000 (0.02)	0.012 (0.20)	0.061 (1.20)
$\ln(n+g+\delta)$	-0.115 (-0.90)	0.185 (0.83)	0.476 (2.58)[a]
ln(area)	-0.000 (-0.04)	-0.034 (-2.11)a	-0.019 (-1.46)
ln(tropical)	-0.116 (-1.67)[c]	-0.203 (-1.95)[c]	0.194 (1.87)[c]
French legal origin			
Political rights 1980-2010	-0.070 (-5.17)[a]	-0.016 (-0.67)	-0.023 (-1.33)
Share of Orthodox	-0.126 (-2.54)[b]	-0.003 (-0.02)	0.084 (1.13)
Share of Jews	-0.143 (-2.57)[b]	-0.809 (-8.11)[a]	-0.687 (-6.98)[a]
Share of Buddhists	-0.278 (-3.29)[a]	0.102 (0.93)	0.189 (1.61)
Share of other Eastern religions	0.689 (4.83)[a]	0.032 (0.17)	0.405 (2.16)[b]
Share of nonreligious population	0.197 (1.57)	-0.031 (-0.10)	0.009 (0.02)
Ethnic fractionalization	-0.016 (-0.18)	-0.399 (-3.17)[a]	0.066 (0.46)
Linguistic fractionalization	0.111 (1.45)	0.399 (3.56)[a]	-0.006 (-0.05)
Religious fractionalization	0.144 (2.28)[b]	0.114 (0.78)	-0.145 (-1.33)
R^2	0.792	0.309	0.379
Partial R^2 of excluded instruments	0.437	0.165	0.150
N	98	98	98

Table 8. First stage regressions for the second stage results in column 4 of Table 5

Heteroskedasticity robust t-statistics are in parentheses. Letters in the upper index refer to significance: a: 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.

For Haiti and El Salvador there are no fractionalization data. That is why there are only 98 countries in those cases in which these variables are used as excluded instruments.

As for the nonreligous share of the population the dataset does not provide data for Germany, only for East and West Germany for 1970. We took the population-weighted share of these latter two to get the data we need.

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