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Jakob de Haan
Susanna Lundström
Jan-Egbert Sturm

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Market oriented institutions and policies and economic growth: A critical survey

Jakob de Haan
J.de.Haan@eco.rug.nl
University of Groningen and CESifo

Susanna Lundström
susanna.lundstrom@economics.gu.se
Göteborg University

Jan-Egbert Sturm
sturm@twi-kreuzlingen.ch
TWI and University of Konstanz

ABSTRACT

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This paper surveys recent evidence suggesting that market-oriented institutions and policies are strongly related to economic growth, focusing on studies using the economic freedom indicator of the Fraser Institute. This index is critically discussed. Also various serious shortcomings of empirical studies using this index are identified. Nevertheless there are strong indications that liberalization, i.e. an increase in the economic freedom index, stimulates economic growth. The paper also reviews studies on the determinants of economic freedom. Political liberalization is often found to enhance economic liberalization, while there is less evidence for causality running in the other direction.

Keywords: liberalization, economic freedom, economic growth

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Address: Jakob de Haan, University of Groningen, The Netherlands and CESifo, Munich, Germany; Susanna Lundström, Göteborg University, Sweden; Jan-Egbert Sturm, Thurgau Institute of Economics, Switzerland, University of Konstanz and CESifo Munich, Germany

"Economic freedom, it seems, can take you a long way."
(*The Economist*, 15 July 2004)

1. Introduction

Nowadays it is widely believed that market-oriented reforms will foster economic development. Liberalization of markets is, for example, a crucial element of the so-called Washington-consensus: adjustment programs of international organizations like the IMF and the World Bank pay quite some lip service to freeing the economy from too much government interference. Indeed, the 2002 World Development Report of the World Bank was titled: *Building Institutions for Markets*. Market based institutions will, according to the World Bank (2002), transmit information efficiently, enforce property rights and contracts, and secure competition, which will all affect the incentives to participate in a market.

Until recently, it was difficult to examine to what extent more market-oriented countries have a better growth performance than countries strongly relying on government control.[1] After some think-thank organizations like the Fraser Institute and the Heritage Foundation started to publish indicators of what they call "economic freedom", it became possible to test for the effect of liberalization on economic growth. Individuals have economic freedom when (a) the property they acquire without the use of force, fraud, or theft is protected from physical invasions by others, and (b) 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., 1996). As the index of the Fraser Institute is the most widely used economic freedom indicator, the present paper focuses on this index.[2]

Most studies that have used some economic freedom indicator in a cross-country growth model conclude that economic freedom fosters economic growth. This paper critically reviews the literature on the relationship between economic freedom and economic growth.[3] Section 2 discusses the concept of economic freedom and how it is related to the Washington consensus. Section 3 reviews the Fraser index. Section 4 assesses empirical studies on the relationship between economic freedom and economic growth, while section 5 discusses the literature on the determinants of economic freedom. The final section offers some concluding comments.

2. The concept of economic freedom

The core ingredients of economic freedom (EF) are free personal choice, protection of private property, and freedom of exchange. An index of EF should measure the extent to which rightly acquired property is protected and individuals are free to engage in voluntary transactions. Clearly, these elements prescribe an important role for government. In an economically free society, the fundamental function of government is the protection of private property and the enforcement of contracts. However, governments may also diminish economic freedom by overly regulating and taxing the economy.

Many researchers seem to be hesitant using EF indicators as they doubt whether the data are reliable, given the strong ideological position of the organizations providing them. In our view, this is probably the best guarantee that the indicators measure what they should. As Paldam (2003, p. 463) argues:

> "The concept of *economic freedom* used is the one the economic profession associates with the Chicago School. One may see the effort as one where a particular "church" sends out a group of its most devoted members on a worldwide search for virtue and sin. It is preferable that the searchers for sin are zealots, as they are likely to search particularly hard."

However, the zealots who want their index to be a useful instrument in answering the question of whether a policy oriented towards free markets is superior, probably also want to answer this question in the affirmative. We agree with Paldam (2003, p.466), that this moral hazard risk is, however, not a compelling argument against the use of the economic freedom indicator:

> "we are dealing with a group of imminent scholars who know the problems described. They would not risk having their project accused of manipulation, but they are zealots, and moral hazard is a problem even for the most honest. However, once the method has been released it is out of their control, and 100 data points time 7 spread over 30 years are hard to manipulate."[4]

The EF index of the Fraser Institute is closely related to the so-called Washington consensus.[5] The first column in Table 1 shows the main elements of the adjustment programs of the IMF and the Worldbank, according to Williamson (1994), who invented the term 'Washington consensus'. The second column shows how the elements of the Washington consensus match with components of the most recent version of the EF index (these components are described in more detail in section

3.1). It is clear that there is a remarkable resemblance between the EF index and the Washington consensus. In other words, readers who do no like the usage of the economic freedom terminology might use the word liberalization as that is basically what an improvement in the economic freedom rating implies.

Table 1. The Washington Consensus and Economic Freedom

Washington consensus:	Freedom of the World Indicator (edition 2004):
Fiscal Discipline: Budget deficits, properly measured to include provincial governments, state enterprises, and the central bank, should be small enough to be financed without recourse to the inflation tax, implying a primary surplus of several percent of GDP	Average annual growth of the money supply in the last five years minus average annual growth of real GDP in the last ten years (1); Standard inflation variability during the last five years (2); Recent inflation rate (18).
Public Expenditure Priorities: Redirect expenditure from areas with low economic return (e.g., administration, defense, indiscriminate subsidies) to areas with high economic return and the potential to improve income distribution (e.g., primary health and education).	General government consumption as percentage of total consumption (5); Transfers and subsidies as a percentage of GDP (11).
Tax Reform: Broaden the tax base, cut marginal tax rates, and improve tax administration.	Top marginal tax rate and income threshold at which it applies (12); Top marginal income and payroll tax rates and income thresholds at which they apply (42).
Financial Liberalization: Eliminate preferential interest rates for privileged borrowers, achieve a positive real interest rate, with the ultimate objective of market-determined rates.	Freedom to own foreign currency account (3/4); Ownership of banks – percentage of deposits held by privately owned banks (22); Extension of credit – percentage of credit extended to private sector (23); Avoidance of interest rate controls and regulations that lead to negative real interest rates (10); Interest rate controls – interest rates on bank deposits and/or loans are largely determined by the market (33).
Exchange Rates: A unified exchange rate (at least for trade transactions) to ensure export competitiveness.	Difference between official exchange rate and black-market rate (15).
Trade Liberalization: Replace quantitative restrictions with tariffs, which should be progressively reduced until a uniform low tariff is achieved.	Revenue from taxes on international trade as percentage of exports plus imports (14); Mean tariff rate (20); Standard deviation of tariff rates (21); Hidden import barriers – no barriers other than published tariffs and quotas (29); Costs of importing – the combined effect of tariffs, license fees, bank fees and time required for administrative red-tape costs of importing equipment (30); Actual size of trade sector compared to expected size (16).
Foreign Direct Investment: Abolish barriers on entry of foreign firms, with domestic and foreign firms allowed to compete on equal terms.	Access of citizens to foreign capital markets and foreign access to domestic capital markets (31); Restrictions on the freedom of citizens to engage in capital market exchange with foreigners (17); Competition – domestic banks face competition from foreign banks (32).
Privatization: Private state enterprises.	Government enterprises and investment as a percentage of GDP (6).
Deregulation: Abolish regulations that impede entry of new firms or restrict competition and ensure that all regulations are justified by criteria such as	Impact of minimum wage – the minimum wage set by law, has little impact on wages because it is too low or not obeyed (34); Hiring and firing practices of companies are determined by private contracts (35); Share of labour force whose wages are

safety, environmental protection, or prudential supervision of financial institutions.	set by centralized collective bargaining (36); Unemployment benefits – the unemployment benefits system preserves the incentives to work (37); Use of conscripts to obtain military personnel (13); Price controls – extent to which businesses are free to set their own prices (7); Administrative conditions and new business – administrative procedures are an important obstacle to starting a new business (38); Time with government bureaucracy – senior management spends a substantial amount of time dealing with government bureaucracy (39); Starting a new business is generally easy (40).
Property Rights: A legal system that secures property rights throughout the economy without excessive costs.	Judicial independence – the judiciary is independent and not subject to interference by the government or parties in dispute (24); Impartial courts – a trusted legal framework exists for private business to challenge the legality of government actions or regulation (25); Protection of intellectual property (26); Military interference in the rule of law and the political process (27); Integrity of the legal system (28); 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 (41).

Note: Figures in parentheses refer to the Economic Freedom components as shown in Appendix 1.

3. The economic freedom index of the Fraser Institute

The Fraser index has evolved over time, both in terms of the elements taken up in the index and the way they are combined into one single index.[6] In this section we will focus on the selection of the elements and the aggregation procedures used to combine them into one single index. For this purpose, we will use the 1996, 2001, and 2002 editions as well as the most recent edition of the Freedom of the World report.[7] In the various editions of the report, the EF index is available for a long time span, starting in 1970 with a frequency of five years; for more recent years the index is available on an annual basis.

3.1 Components of the freedom index

Gwartney et al. (1996) use 17 measures and rate a high number of countries on each of these measures on a scale of 0-10, in which zero means that a country is completely unfree and ten means it is completely free (see Appendix 1 for a listing of all items). These components are grouped in four broad areas: Money and inflation (items 1-4 in Appendix 1), Government operations and regulations (items 5-10), "Takings" and discriminatory taxation (items 11-14), and International exchange (items 15-17).

In the 2001 edition of the *Freedom of the World* report the list of components making up the index as well as their grouping is different from those presented in Gwartney et al. (1996). The report distinguishes 21 components grouped in seven areas: 1. The size of government (items 5, 11 in Appendix 1), 2. Economic structure and use of markets (items 6, 7, 12, 13), 3. Monetary policy and price stability (items 1,2, 18), 4. Freedom to use alternative currencies (items 3/4, 15), 5. Legal structure and security of private ownership (items 19, 9), 6. Freedom to trade with foreigners (items 14, 20, 21, 16), and 7. Freedom of exchange in capital markets (items 22, 23, 10, 17).

In the 2002 version of the report, again a number of major changes were introduced with respect to the elements making up the index. In constructing the index, survey data on legal structure and government regulation are taken into account. These data are from the Global Competitiveness Report (GCR) and the International Country Risk Guide (ICRG). There are 21 components distinguished, but many of them have sub-components so that the total number of items included is now 37. They are grouped in five areas:

(1) Size of government (items 5, 11, 6, 12 in Appendix 1),

(2) Legal structure and security of property rights (items 24-28),

(3) Sound money (items 1,2, 3-4, 18),

(4) Freedom to trade with foreigners (items 14, 15, 16, 17, 20, 21, 29-31), and

(5) Regulation of credit, labour and business (items 10, 13, 22, 23, 32-41).

The component ratings within each area are averaged to derive ratings for each of the five areas.

The 2004 report has the same grouping of almost the same elements as in the 2002 report.[8] The components in the first area indicate the extent to which countries rely on individual choice and markets rather than the political process to allocate resources and goods and services. Protection of persons and their rightfully acquired property is a central element of economic freedom. The items included in the second area focus on this issue. The key ingredients of a legal system consistent with economic freedom are rule of law, security of property rights, an independent judiciary, and an impartial court system. The components in the third area aim to measure this. Absence of sound money undermines gains from trade, since high and volatile rates of inflation distort relative prices, alter the fundamental terms of long-term contracts, and make it virtually impossible for individuals and businesses to plan sensibly for the future. Furthermore, inflation erodes the value of property held in monetary instruments. These issues are captured in the items included in area four. Freedom of exchange across national boundaries is a key ingredient of economic freedom. The components in area four measure the freedom to trade internationally. Finally, the items in area five measure regulatory restraints that limit the freedom of exchange in credit, labour, and product markets.

3.2 Critique

The Fraser index has been criticized as being a rather *heterogeneous collection of variables* (see, for instance, Leschke, 2000). Indeed, some of the components of the economic freedom indicator of the Fraser Institute, such as security of property rights, are institutional measures (the 'rules of the game'), while others have more of a policy character (the 'outcomes of the game'). North (1981) defines institutions as "a set of rules, compliance procedures, and moral and ethical behavioural norms designed to *constrain* the behaviour of individuals in the interests of maximizing the wealth or utility of principals" (p. 201-202). The key word here is constraints. As pointed out by Glaeser et al. (2004), there is another essential aspect of institutions: the constraints

need to be reasonably permanent or durable. Indeed, transitory "constraints" would not necessarily bind, and may be changed by those who do not like them. Glaeser et al. (2004) discuss the measurement of some proxies for political institutions that have been used in recent research, asking if these measures of institutions reflect a) constraints on government and b) permanent or at least durable features of the environment. They show that, in fact, these proxies reflect neither as they all measure *outcomes*, not some permanent characteristics that North refers to. The same critique can be made with regard to the EF indicator, which is a mixture of institutions and outcomes.[9] So far, the literature has not come up with an outcomes-free EF index.

Economic freedom cannot simply be counted because it refers to quality rather than quantity. Consequently, *subjectivity and imprecision* will – to some extent – be inevitable when it comes to measuring EF. The Fraser Institute gives a score between 0 and 10 on each variable that is part of the EF index. The transformation of the underlying variable to this 0-10 scale can be done in several ways. This includes (subjective) decisions. Take, for instance, the component 'Transfers and subsidies as a percentage of GDP'. The score is determined by taking $(V_i - V_{\max})/(V_{\max} - V_{\min})$ multiplied by 10. V_i is country *i*'s transfers and subsidies as a percentage of GDP, and $V_{\max}$ and $V_{\min}$ represent the maximum and the minimum value of the measure during the base year, respectively. In other cases $V_{\max}$ and $V_{\min}$ are simply assigned different numbers - for example 40 and 6 in the case of 'General government consumption spending as a percentage of total consumption'. This choice is, of course, subjective to some extent. In other cases discrete scores are given according to certain subjective criteria. For example, for the component 'Freedom to own foreign bank accounts domestically and abroad' a rating of 10 is given when there is no restriction to hold foreign bank accounts domestically or abroad, and 0 if there are restrictions on both. If it is allowed to hold an account domestically but not abroad, the value of 5 is assigned.

Even though subjectivity to some extent plays a role in constructing the economic freedom index, we do not consider that a compelling argument against the use of the data. Constructing proxy variables like these always implies that discretionary decisions have to be made; the choices made seem quite reasonable to us. Furthermore, the data are generally provided in such a way, that an individual researcher may change the scores for a particular component. We are not aware of any

study that has examined the sensitivity of the EF rankings with respect to the choices made in the scoring methods as applied by the Fraser Institute.

Some of the *components of the index are disputed*. For instance, De Haan and Sturm (2000) question the inclusion of the level of taxes. Of course, taxes always distort prices, but that in itself does not make it necessary to include the level of taxation in an index of economic freedom. To extreme libertarians, like Rotbarth (1970), the state obtains its revenue by coercion, known as taxation, whereas private persons and groups obtain their income voluntarily by selling goods and services to others or by voluntary gift. To Rothbard, taxation is theft, pure and simple. However, most economists agree that the government does have some important tasks, which have to be financed. The question then becomes what level of taxes (spending) is acceptable? Gwartney et al. (1996) also seem to defend this line of argument, as they state (p. 22): "There are two broad functions of government that are consistent with economic freedom: (1) protection of individuals and their property against invasions by intruders, both domestic and foreign and (2) provision of a few select goods - what economists call public goods - which have characteristics that make them difficult for private business firms to produce and market.... When governments move beyond these protective and productive functions into the provision of private goods, they restrict consumer choice and economic freedom." However, in constructing their economic freedom indicator, they forget these nuances and focus on levels of taxes and spending, since "government provision of goods and services, even when desirable, supplants individual decision making with collective decision making and erodes economic freedom as we see it." (Gwartney and Lawson, 2003, p. 408).

Sturm and De Haan (2000) also criticise the way monetary policy is taken up in the Fraser index. For one thing, many authors have argued that inflation is a tax and should be treated as such. Like every other tax it has distortive effects and optimal policy would be to choose such a tax mix that its distortive effects are minimal (Mankiw, 1987). So the same argument made with respect to other forms of taxation may apply here as well. Again, this is not to argue that inflation as such may not be detrimental. Indeed, various studies suggest that it is (see, for instance, Fischer, 1993). Another objection to the inclusion of both inflation (or money growth) and the standard deviation of inflation is that inflation variability is positively correlated with the level of inflation (Chowdhury, 1991).[10]

3.3 Aggregation

There are two problems that have to be solved when aggregating the components into a summary index: missing observations and the selection of an aggregation procedure. As to the first problem: for certain country-year observations data are missing on some components of EF so that the area score is calculated using only partial data. For other observations, data are missing on all components of a particular area. If the overall index is constructed by using the average of the various areas (as is done in the most recent versions of the *Freedom of the World* report), the overall EF index represents the average of only those areas for which data are available. Consequently, the index is measured inconsistently across nations and/or over time (Heckelman and Knack, 2004). If the various components are highly correlated, missing data is unlikely to affect the overall index very much. However, as we will show below, the correlation of the elements making up the index is often very low.

Over time, the Fraser Institute has employed different aggregation procedures. Gwartney et al. (1996) combine their 17 elements of economic freedom in three ways in aggregated rankings. In the first Index (*Ie*) each component is assigned a weight equal to the inverse of its standard deviation, while in the Index *Is1* the importance of the components is based on a survey of experts in the field of EF. Finally, in the Index *Is2* the weighing is based on a survey among country experts.

Heckelman and Stroup (2000) rightly criticize the aggregation procedures employed by Gwartney et al. (1996) as being ad-hoc. The basic problem is that various components may provide some information on an unobservable variable called economic freedom. From this perspective, a latent variable approach is therefore preferable (see Wansbeek and Meier, 2000 for an excellent discussion).[11] The various components of economic freedom may be considered as imperfect measures (indicators) of economic freedom. The objective is then to find values for the parameters expressing the relation between the latent variable and the indicators. For this purpose principal components analysis (PCA) can be used. This is a method of combining a set of variables into variable(s) that best reflect(s) the original data, using all information that is available in the indicators without imposing a specific structure on the model. It is not based on subjective judgments. Moreover, it takes care of multi-collinearity issues. The procedure partitions the variance of a set of variables and uses it to determine the linear combination of these variables that maximizes the variation of the newly constructed principal component(s). Using this

approach to the data of Gwartney et al. (1996), Leertouwer et al. (2002) extracted a number of components that are orthogonal to the indicators by deriving eigenvectors and eigenvalues.[12] Also in the 2001 edition of the *Freedom of the World* report, PCA was used to construct an aggregated measure of EF.[13]

However, in the 2002 edition of the Fraser Institute another aggregation is used. The component ratings within each area are averaged to derive ratings for each of the five areas. The aggregated score is merely the average of the five area ratings. The same procedure is used in the most recent version of *Economic Freedom of the World*. When the component ratings are correlated, the ratings and rankings of countries will be relatively insensitive to the weights assigned to the components. However, especially the components in the 'Size of the Government' area are only weakly correlated with the aggregated index (see Appendix 2). The weights assigned to these components therefore exert an important impact on the ratings and ranking of countries. This applies especially to countries in western Europe (Gwartney and Lawson, 2003).

Table 2 shows Spearmann and Kendall rank correlations for economic freedom in 1995, using the 5 versions of the index described above. All countries for which the various versions of the index are available have been taken up. Despite the various changes, the Spearmann rank correlations are generally above 0.90. The correlations are below this level for the relationship between *Is2* and the more recent indicators. Kendall rank correlations reveal the lowest values for especially *Is1* versus the other indicators.

Table 2. Rank correlation of various editions of the economic freedom indicator of the Fraser Institute (1995, 102 countries)

Spearmann/ Kendall	*Ie*	*Is1*	*Is2*	*Fraser2001*	*Fraser2002*	*Fraser2004*
Ie	1	0.970	0.982	0.900	0.900	0.913
Is1	0.885	1	0.924	0.849	0.858	0.865
Is2	0.912	0.783	1	0.913	0.900	0.916
Fraser2001	0.745	0.663	0.765	1	0.952	0.959
Fraser2002	0.742	0.683	0.737	0.830	1	0.981
Fraser2004	0.762	0.688	0.770	0.841	0.903	1

Note: below the diagonal Spearman rank correlation are reported, whereas above the diagonal Kendall rank correlations are shown.

In principal three factors can lead to differences of the index as published in various editions of *Economic Freedom of the World*: 1. data revisions (including changes in the construction of the components making up the index), 2. new elements that have been taken up in the index, and 3. the use of different aggregation procedures.

Table 3 shows the correlation of the 13 components that have been included in three editions of the *Economic Freedom of the World* report for those countries for which this information is available for 1995. In other words, Table 3 illustrates the importance of data revisions and changes in the way these various elements have been constructed (see Appendix 1 for further details on definition issues). Table 3 suggests that the variation between the various versions of the EF index is to some extent due to data and definition revisions. Note especially the differences between the 1996 and later versions of the index; in all cases revisions have taken place. For a few items (notably the role and presence of government-operated enterprises and government consumption) the correlations between the 1996 edition on the one hand and the 2000 and 2001 editions on the other are even below 0.7.

Table 3. Rank correlation of sub-indicators of economic freedom present in the 1996, 2001 and 2004 edition of Freedom of the World (1995, 102 countries)

	Spearman:			Kendall:		
Element:	1996/ 2001	1996/ 2004	2001/ 2004	1996/ 2001	1996/ 2004	2001/ 2004
Average annual growth rate of the money supply during the last five years minus the potential growth rate of real GDP	0.943	0.872	0.950	0.834	0.724	0.838
Standard deviation of the annual inflation rate during the last five years	0.830	0.830	1.000	0.704	0.704	1.000
Government general consumption expenditures as a percentage of GDP	0.682	0.666	0.983	0.574	0.554	0.970
The role and presence of government-operated enterprises	0.551	0.551	1.000	0.463	0.463	1.000
Price controls – the extent that firms are free to set their own prices	0.861	0.861	1.000	0.777	0.777	1.000
Freedom from government regulations and policies that cause negative real interest rates	0.816	0.816	1.000	0.737	0.737	1.000
Transfers and subsidies as a percentage of GDP	0.971	0.965	0.991	0.902	0.890	0.978
Top marginal tax rate (and income threshold at which it applies)	0.924	0.934	0.994	0.853	0.869	0.982
The use of conscripts to obtain military personnel	0.839	0.853	0.971	0.781	0.794	0.971
Taxes on international trade as a percentage of exports plus imports	0.889	0.889	1.000	0.782	0.782	1.000
Difference between the official exchange rate and the black market rate	0.684	0.684	1.000	0.608	0.608	1.000
Actual size of trade sector compared to the expected size	0.732	0.779	0.885	0.588	0.632	0.796
Restrictions on the freedom of citizens to engage in capital transactions with foreigners	0.861	0.861	1.000	0.777	0.777	1.000

How sensitive are the rankings to the various aggregation procedures applied? Using only data from the 1996 edition of the Freedom of the World report for those components that are included in the editions of the report of the Fraser Institute that we focus upon, Table 4 shows the correlation of the aggregated index using 5 different aggregation procedures.[14] The first three are the weights as used by Gwartney et al. (1996), i.e. a weight equal to the inverse of its standard deviation (*Fraser96Ie*), a weighting scheme based on a survey among experts in the field of economic freedom (*Fraser96S1*) and a weighting scheme based on a survey among

country experts (*Fraser96S2*). The fourth weighting scheme is based on the principal components estimates as used in the 2001 edition of *Freedom of the World* (*Fraser96PC*). The final scheme is similar to the one used in the 2002 and 2004 editions of the report, i.e. the average of the elements (*Fraser96AV*).

Table 4. Rank correlation coefficients of economic freedom indicators (1995, 102 countries) using different weighting schemes and data of Gwartney et al. (1996)

Spearmann/ Kendall	*Fraser96Ie*	*Fraser96S1*	*Fraser96S2*	*Fraser96PC*	*Fraser96AV*
Fraser96Ie	1	0.928	0.942	0.961	0.985
Fraser96S1	0.788	1	0.770	0.927	0.909
Fraser96S2	0.812	0.592	1	0.869	0.938
Fraser96PC	0.854	0.783	0.703	1	0.927
Fraser96AV	0.922	0.763	0.802	0.793	1

Note: below the diagonal Spearman rank correlation are reported, whereas above the diagonal Kendall rank correlations are shown.

It follows from Table 4 that the use of different aggregation procedures affects the outcomes to some extent. The indicators employing weights based on views of the experts again yield the lowest correlations.[15] The choice of a particular aggregation procedure is also important as it may affect conclusions concerning the relationship between EF and economic growth. Recently, Heckelman and Stroup (2005) have shown that the relationship between the level of the EFI and growth is not robust to alternative aggregation methods, even when using the same regression specification.

4. Economic freedom and economic growth

4.1 Why would (the components of) economic freedom affect growth?

According to the 2004 edition of the *Economic Freedom of the World* report, there are various reason to expect that free economies will grow more rapidly than those that are less free. EF implies competition. In general, competition is widely believed to lead to higher rates of economic growth. If firms operating in open markets (free entry) do not cater to the wishes of consumers they will soon be replaced by rivals who do. More liberal economies also provide greater opportunities for entrepreneurial discoveries. A free market makes it possible for entrepreneurs to try out their innovative ideas and see if they can pass the market test. Finally, in a free market private investment will tend to flow towards areas with the highest rate of return.

However, once we zoom in on the five areas of EF as distinguished in the more recent versions of the report, it becomes clear that counter arguments can be made. With regard to area 1 (Size of Government), views on the optimal size of the government depend largely on the perception of how well the government pursues its tasks, which, in turn, is largely dependent on the assumed underlying motives of the policy makers. From a public-choice perspective, in which the government is seen as consisting of purely selfish individuals, the conclusion will generally be: the smaller, the better. However, different conclusions may be reached if it is assumed that government is a benevolent social planner trying to maximize some social welfare function (Barro, 1990). There is substantial evidence that high levels of taxes and government consumption may retard economic growth. At the same time, most economists agree that the government does have some efficiency-enhancing role (like providing pure public goods), even though its exact role is under debate.

As to area 2 (Legal structure and security of property rights), there seems to be a broad consensus in the literature that secure property rights are crucial for economic growth. First, secure and transferable rights of assets and contracts are investment generating and hence growth enhancing, since owners can be sure that they will receive the benefits of their investments (World Bank, 2002). Second, with secure property rights, the allocation of assets will be efficient and hence growth promoting. Savings will be transferred to activities with the highest expected profits. However, protection of property may create a monopoly situation for the economic actor owning

the right. A functioning legal structure and secure property rights are to a large extent a necessary, complementary institution to all the other economic freedom categories (Rodrik, 2000). For example, without secure property rights the incentives to invest will be low even if the credit market is deregulated. However, the effects of stronger ownership are also conditional on complementary institutions or factors not always present (Lin and Nugent, 1995). For example, higher security of property may not increase growth in the absence of good credit possibilities and access to new technology.

Components in area 3 (Access to sound money) focus on the costs of inflation. There are good reasons why especially high and volatile inflation will have a negative impact on growth (see Briault, 1995). However, Akerlof et al. (1996) argue that a moderate level of inflation provides 'grease' to the price and wage setting process. The economic adjustment of relative prices to shocks can become sluggish in the presence of downward nominal rigidities in wages and prices. For instance, with a zero inflation rate, individual firms facing an adverse firm-specific shock will not be able to secure real wage reductions in the presence of downward nominal wage rigidity and will, instead, lay-off workers. A moderate level of inflation provides for some real wage flexibility, which reduces the natural, or long run, rate of unemployment. Also the empirical evidence on the inflation-growth nexus is somewhat mixed. For example, Barro (1995) finds that in samples that include countries with inflation rates of 20% or less the inverse relationship breaks down. This suggests that the inflation-growth relationship is not simply linear.

As to area 4 (Freedom to exchange with foreigners) it is widely believed that there are efficiency effects from trade liberalization. The most straightforward efficiency effect is the larger market and the gains for both trading partners if they produce according to their comparative advantages. Another benefit is that the interaction with foreigners and their products may ease the diffusion of technology and this may, in combination with international competition, enhance the productivity of the domestic firms. However, since Sachs and Warner (1995) published their seminal article, there is an ongoing debate on the relationship between trade liberalization and economic growth (see Rodriguez and Rodrik, 2000). Some authors (see, for instance, Greenaway et al., 2002) report evidence in support of a positive linkage, while others (see, for instance, Yanikkaya, 2003) are more skeptical.

With respect to area 5 (Regulation of Labour, Credit, and Business) there is a broad consensus that less regulation in general will be beneficial for growth. However, to what extent all the components included are detrimental to growth is more disputed. For instance, there is a debate on the impact of the degree of centralization of wage bargaining; some authors argue that a high level of centralization and a high level of decentralization will lead to a better performance of the labour market than the intermediate case (Calmfors and Driffill, 1988).

4.2 Empirical Evidence

Most studies analysing the relationship between economic growth and economic freedom have employed cross-country (or panel) growth models.[16] Table 5 summarizes empirical growth studies in which some economic freedom indicator is taken up as explanatory variable.

It is clear from these studies that economic freedom seems to have a positive association with growth. None of the studies summarized reports that economic freedom is bad for growth. Even though many studies have serious drawbacks – like wrong model specification and lack of sensitivity tests – that will be discussed in some detail below, it is a strong result that emerges when looking at these studies collectively. Furthermore, those studies that deal with the problems of model specification and sensitivity in a more rigorous way also find that there is a positive growth effect from economic freedom (see e.g. De Haan and Sturm, 2000). The only caveat to this conclusion is that studies that use the area indexes of economic freedom instead of the overall EF index find that the effects may differ across areas (see e.g. Heckelman and Stroup (2000) and Carlsson and Lundström (2002)).

4.3 Discussion

Level vs change

Should the level of economic freedom or the change in economic freedom be used in empirical research, or both? Gwartney et al. (1999, p. 647) argue that:

> "it would not be surprising to observe a loose relationship between the level of economic freedom and growth of income. A measure of economic freedom in 1995, for example, does not reveal how long that level has been present. Based

on the level alone, it is not possible to determine whether economic freedom has been increasing or decreasing in recent years. There is more reason to expect a consistent relationship between changes in economic freedom and growth. Credibility, however, is vitally important here. Because credibility must be earned, there will often be a time lag between a change in economic freedom and when the change exerts an impact on economic activity."

Many studies use the level of economic freedom (either the initial level (EF_0) or the period average level of economic freedom) in combination with the change in economic freedom (ΔEF) in some otherwise pretty standard cross-country growth model (see, for instance, Dawson, 1998, Gwartney et al., 1999, 2004, and Cole, 2004). A representative model looks like:

$$Y = \alpha_0 + \alpha_1 Y_0 + \alpha_2 I + \alpha_3 HC + \alpha_4 EF_0 + \alpha_5 \Delta EF + \varepsilon \qquad (1)$$

where Y denotes the average rate of growth of GDP per capita, Y_0 is initial GDP per capita, I is average investment to GDP ratio, and HC is an indicator for human capital.

Including the level of economic freedom, say in 1975, and the change, say over 1975-90, implies estimating a model with the level of freedom in 1990 as explanatory variable. Such a model will, no doubt, be suffering from an endogeneity problem. Table 6 offers a simple illustration. In this model for average economic growth estimated over the period 1975-90 for 80 countries, the level and the change of economic freedom are included, jointly and separately. The data on the average growth rate of GDP per capita are taken from the Summers and Heston data file (version 5.6). The set of other explanatory variables consists of: initial per capita income in US-dollars (Y_0), average investment share to GDP (I) – both from the Summers and Heston data file – and secondary-school enrolment in 1975 (HC), which is taken from the Barro-Lee data set. The first column presents the results for the model with control variables only, in column 2 both the level and change in freedom are taken up, while the third column includes the level of economic freedom in both 1975 and 1990. The level and change in the freedom index are each separately included in the last two columns.

Table 6. Simple growth regressions with the level and change of economic freedom

	(1)	(2)	(3)	(4)	(5)
Constant	9.66	7.42	7.42	9.42	8.45
	(3.06)	(2.49)	(2.49)	(2.99)	(2.75)
Y_0	-1.64	-1.61	-1.61	-1.75	-1.46
	(-3.49)	(-3.64)	(-3.64)	(-3.68)	(-3.19)
I	0.27	0.23	0.23	0.26	0.24
	(5.27)	(4.70)	(4.70)	(5.21)	(4.91)
HC	0.04	0.02	0.02	0.04	0.02
	(1.55)	(1.09)	(1.09)	(1.66)	(1.04)
Level economic freedom in 1975		0.55	-0.43	0.26	
		(2.69)	(-1.60)	(1.27)	
Change economic freedom between 1975-90		0.98			0.69
		(3.60)			(2.65)
Level economic freedom in 1990			0.98		
			(3.60)		
Adj.R^2	0.29	0.39	0.39	0.30	0.34
No. Obs.	80	80	80	80	80

It follows from Table 6 that models that include either the change of economic freedom or the level of economic freedom at the end of the sample (i.e. 1990, see columns (2), (3) and (5)) explain significantly more of the variation in economic growth then models with only the level of economic freedom at the beginning of the sample (i.e. 1975), or no economic freedom variables in the specification (columns (4) and (1), respectively). Columns (2) and (3) are mathematically identical. Hence, specifications including both the initial level and the first difference of economic freedom can also be interpreted as having the level at the start and at the end of the sample included instead. Looking at it in that way, column (3) makes clear that a higher initial level of economic freedom does not contribute to subsequent higher

growth; especially the end level seems to matter – pointing at causality and endogeneity issues.

This finding casts considerable doubt on the results of many of the studies summarized in Table 5. In this table we indicate for studies using the Fraser index whether the initial level of EF (EF_0), the period average of the level of EF (EFAV), or the change in EF (ΔEF) is used and whether the level of EF is combined with the change in EF. Especially studies that jointly employ the level and the change of EF as regressors are suspect.

Modelling strategy

Unfortunately, most of the empirical research summarized in Table 5, does not carefully check how sensitive conclusions are with respect to model specification, a finding not uncommon in cross-country growth studies (Temple, 2000; see also Brock and Durlauf, 2001). The central difficulty is that several different models may all seem reasonable given the data, but yield different conclusions about the parameters of interest. Therefore, various authors have come up with some kind of procedure, like the so-called Extreme Bounds Analysis (EBA); see, for instance, Levine and Renelt (1992), Sala-i-Martin (1997) and Sturm and De Haan (2005).[17] The central idea of EBA is to run a whole range of possible regressions and to examine how sensitive parameter estimates are to different model specifications. It quite remarkable that studies summarized in Table 5 that use some variant of the EBA generally come to less strong conclusions than those that don't. Still, Sturm and De Haan, who have applied the EBA quite extensively, conclude that the change in economic freedom, i.e. the first difference of the economic freedom indicator, is robustly related to economic growth (see, for instance, De Haan and Sturm, 2000, 2004 and Leertouwer et al., 2002).

Various studies have other drawbacks as well. Some studies use very simple specifications. Islam (1996), for instance, uses only the level of the economic freedom index and its square as explanatory variables in his model for economic growth rates. Many other studies include only a limited number of other control variables. Doucouliagos and Ulubasoglu (2005) find that nearly half of the studies in their meta-analysis do not use a physical capital variable in their specifications, even though Levine and Renelt (1992) identified investment as one of the few variables that have a robust impact on economic growth. Only 35 per cent of the studies include both human and physical capital even though Mankiw et al. (1992) suggest that these variables play

an important role in explaining growth. Doucouliagos and Ulubasoglu (2005) also find that controlling for capital in the growth equation produces a smaller partial correlation between economic freedom and economic growth.

Except for Carlsson and Lundström (2002), Paldam et al. (2003), Islam (1996) and De Haan and Sturm (2004), all studies summarized in Table 5 assume a linear relationship between economic freedom and economic growth. Paldam et al. (2003) argue that the relationship is not linear: below the bend there is a positive relationship between freedom and growth, while above the bend there is no effect of economic freedom on growth. So, only countries below the bend, situated at a freedom level of about 6, will benefit from liberalization. However, De Haan and Sturm (2004) do not find support for such a non-linear relationship.

Direct vs indirect effect

If EF is the primary factor driving cross-country differences in investment, it is redundant to include both investment and EF as regressors in a cross-country growth regression. Of course, in that case there should be a strong relationship between EF and investment. If other factors than EF contribute to cross-country variation in investment or if the effect of EF operates via other channels than investment, the inclusion of EF should attenuate the size and significance of the estimated coefficient on investment. If EF works directly through an effect on factor productivity, including a measure of EF can be expected to add explanatory power to the regression and will not affect the size and significance of the estimated coefficient on investment. If EF works through both channels, inclusion of an EF indicator should add explanatory power and reduce the size and significance of investment's impact on growth. Dawson (1998) reports evidence in favour of both a direct productive efficiency and indirect investment effect. Likewise, Bengoa and Sanches-Robles (2003) report a positive impact of economic freedom on Foreign Direct Investment (FDI) in their panel of 18 Latin American countries. Apart from an indirect effect on FDI, economic freedom has also a direct impact on growth. Also Gwartney et al. (2004) find that EF is significant and adds to the explanatory power, even if investment is included in the growth regression; they also report that EF affects investment. So, their evidence supports the existence of a direct and an indirect channel. However, their investment model includes both the level and the change in economic freedom, causing an endogeneity problem.

Other studies reach different conclusions. De Haan and Sturm (2000) find no robust relationship between (the level and changes of) economic freedom and investment. Dawson (2003) reports that both the level and change of EF Granger-cause investment. However, among the individual areas of freedom, there is less evidence of a causal relationship with investment, with the exception of freedom in the area of international finance. Cole (2004) only finds support for the direct effect of EF on growth: the coefficient of investment in his growth model is not affected when the EF indicator is included.

Aggregated index vs components

Various authors have argued against aggregation (see e.g. Heckelman and Stroup, 2000 and Lundström, 2003). Apart from the argument that weighting schemes may be arbitrary, these authors argue that not all elements in the economic freedom index may be robustly and positively related to economic growth. For instance, Heckelman (2000, p. 72) argues: "It is likely that not every type of freedom will enhance growth; some may actually deter growth. Which do or do not is an empirical question and reliance on the summary measures may lead policy makers astray if their objective is growth, rather than freedom itself."

Ayal and Karras (1998) conclude that the eight categories they study are significantly and positively related to growth, even though one of the categories is not robust to the inclusion of some control variables. Heckelman and Stroup (2000) use 14 components of economic freedom but find that only four of them have a positive and significant effect on growth in bivariate regressions, and only two in a multivariate regression, and one has a negative and significant effect. Carlsson and Lundström (2002) study the seven categories from the 2000 version of the Fraser Institute Index and report that only one category is positively and robustly related to growth, one has a robust hump-shaped relation and one is negatively and robustly related to growth. Using Granger-causality tests between the different economic freedom categories and growth Dawson (2003) concludes that only two on the categories can be said to granger-cause growth. Berggren and Jordahl (2004) go even further in the decomposition and identify factors within the categories that are the most important determinants of economic growth.

These studies indicate that the relation between economic freedom and economic growth is a complex issue. It is important to consider the different types of economic freedom since they seem to have different effects on growth.

Table 5. A summary of empirical cross-country growth models with economic freedom

Study	Indicator(s) used	Countries	Period	Method	Results	Comments
De Vanssay and Spindler (1994)	Index of Scully and Slottje (1991)	100	1985-88	OLS, some control variables	Significant relationship with GDP per capita	Limited set of control variables, no robustness checks
Islam (1996)	Easton and Walker (1992)	94 and subgroups	1980-92	OLS with GNP per capita and growth	Freedom indicator often significant, but results differ for different (income) groups of countries	Too simple model, no robustness checks
Hanke and Walters (1997)	Fraser, Heritage and Freedom House Indicators	29	1996 survey data	OLS with GNP per capita	Significant relation with all freedom indicators	No growth model, no robustness and outlier checks
Goldsmith (1997)	Gwartney et al. (1996) EFAV and Heritage Foundation and Freedom House indicator	69	1985-94	OLS with only investment as control variable	Significant relations with economic freedom indicator of Fraser Institute	Period Average of EF is used; no robustness and outlier checks
Easton and Walker (1997)	Gwartney et al. (1996); EF_0	57	1975-85	OLS with GNP per capita	Significant relations with economic freedom	Income instead of growth rate in a growth model, , no robustness and outlier checks
Park and Ginarte (1997)	Gwartney et al. (1996); EFAV	60	1960-90	System of four equations estimated by SUR	EF is significant in growth regression, but not in investment mdel.	Period Average of EF is used; no robustness and outlier checks; estimation period does not coincide with availabality of EF index
De Haan and Siermann (1998)	Index of Scully and Slottje (1991)	78	1980-92	Extreme bounds analysis (EBA)	Outcomes depend on which index of Scully and Slottje is used	Some control variables used in the regression are part of freedom index
Johnson and	Gwartney et al.	38	1985-94	OLS	Economic freedom positively	Apart from initial

Study	Indicator(s) used	Countries	Period	Method	Results	Comments
Lenartowicz (1998)	(1996); EF_0				related to growth	GDP no control variables; no robustness and outlier checks.
Ayal and Karras (1998)	Gwartney et al. (1996); EFAV	58	1975-90	OLS with 13 elements of index	Six components have significant effect on growth	No robustness and outlier checks; period average of EF is used
Dawson (1998)	Gwartney et al. (1996) EF_0 and _EF at the same time	85	1975-90	Cross-country and panel models	Both level and change of economic freedom have significant effect on growth	Both level and change included; no robustness and outlier checks
Nelson and Singh (1998)	Easton and Walker (1997)	67	1970-89	Fixed effects model with 5 years averages	Statistically significant positive effect of level of EF	No robustness and outlier checks
Gwartney et al. (1999)	Fraser 1997 index; EF_0 and _EF at the same time	82	1980-95	OLS	Both level and change of economic freedom have significant effect on growth, but level not always significant	No robustness and outlier checks; level and change EF in same regression
Leschke (2000)	Fraser 1998 index ; EF_0 and _EF at the same time	80	1990-97	OLS ; set of explanatory variable includes two factors ('political interventions in the market process' and 'market framework'), which are based on elements of EF and Freedom House indicators	Factors perform better than EF index; factor 2 has stronger impact	Only initial income used as control variable; no robustness and outlier checks; level and change EF and factors in same regression
De Haan and Sturm (2000)	Gwartney et al. (1996); EF_0 and _EF but not at the same time	80	1975-90	EBA	Only change in freedom is robustly related to growth.	Some control variables included in freedom index
Heckelman and Stroup (2000)	Index based on Gwartney et al. (1996)	49	1980-90	OLS	Differences in economic freedom between nations can explain almost half of the variation in growth	See comment by Leertouwer et al. (2002)
Sturm and De Haan	Gwartney et al.	80	1975-90	Robust estimators	Only change in freedom is	

Study	Indicator(s) used	Countries	Period	Method	Results	Comments
(2001)	(1996), EF_0 and _EF but not at the same time				robustly related to growth.	
Pitlik (2002)	Fraser 2001 index, EF_0 and _EF at the same time, as well as stand. dev. of _EF	80	1975-95	EBA	Volatility of liberalization has negative impact on growth; level and change are related to growth, but level is not very robust	Only few control variables used in EBA
Carlsson and Lundström (2002)	Fraser 2000 index, EFAV	74	1975-95	EBA	Only variables in the index that have positive and robust relation with growth are legal structure and private ownership, and freedom to use alternative currency.	Period Average of EF is used.
Leertouwer et al. (2002)	Gwartney et al. (1996) EF_0 and _EF but not at the same time	49	1980-90	EBA	Only change in economic freedom is related to economic growth.	
Green et al. (2002)	Gwartney et al. (1996)	45	1970-89	Panel model (5-years intervals)	Once economic freedom is included, human capital no longer affects technological diffusion.	No robustness and outlier checks
Ali and Crain (2002)	Gwartney et al. (1996); EFAV	119	1975-89	EBA	Level of EF is robustly related to growth, in contrast to political freedom indicators, but not to investment.	Z vector consists of only 3 variables (trade, inflation and standard deviation of credit growth) that are to some extent included in the economic freedom index
Weede and Kämp (2002)	Gwartney et al. (2000); EF_0 and _EF separate and togther	70	1970-95	Cross-country growth model	EF significant if both level and change are included, otherwise only change is significant	No robustness and outlier checks
Knowles and Garces-	2 elements of	53-65	1960-85	Cross-country growth model	Price controls and	Estimation period and

Study	Indicator(s) used	Countries	Period	Method	Results	Comments
Ozanne (2003)	Gwartney et al. (1996)				government ownership are significant if included separately, but if red tape variable is included they are not significant anymore.	variable periods do not match; no robustness and outlier checks
Paldam et al. (2003)	Fraser 2001 index	582 observations (country years)	1970-99	Non-parametric tests and ad-hoc functional forms in panel model with fixed effects.	Below the bend (around freedom level of 6), the relationship is positive, above the bend there is no effect on growth of increases or decreases in freedom.	In regressions only initial GDP and country groups included.
Bengoa and Sanches-Robles (2003)	Gwartney et al. (1996), EF_0	18 Latin American countries	1970-99	Panel with 5 year averages	EF affects FDI and has also direct effect of growth	Period average of EF is used; no robustness and outlier checks
Norton (2003)	Fraser 2001 index; level EF	65-113 countries	unclear	OLS with Poverty and Development index as dependent variable	EF significant in both regressions	Period average of EF is used; no robustness and outlier checks
Cole (2004)	Fraser 2002 index; EF_0 and _EF at the same time	80-96 countries	1980-99	OLS	EF and change in EF significant	No robustness and outlier checks; level and change EF in same regression
Gwartney et al. (2004)	Fraser 2003 index; EF_0 and _EF at the same time	66-94 countries	1980-2000	OLS	EF and change in EF significant in models for investment and growth	No robustness and outlier checks; level and change EF in same regression
World Bank (2004)	Heritage Index	62 developing countries	1999-2003	OLS	Only change in EF affects growth, the level of EF increases the effect of aid	Relatively short run growth effects
Heckelman and Knack (2004)	Fraser 2002; EF_0	52 countries	1980-2000	WLS	Area 1-3 have significantly positive and area 5 has significantly negative effect on growth	Only initial GDP included, no robustness and outlier checks
De Haan and Sturm (2004)	Gwartney (1996), Fraser 2001, Fraser	80 countries	1975-90	EBA with robust estimation	Only change in EF robustly related to growth	

Study	Indicator(s) used	Countries	Period	Method	Results	Comments
	2002; EF_0 and _EF but not at the same time					
Bergren and Jordahl (2005)	Fraser 2002, EFAV	78 countries	EF 1970-90, growth 1975-2000	EBA, LTS	Decomposes the effects in detail, examines the effect of different samples	Mainly an analysis of freedom to trade
Doucouliagos and Ulubasoglu (2005)	Fraser 2002 index; EF_0 and _EF but not at the same time	82 countries	1970-99 and 5 years intervals	OLS and panel	EF and change in EF significant in all panels, but EF not in cross-country model if capital stock is included	No robustness and outlier checks

5. Causes of economic freedom

There are only a few studies dealing with the causes of economic freedom. Still, this is an interesting area for research as there is quite some variation among countries and variation over time in countries. Why do some countries have higher levels of EF than others? Why does the level of EF of some countries increase over time, while it decreases for some others? In this section we discuss studies trying to explain (changes in) economic freedom.

Table 6 summarizes studies that explicitly focus on the determinants of EF.[18] Various studies posit that there may be a positive *link between democracy and the (change in the) level of EF*. Arguments why democracy may lead to more EF are generally similar to the arguments as to why democracy may foster economic growth (see Przeworski and Limongi (1993) and De Haan and Siermann (1996) for surveys). First, only governments with some legitimacy will be able to implement and sustain policies that may bear high short-term costs. Second, various institutional characteristics of a democracy, like an independent legal system, are also required for a successful liberalization. As North (1993) puts it, "well specified and enforced property rights, a necessary condition for economic growth, are only secure when political and civil rights are secure; otherwise arbitrary confiscation is always a threat." Third, democratisation may limit rent-seeking due to its system of checks and balances. Finally, Rodrik (1999) argues that democratic institutions - political parties, elected representatives, free speech, and the like - can be viewed as the ultimate institutions of conflict management, as they allow for differences among social groups to be resolved in a predictable, inclusive, and participatory manner. As liberalization may lead to distributional conflicts, this view implies that democracies should be better able to liberalise their economies than non-democracies.

The view that there is a positive relationship between democracy and liberalization may be referred to as the *compatibility view*. However, according to the *conflict view* there is a trade-off between a democratic process and rapid liberalization. A first argument is that democracy makes it harder for a government to make tough but necessary decisions. An authoritarian government is needed at least in the beginning of the liberalization process, since massive layoffs and cuts in entitlements are common in the initial stages. Examples in favour of this view are countries like Chile, South Korea, and Taiwan, which all successfully implemented economic reforms under an autocratic regime and subsequently replaced the regime with a more democratic government. Another example is Russia that started with a political liberalization that ended up in institutional chaos, which retarded the economic

reforms (Shleifer, 1998). A second argument for a negative effect of democracy on economic freedom is that the positive long run effects of a reform involve great uncertainty. This may lead a rational voter to oppose the changes in economic freedom even though the final effects are expected to be welfare augmenting for a majority (see, e.g., Fernandez and Rodrik, 1991). An example is workers opposing privatization, even though they believe most will benefit in the end, because they do not know if their individual skills will be demanded after the reform. Since political backlashes would be unavoidable, an autocratic regime would be more likely to implement these policies, which ex-post would be popular. A third argument concerns the inefficiencies that might be created by the rent-seeking activities of interest groups under a democratic regime. Some argue that elected governments are more likely to follow the demands of some interest groups in society as a means to win votes in the short run. The redistributive role of a democratic government may therefore lead to overspending and adverse effects on savings and productive investment (Alesina and Perotti, 1994). Necessary restraints on consumption and real wages would decrease the probability of re-election. Alesina and Drazen (1991) illustrate how efficiency-enhancing reforms may be delayed because of wars of attrition over asymmetric pay-offs.

Dawson (1998) finds that for a sample of 92 (OECD and developing) countries the level of EF in 1990 is significantly related to political and civil freedom at the beginning of the estimation period (i.e. 1975). There are however serious questions about causality in Dawson's model as he also includes economic growth over the same period as explanatory variable. Furthermore, he does not distinguish between developing and industrial countries. Still, his results are confirmed by most other studies summarized in Table 6, except for Farr et al. (1998) and Wu and Davis (1999), and a recent study by Giavazzi and Tabellini (2004). The latter use a difference-in-difference estimation to examine the effects of economic and political liberalizations on economic performance and the interaction effects between the two kinds of reforms. They find positive feedback effects between economic and political reforms[19]; causality is more likely to run from political to economic liberalizations, rather than vice versa.[20] Also Farr et al. (1998) find little support for Friedman's (1962, p. 8) view that "economic freedom is … an indispensable means toward the achievement of political freedom."

Lundström (2003) argues that it is far from obvious that all categories in an EF index are equally affected by democracy. For example, the conflict view may be more appropriate when looking at discriminatory regulations as a measure of EF, while the compatibility view may be accurate when predicting the government size. She finds that there seems to be a

positive effect of democracy on the categories 'Government Operations' and 'Regulations and Restraints on International Exchange', but for the categories 'Money and Inflation' and 'Takings and Discriminatory Taxation' there is no effect.

Apart from political freedom various *other determinants of EF* have been suggested. From the perspective of causality as discussed in the previous section, especially the role of economic growth may be interesting. Low growth rates in the previous period may affect EF in the next period. One might hypothesize that low growth would stimulate liberalization. However, Gwartney et al. (2004) report that there is a negative impact of economic growth over the period 1980-90 in their model explaining the change in EF over 1990-2000. Likewise, De Haan and Sturm (2003) find some (weak) evidence that economic growth over the period 1960-75 had a negative effect on the change in EF over the period 1975-95. So low growth, if anything, seems to stimulate economic reform. Similarly, Pitlik and Wirth (2003) report strong support for the hypothesis that deep economic crises foster the adoption of market-friendly policies.

Table 6. Causes of economic freedom

Study:	Sample:	Results:
Dawson (1998)	92 countries, 1975-90	The level of EF in 1990 is significantly related to political and civil freedom in 1975.
Farr et al. (1998)	22 industrial and 78 developing countries, 1975-90	No Granger-causal relationship between EF and political freedom and vice versa; EF Granger-causes income per capita, which, in turn, Granger-causes political freedom.
Johnson and Lenartowicz (1998)	26/33 countries, 1975 and average of 1993-95	Strong correlation with EF and various indicators of culture (like uncertainty avoidance) but not with others (like masculinity).
Wu and Davis (1999)	About 100 countries, 1975-92.	Applying log-linear methods to examine the relationship between EF, political freedom, level of income, and economic growth, the authors find that political freedom is not associated with economic freedom.
De Haan and Sturm (2003)	55-68 developing countries, 1975-95	The change in EF is significantly related to level of democracy in 1975, taking various control variables into account; conclusion also holds if robust estimators are used.
Pitlik and Wirth (2003)	Panel model 1970-99 with 5 years intervals for 57-122 countries	Strong crises lead to more liberalization (i.e. higher EF); also democracy is positively related to increase in EF, as are some political system indicators that are based on the number of veto players.
Boockman and Dreher (2003)	Panel model 1970-97 with 5 years intervals for 85 countries	Number of World Bank projects has a positive and the amount of World Bank credit has a negative influence on EF; no effect for IMF programs/credit.
Dawson (2003)	Granger causality tests, 1970-2000	Causation runs primarily from political to economic freedom.
Lundström (2003)	58 developing countries, 1975-95	Political freedom is related to some groups of components of EF ('Government Operations' and 'Regulations and Restraints on International Exchange'), but no to others.
De Vanssay et al. (2004)	Up to 122 countries, 1970, 75, 80, 85, 90, 95, 2000 and 2001	The level of EF is related to various political-institutional variables motivated by principal-agent model, like a democratic system, checks and balances, and when the executive and the legislative are both elected.
Gwartney et al. (2004)	85-94 countries, 1990-2000	Average annual growth in the preceding decade is negatively related to the change in EF over 1990-2000
Heckelman and Knack (2004)	59-80 developing countries, 1980-2000	Higher aid reduces EF, but effect differs across EF areas

At least three studies examine to what extent the amount of aid received is related to economic freedom. De Haan and Sturm (2003) find in some of their models that aid has a

positive impact on the change in EF over the period 1975-95. Even stronger evidence for a positive relationship is reported by Pitlik and Witrth (2003). However, Heckelman and Knack (2004) conclude that aid during the 1980s and 1990s reduce economic freedom. Disaggregating the index into five economic freedom areas, they show that aid is significantly related to three of them: Legal structure and security of property rights, Access to sound money and Regulation of credit, labour and business.

6. Concluding comments

Since the time of Adam Smith, if not before, economists and economic historians have argued that the freedom to choose and supply resources, competition in business, free trade with others and secure property rights are central ingredients for economic progress. After various organizations had published indicators of economic freedom, it became possible to explicitly test whether and to what extent market-oriented economic policies foster economic growth. A large number of recent empirical studies suggest that economic freedom may be important in explaining cross-country differences in economic performance.

In this paper we have critically assessed recent evidence suggesting that economic freedom is strongly related to economic growth. In most studies, a single overall measure of economic freedom has been employed. We have focused on the economic freedom index of the Fraser Institute, as this is the most widely used index. In constructing an indicator of economic freedom three issues emerge, i.e. which elements should be taken into account, how to quantify them, and how to aggregate the various underlying components into a single index. There are reasons to question the index in all these aspect but our conclusion is still that the index is both reliable and useful. Moreover, the construction of the index makes it possible to disaggregate it and analyse the different categories and variables separately in order to identify the crucial determinants.

Most studies reviewed in this paper have serious drawbacks, including lacking sensitivity analysis and poor specifications of the growth model used. However, studies that have applied some kind of sensitivity analysis and sensible specifications, generally find support for a positive relationship between changes in EF and growth. This suggests that liberalization will indeed boost economic growth.

There is some evidence suggesting that political liberalization enhances economic liberalization. Other non-economic factors that seem to be relevant in explaining EF are: aid received and economic crises.

Even though studies so far often conclude that market based institution do indeed foster growth, a lot of research remains. Rodrik (2003) argues, for example, that different types of triggers are needed for igniting economic growth and for sustaining it. He also stresses that institutions such as protection of property rights, competition, appropriate incentives, sound money, etc, do not map into unique policy packages. It is therefore important to study *in what context* market based institutions are working. The success of reforms is affected by the historical and cultural environment, by the existence of complementary institutions and by the sequence in which they are implemented. This is easily illustrated by case studies but cross-country analyses have not explored these issues so far.

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Appendix 1. Versions of the Fraser index of economic freedom

Nr.	Description:	1996	2001	2002	2004
1	Average annual growth of the money supply in the last five years minus average annual growth of real GDP in the last ten years	√ [1)]	√	√	√
2	Standard inflation variability during the last five years	√ [1)]	√	√	√
3	Freedom of citizens to own a foreign currency bank account domestically	√ [2)]	√	√	√
4	Freedom of citizens to maintain a bank account abroad	√			
5	General government consumption spending as a percentage of GDP or total consumption	√ [1) 3)]	√	√	√
6	Government enterprises and investment as a percentage of GDP	√ [4)]	√	√	√
7	Price controls – the extent that firms are free to set their own prices	√	√	√	√
8	Freedom of private businesses and cooperatives to compete in markets	√			
9	Equality of citizens under the law and access of citizens to a non-discriminatory judiciary	√ [1) 5)]	√		
10	Avoidance of interest rate controls and regulations that lead to negative real interest rates	√	√	√	√
11	Transfers and subsidies as a percentage of GDP	√ [1)]	√	√	√
12	Top marginal income tax rate and income threshold at which it applies	√	√	√	√
13	The use of conscripts to obtain military personnel	√ [6)]	√	√	√
14	Revenues from taxes on international trade as a percentage of exports plus imports	√ [1)]	√	√	√
15	Difference between the official exchange rate and the black-market rate	√ [1)]	√	√	√
16	Actual size of trade sector compared to the expected size	√ [1)]	√	√	√
17	Restrictions on the freedom of citizens to engage in capital market exchange with foreigners	√	√	√ [7)]	√
18	Recent inflation rate		√	√	√
19	Legal security of private ownership		√		
20	Mean tariff rate on international trade		√	√	√
21	Standard deviation of tariff rates on international trade		√	√	√
22	Ownership of banks – percentage of deposits held by privately owned banks		√	√	√
23	Extension of credit – percentage of credit extended to private sector		√	√	√
24	Judicial independence – the judiciary is independent and not subject to interference by the government or parties in dispute (GCR)			√	√
25	Impartial courts – a trusted legal framework exists for			√	√

	private business to challenge the legaliy of government actions or regulation (GCR)				
26	Protection of intellectual property (GCR)			√	√
27	Military interference in rule of law and political process (ICRG)			√	√
28	Integrity of the legal system (ICRG)			√	√
29	Hidden import barriers – no barriers other than published tariffs and quotas (GCR)			√	√
30	Costs of importing – the combined effect of tariffs, license fees, bank fees and time required for administrative red-tape costs of importing equipment (GCR)			√	√
31	Access of citizens to foreign capital markets and foreign access to domestic capital markets (GCR)			√	√
32	Competition – domestic banks face competition from foreign banks (GCR)			√	√
33	Interest rate controls – interest rates on bank deposits and/or loans are largely determined by the market (GCR)			√	√
34	Impact of minimum wage – the minimum wage ste by law, has little impact on wages because it is too low or not obeyed (GCR)			√	√
35	Hiring and firing practices – hiring and firing practices of companies are determined by private contracts (GCR)			√	√
36	Share of labor force whose wages are set by centralized collective bargaining (GCR)			√	√
37	Unemployment benefits – the unemployment benefits system preserves the incentives to work (GCR)			√	√
38	Administrative conditions and new businesses – administrative procedures are an important obstacle to starting a new business (GCR)			√	√
39	Time with government bureaucracy – senior management spends a substantial amount of time dealing with government bureaucracy (GCR)			√	√
40	Starting a new business - starting a new business is generally easy (GCR)			√	√
41	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 (GCR)			√	√
42	Top marginal income and payroll tax rates and income thresholds at which they apply				√

[1)] In the 2001/2/4 editions rating is equal to $(V_{max} - V_i)/(V_{max} - V_{min})$ multiplied by 10, while in the 1996 edition a separate scaling table is used. Also some other minor differences.

[2)] In the 2001/2/4 editions combined with element nr. 4.

[3)] In the 2001/2/4 editions scaling is by total consumption, while in the 1996 edition scaling is by GDP.

[4)] In 2001/2/4 editions rating is based on number, composition and share of output supplied by State-Operated Enterprises and government investment as share of total investment, while in the 1996 edition there are six categories based on the presence of SOEs.

[5] In the 1996 edition the rating is based on one element of the Freedom House civil liberties checklist (are citizens equal under the law, do they have access to an independent and non-discriminating judiciary and are they respected by the security forces), while in the 2001 edition the ICRG rating on legal institutions supporting of law is used. In the 2002 edition this element is not included.

[6] In the 1996 edition there is only a rating of 0 (conscription) or 10 (no conscription), while in the 2001/2 editions length of conscription is used to distinguish more possible ratings.

[7] Since the 2002 edition of the report only IMF data on the number of capital controls is used, whereas previously component 17 was also based on other information.

Appendix 2. Spearman rank correlation coefficients of the elements of the Economic Freedom indicator and the various versions of the aggregated index, 1995

		Is1	*Is2*	*Ie*	*Fraser2001*	*Fraser2002*
1	Average annual growth rate of the money supply during the last five years minus the potential growth rate of real GDP	0.33	0.45	0.43	0.43	0.55
2	Standard deviation of the annual inflation rate during the last five years	0.52	0.59	0.59	0.64	0.75
3	Freedom of citizens to own a foreign currency bank account domestically	0.59	0.68	0.63	0.80	0.71
4	Freedom of citizens to maintain a bank account abroad	0.69	0.76	0.72	0.80	0.71
5	Government general consumption expenditures as a percentage of GDP	**0.14**	**-0.11**	**0.01**	-0.26	**-0.22**
6	The role and presence of government-operated enterprises	0.62	0.53	0.58	0.74	0.76
7	Price controls – the extent that firms are free to set their own prices	0.62	0.71	0.70	0.69	0.58
8	Freedom of private businesses and cooperatives to compete in markets					
9	Equality of citizens under the law and access of citizens to a non-discriminatory judiciary	0.49	0.65	0.60	0.64	
10	Freedom from government regulations and policies that cause negative real interest rates	0.58	0.64	0.67	0.78	0.82
11	Transfers and subsidies as a percentage of GDP	**0.01**	-0.38	-0.24	-0.35	**-0.18**
12	Top marginal tax rate (and income threshold at which it applies)	0.35	**0.05**	**0.13**	**0.07**	**0.11**
13	The use of conscripts to obtain military personnel	**0.10**	**0.03**	**0.04**	**0.10**	**0.17**
14	Taxes on international trade as a percentage of exports plus imports	0.44	0.63	0.57	0.65	0.54
15	Difference between the official exchange rate and the black market rate	0.62	0.72	0.69	0.69	0.59
16	Actual size of trade sector compared to the expected size	**0.13**	**0.17**	**0.17**	**0.03**	**0.01**
17	Restrictions on the freedom of citizens to engage in capital transactions with foreigners	0.77	0.85	0.82	0.76	0.65
18	Annual inflation rate during most recent year				0.63	0.70
19	Mean tariff rate on international trade				0.70	0.57
20	Standard deviation of tariff rates on international trade				0.48	0.34
21	Percentage of deposits held in privately-owned banks				0.69	0.67
22	Percentage of credit extended to private sector				0.39	0.46

Note: bold figures indicate **not significantly** different from zero at at least a 1 per cent level.

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Notes

[1] According to Lin and Nugent (1995), the unavailability of indicators for institutions was due to both a lack of interest in explaining institutions among economists working in high-income countries, where the neoclassical models relatively well describe the growth path, and the fact that institutions are complex and difficult to quantify.

[2] The index of the Heritage Foundation/the Wall Street Journal is in many respects similar to the Fraser index (Holmes et al., 1998), but is available for a shorter period of time, which probably explains why most empirical studies employ the Fraser index, Heckelman (2000) being a notable exception. A third attempt to measure economic freedom comes from the Freedom House, which has, however, not continued publication of this index (see Messick, 1996). Hanson (2003) compares these three measures. See Hanke and Walters (1997) for a discussion of earlier attempts to measure economic freedom. Some other sources of liberalization indicators have to be mentioned as well. First, Wacziarg and Welch (2003) updated the liberalization index of Sachs and Warner (1995), which, however, only refers to trade openness. Second, the EBRD publishes annual data for transition countries indicating to what extent they have become market economies. Finally, there are various indicators available that refer to an element of economic freedom, like judicial independence (see, for instance, La Porta et al., 2004).

[3] Some studies examine the link between economic freedom and income equality (e.g., Berggren, 1999) and economic freedom and corruption (e.g., Graeff and Mehlkop, 2003). These relationships will not be examined in the present survey.

[4] Essentially the same point has been put forward, in a somewhat different context, by Dewatripont and Tirole (1999).

[5] In a recent study the World Bank (2004) uses the Heritage Foundation index of economic freedom as a proxy for reform and concludes that reform does affect growth in developing countries. Moreover, the level of the index is reported to increase the marginal growth effect

of aid.

[6] Recently, the Fraser Institute has also developed economic freedom indicators at the sub-national level for Canada and the US (see Karabegovic et al., 2003).

[7] The 1996 (2004) edition is the first (most recent) *Economic Freedom of the World* report in its current form. The 2001 and 2002 editions are taken up as they introduced new elements and other aggregation procedures.

[8] The only new subcomponent is "Top marginal income and payroll tax rates and income thresholds at which they apply" in area I (component 42 in appendix 1).

[9] Of course, both institutions and policies may affect economic growth. As the IMF argues in its *World Economic Outlook 2003*: "The evidence that greater openness to trade and stronger competition are conducive to institutional improvement, and thus to growth, suggests that countries are not 'predestined', say by geography or history: the 'right' policies may shape institutions and through this channel affect growth." (WEO, 2003, chapter 3).

[10] De Haan and Sturm (2000) have adjusted the EF index for those components that they feel should not be included and still find that an increase in economic freedom is robustly related to economic growth.

[11] Also missing data are less problematic in latent variable techniques in comparison to other aggregation techniques.

[12] Also Scully and Slottje (1991) employed PCA to aggregate their 15 attributes of economic freedom.

[13] As pointed out by Heckelman and Stroup (2005), the principal component methodology is not without its own inherent problems. While a true principal components methodology allows the data to determine both the proper magnitude and sign for aggregating the elements into a single, overall index value, this methodology fails to reflect any conceptual link between the economic theory behind the selection of the elements being aggregated and the aggregate index value itself. According to Greene (1993, p.273), "There are three problems with using this estimator. First, the results are quite sensitive to the scale of measurement in the variables. The obvious remedy is to standardize the variables, but unfortunately, this has substantial effects on the computed results. Second, the principal components are not chosen on the basis of any (theoretical) relationship of the regressors to **Y**, the variable we are attempting to explain. Lastly, the calculation makes ambiguous the interpretation of the results. The principal components estimator is a mixture of all of the original coefficients. It is unlikely that we shall be able to interpret these combinations in any meaningful way."

[14] The weights for the various elements as given in the various versions of the *Freedom of the World* reports are adjusted so that they sum to 1.

[15] It is also interesting to compare Tables 2 and 4. First, compare the correlations of the indicators based on the three weighting schemes of Gwartney et al. (1996), i.e. the upper-left part of the tables. For that part, the only difference between Table 2 and Table 4 is the number of elements taken into account: in Table 2 all elements are taken up, while in Table 4 only those elements that are present in the various versions of the Freedom of the World reports are included. It follows that the inclusion of more elements apparently yields higher correlations. Second, based on this finding, we would also expect lower correlations in Table 4 with the more recent indicators (upper-right and lower-left part of the tables) as compared to Table 2. However, it turns out this is not the case. So, getting rid of the data revisions between the 1996 edition on the one hand and the 2001 and 2002 editions on the other apparently yields higher correlations.

[16] Alternatively, Granger-causality tests have been used. See, for instance, Heckelman (2000) and Dawson (2003). A stochastic frontier approach can also be used to study the effects of economic freedom. Klein and Luu (2002) find that technical efficiency is positively related to economic freedom.

[17] Sala-i-Martin et al. (2004) have recently suggested a variant of the EBA, the so-called Bayesian Averaging of Classical Estimates, which constructs estimates as a weighted average of OLS estimates for every possible combination of included variables.

[18] De Haan and Sturm (2003) discuss studies that analyse the relationship between democracy and other indicators for economic liberalization than the economic freedom index. A good recent example of this line of research is Fidrmuc (2003), who uses the EBRD index for liberalization in transition countries; he finds that implementing wide-ranging democracy had a positive effect on liberalization.

[19] Giavazzi and Tabellini (2004) use the indicator of economic liberalization of Waziarg and Welch (2003) for a sample of about 140 countries over the period 1960-2000.

[20] Furthermore, they report that the sequence of reforms matters. Countries that first liberalize and then become democracies do much better than countries that pursue the opposite sequence.

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THURGAUER
WIRTSCHAFTSINSTITUT
an der Universität Konstanz

Hauptstr. 90
CH-8280 Kreuzlingen 2

Telefon: +41 (0)71 677 05 10
Telefax: +41 (0)71 677 05 11

info@twi-kreuzlingen.ch
www.twi-kreuzlingen.ch