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## **ECONOMIC FREEDOM AND ECONOMIC GROWTH: A SHORT-RUN CAUSAL INVESTIGATION**

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The freedom and growth literature has consistently shown that nations which have fewer restrictions on private agents and transactions tend to higher levels of economic growth. It is less clear, however, whether freedom causes growth, growth causes freedom, or the two are jointly determined. To assess these possibilities, Granger-causality tests are performed on annual freedom indicators developed by the Heritage Foundation and national growth rates. The underlying component indexes, which include Trade Policy, Taxation, Government Intervention, Monetary Policy, Capital Flows and Foreign Investment, Banking, Wage and Price Controls, Property Rights, Regulation, and Black Markets, are also tested in addition to the summary freedom rating. The tests suggest the average level of freedom in a nation, as well as many of the specific underlying components of freedom, precedes growth. However, growth may precede one of the component indexes (Government Intervention), and no relationship is found to exist between growth and two of the indexes (Trade Policy and Taxation).

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### **I. Introduction**

Studies have consistently shown a strong correlation exists between various measures of economic freedom and differences in economic growth across nations

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(Dawson 1998, De Vanssay and Spindler 1994, Spindler and Miyake 1992). However, the link between these two factors is not as clear as these scholars suggest. First, if liberty is a normal good, an increase in wealth may spur the demand for freedom. In this case, contemporaneous correlations may be driven by growth causing governments to allow a higher degree of freedom, rather than the other way around as implicitly assumed by typical interpretations of the empirical correlations.

A second concern relates to the freedom measures themselves. Unlike GDP growth, which is measured without much controversy, economic freedom is a highly subjective term. Each scholar has their own interpretation of what is meant by economic freedom, which variables should be considered, and the importance of each. Typically, an aggregated summary measure of freedom is developed, but this measure depends critically on the weighting of the subcomponents used. Although the correlations are robust to different weighting schemes and different summary measures (Hanke and Walters 1997, Scully and Slottje 1994), the summary measures will still generate biased estimates of the impact of freedom on growth if the wrong weights are used. These studies also overreach in their conclusions by not differentiating between the different types of freedoms they consider in the summary measure. 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.

This study extends the freedom-growth literature by incorporating the methodologies of Farr et al. (1998) and Heckelman and Stroup (1999) and using a different source for freedom measures. Farr et al. employ Granger-causality tests<sup>1</sup> on economic freedom measures developed by the Fraser Institute<sup>2</sup> which cover a five year interval and the average level of (logged) real GNP per capita

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<sup>1</sup> Interpretation of the Granger-causality methodology will be considered in detail in Section III.B below.

<sup>2</sup>The first set of measures were published in Gwartney et al. (1996).

over a five year period. Lagged freedom measures are found to be significant at the 5% level in preceding GNP, but lagged GNP is found to be significant at the 1% level in preceding freedom. Thus, depending on the level of confidence chosen, the conclusion would be either that they are jointly determined, or that GNP Granger-causes freedom but not vice versa. Their results call into question the simple interpretation others give to the contemporaneous correlations uncovered. Unfortunately, they do not perform Granger tests on the underlying indices which compose the overall freedom score.

Summary measures are problematic if the underlying measures of freedom do not all contribute to growth. Heckelman and Stroup (1999) find that five of the fourteen freedom components measured by Fraser adversely affect growth from 1980-1992. They develop an alternative weighting scheme based on hedonic regression analysis which takes into account both the positive and negative influences on growth. Neither their weights nor their aggregated measures are highly correlated with those assigned by Fraser.

In this study the Granger-causality method employed by Farr et al. is employed for the case of annual growth rather than level of GNP. Following Heckelman and Stroup, the importance of each individual component measure is also considered in addition to the aggregated summary rating. However, this study deviates from the others by using the Heritage Foundation freedom measures. The Fraser measures are dominated by outcome variables whereas the Heritage measures are primarily policy variables the governments can actually control. Furthermore, the Fraser data set has a lot of missing data for many of the underlying indexes, which prevents consistent aggregation into an overall score, and would hamper tests on the subcomponents of freedom.

The rest of the paper is structured as follows. The next section describes the Heritage freedom measures and considers the benefits and pitfalls of utilizing these scores rather than alternative published measures. The subsequent sections develop the Granger-causation methodology followed by the data analysis. Finally, the results are summarized and extensions offered for future work.

## II. The Heritage Foundation's Notion of Economic Freedom

There are a number of potential freedom measures to use. Several have been developed and published in *Rating Global Economic Freedom* (1992), including studies by Gwartney et al., Spindler and Miyake, and Scully and Slottje. The first set represents what was to become a continuing project funded by Fraser Institute; the others have not been updated.

The Heritage freedom classifications are based on 10 individual categories.<sup>3</sup>

- *Trade Policy*—tariff and nontariff barriers; corruption.
- *Taxation*—income and corporate taxes; other taxes.
- *Government Intervention in the Economy*—government consumption and ownership.
- *Monetary Policy*—average and current inflation.
- *Capital Flows and Foreign Investment*—foreign investment code; restrictions on foreign ownership and investment; legal equality between foreign and domestic companies.
- *Banking*—government ownership and regulation; restrictions on foreign banks
- *Wage and Price Controls*—minimum wage laws; government price controls; government subsidies that affect prices.
- *Property Rights*—commercial code defining contracts; government expropriation of property; protection of private property; judicial delays; judicial corruption.
- *Regulation*—licensing requirements; ease of obtaining licenses; environmental, consumer, worker regulations; bureaucratic corruption.
- *Black Market*—smuggling; size of black market activity.

Each country is rated for every category and the average value represents the countries' assigned freedom score. Although a bit misleading, the values assigned actually refer to the previous year. The 1998 score published in the *1998 Index*, for example, actually refers to the degree of freedom in 1997. To avoid further

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<sup>3</sup>See Johnson et al. (1998, 38-51) for a detailed description of the factors comprising each category.

confusion, all future references to freedom will be denoted by the year the data reflect, rather than the title year assigned by Heritage.

To a certain degree, the indexes of economic freedom considered by Heritage are unique. Along with Fraser, they are the only regularly published and updated sets of measures. Granger-causality tests by design require more than a single year worth of data. The Fraser indexes represent five-year intervals but Heritage updates their data on an annual basis which will help to highlight the short-run contributions of each freedom to growth. Heritage has also maintained the consistency of their rating system. While improvements are to be lauded, changes in both the measurement and types of freedoms considered by Fraser over time prevent consistent coding of their summary ratings. In addition, there are many missing observations for the various Fraser indexes so their summary measures are implicitly based on different categories for different nations, and the relative weights assigned to each index value are thus inconsistent.

If the purpose of these exercises are to move beyond the stage of academic curiosity and into policymakers' designs, it is necessary to show which types of economic freedoms are important for growth and also use policy-based measures of freedom rather than freedoms that are designated by macroeconomic outcomes. Many of the Fraser measures are based on particular institutional settings that can be altered by a central government, but others are not. For example, one measure of restraint on international exchange measures "the actual size of the trade sector compared to the expected size" which is based on ad-hoc regression prediction. Another variable measures "freedom from government regulations and policies that cause negative real interest rates" which is based on the *occurrence* of negative real interest rates and not on any particular policy. Also each of the component measures are determined by separating the nations into 11 equal groups so countries are measured only relative to each other. Thus, one country can show an "improvement" in freedom for a particular measure if other nations previously rated above it become more repressive. Heritage ranks each country on a scale of 1 to 5 for a set of 10 indexes which are largely free of these problems but introduce some problems of their own.

First, unlike Fraser, Heritage did not extend their data back in time. The first indexes were produced in 1995 rating nations for 1994, so there are currently only four years worth of data which makes causality testing for long-term growth impossible. Instead, we will consider annual growth rates. A potentially serious problem with using annual growth rates is the proclivity of picking up normal business cycle effects unrelated to freedom. As a partial control, the robustness tests will include up to three years of lags.

Second, although the Heritage rankings are based on absolute criteria, the categorical boundaries are completely arbitrary. And as there are only 5 categories for each measure (except Taxation which allows half-point adjustments to the original 1-5 scale) Heritage is not able to make as much distinction between the nations as compared to Fraser.

With these caveats in mind, we now turn to the investigation of the relationship between the annual Heritage measures of economic freedom and economic growth.

### **III. Empirical Methodology**

#### **A. The Simple Bivariate Relationship**

Since smaller Heritage scores indicate higher levels of freedom (fewer restrictions), we expect an inverse relationship to exist between measured freedom and growth. Employing Ordinary Least Squares (OLS) analysis, the estimated bivariate regression<sup>4</sup> for a cross-section of 147 nations is found as (t-ratios in parenthesis below estimated coefficients):

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<sup>4</sup>A simple bivariate regression is inappropriate if economic freedom is correlated with other omitted variables that also influence growth. There is much debate in the growth literature as to the proper econometric growth model, and results are often not robust to minor specification changes (De Haan and Diermann, 1998). The purpose of the bivariate regression presented here is simply to show Heritage Freedom scores generate similar results to the previously used freedom indicators, and should not be over-interpreted.

$$GROWTH9197_i = 6.24 - 1.29 FREEDOM97_i + e_i \quad (1)$$

(4.22) (-2.79)

where *GROWTH9197* is the average annual growth rate from 1991-1997 taken from *World Economic Outlook* (1999), *FREEDOM97* is the 1998 Heritage freedom score which represents the average value across all 10 components (which as mentioned above is actually for 1997), and *e* is the regression residual, for each nation *i* included in both sources.<sup>5</sup> Despite the short time span, the reported regression suggests a statistically significant relationship exists between freedom and growth which is in line with other studies.<sup>6</sup>

Typically, only this relationship (or some variant) is tested but it is also plausible that freedom may be endogenous to growth making OLS on (1) an inappropriate estimator. We now turn to the Granger tests to determine if one variable consistently predetermines the other or if they are potentially jointly determined by a third outside factor making the statistical findings on growth and freedom spurious.

### B. Granger-Causality Tests

A series is said to “Granger-cause” another series if past values of the first are useful in predicting the second, i.e. the former precedes the latter intertemporally. If one variable does not cause the other in this temporal sense, then lagged values of that variable should not improve the predictive power of the other variable beyond simply including its own lags. Specifically, to see if economic freedom precedes growth the regression:

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<sup>5</sup> Eight of the 156 nations rated in 1998 by Heritage are not included in *World Economic Outlook*. In addition, Croatia, the Czech Republic and Slovenia do not have growth rates prior to 1993, and growth data was also missing for Iraq for 1993, 1994, and 1996, Malawi for 1994, Switzerland for 1996, and Zambia for 1991.

<sup>6</sup> Several studies do not use long-term growth. For example, Dawson (1997) considers five-year growth periods using the Fraser indices, Gwartney et al. (1992) use the average annual rate of growth for a five year period, and De Vanssay and Spindler (1994) relate the average per capita GNP over a four year interval to the Scully and Slottje (1991) rankings.

$$GROWTH(t)_i = \alpha + \sum_{j=1}^q \beta_j GROWTH(t-j)_i + \sum_{j=1}^q \gamma_j FREEDOM(t-j)_i + \mu(t)_i \quad (2)$$

is run ( $t$  marks the particular year) and an F-test is used to determine if the coefficients on the lagged *Freedom* variables are jointly significant. One potential concern for these standard Granger tests is the chosen value for  $q$  is arbitrary (typically  $q$  is chosen to be 1). To avoid any particular *ad hoc* choice, and since the Heritage rankings only start in 1994 so that there are currently only four observations on freedom ratings and growth per country, we can consider all the possible number of lags which serves as a robustness check. With so few observations, there is a definitive trade-off from increasing the number of lags. On the one hand, the inclusion of additional lags will serve to partially control for the normal business cycle which becomes important in using annual rather than long-term growth rates. On the other hand, each additional lag reduces the number of usable observations per country so that with three lags, the Granger-tests rely exclusively on predicting values for 1997.

A symmetric representation for the Granger test on growth causing freedom is then

$$FREEDOM(t)_i = \kappa + \sum_{j=1}^q \theta_j FREEDOM(t-j)_i + \sum_{j=1}^q \lambda_j GROWTH(t-j)_i + v(t)_i \quad (3)$$

where again all the available number of lagged terms will be considered.

If the vector of  $\gamma$  coefficients from (2) are significant but the  $\lambda$  coefficients from (3) are not, we can conclude that freedom precedes growth. If the F-tests reject the significance of  $\gamma$  but not  $\lambda$ , we can conclude growth precedes freedom. If we do not reject either set of coefficients, then growth and freedom are jointly determined, possibly by a third factor not considered here. Thus, to claim freedom “causes” growth in the intertemporal Granger-sense, the tests must also reject that growth “causes” freedom. Finally, if we reject the significance of both  $\beta$  and  $\lambda$ , we can conclude freedom is not related to growth.

Using the averaged freedom index can offer broad generalizations regarding the importance of economic freedom, but at the same time may hide or misrepresent



the connection between various freedoms and growth (Heckelman and Stroup 1999). Therefore we will also consider how each of the underlying 10 economic freedom indicators tabulated by Heritage are related to growth. This will help delineate which specific types of freedom Granger-cause, or are Granger-caused by, growth.

#### IV. Data Analysis

The Heritage freedom indexes begin in 1994 and are updated annually.<sup>7</sup> Annual real GDP growth rates are taken from *World Economic Outlook* (1999). Since lagged values will be utilized in the Granger tests, only nations having a complete set of values are included. Missing values from either source limits the data set to a total of 4 annual observations for each of 94 nations, which are listed in the appendix table.

Heritage's grading scale for restrictions on economic freedom in each category corresponds to descriptions of 1 = very low, 2 = low, 3 = moderate, 4 = high, and 5 = very high. The "score" value assigned for the year by Heritage is simply the average value for each category, and for clarification will be labeled here as "average score". The average values in the sample for each variable each year are listed in Table 1. Judging by the average score, economic freedom has been (on average) improving around the globe during the first four years of Heritage's survey.<sup>8</sup> The largest improvement since 1994 was seen in Moldova, from 4.1 to 3.35. However, Moldova's economy has shrunk in every year since gaining independence from the former Soviet Union in 1991, except for 1997 where it experienced positive real GDP growth of 1.3 percent. At the other extreme,

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<sup>7</sup> I thank Jerry O'Driscoll of the Heritage Foundation for sending data files for 1994 and 1995. The 1998 Index indicates Guyana was not rated in the first year but the Heritage files contained these freedom values so they are included.

<sup>8</sup> These numbers do not match those published annually in the *Wall Street Journal* because those are based on every nation rated in that particular year, whereas the sample here is limited to those nations rated in all years.

**Table 1. Descriptive Statistics: Means (Standard Deviation)**

	1994	1995	1996	1997
Annual Real GDP Growth	2.60 (6.47)	3.76 (4.57)	4.10 (3.76)	3.73 (4.23)
Freedom (Average) Score	3.01 (0.69)	2.95 (0.65)	2.95 (0.66)	2.94 (0.67)
Trade Policy	3.69 (1.32)	3.56 (1.25)	3.46 (1.28)	3.31 (1.24)
Taxation	3.73 (0.91)	3.70 (0.87)	3.68 (0.88)	3.65 (0.87)
Government Intervention	2.57 (1.06)	2.48 (1.05)	2.65 (0.98)	2.61 (0.93)
Monetary Policy	2.95 (1.95)	2.87 (1.55)	2.89 (1.56)	2.91 (1.58)
Capital Flows/				
Foreign Investment	2.55 (0.78)	2.50 (0.76)	2.52 (0.74)	2.52 (0.76)
Banking	2.86 (0.84)	2.78 (0.82)	2.74 (0.82)	2.74 (0.79)
Wage and Price Controls	2.56 (0.68)	2.60 (0.68)	2.55 (0.67)	2.55 (0.68)
Property Rights	2.60 (0.99)	2.59 (0.99)	2.60 (1.01)	2.67 (1.03)
Regulation	3.06 (1.00)	3.14 (0.95)	3.16 (0.95)	3.20 (0.92)
Black Markets	3.48 (1.48)	3.33 (1.33)	3.30 (1.28)	3.22 (1.31)

*Source: World Economic Outlook and 1998 Index of Economic Freedom.*

Venezuela has shown the worst measured decline in freedom, dropping from 3.0 to 3.5, and its economy has alternated between years of positive and negative growth over this span.<sup>9</sup>

Further scrutiny reveals the improvement in global economic freedom was primarily limited to comparing 1994 to 1995, and remained basically steady after that time during the last two years. The patterns of many of the indices of freedom diverge from the average freedom score. Freedom from Regulation has decreased in each year while Trade Policy, Taxation, and Black Markets have improved on

<sup>9</sup> Although not in this sample, Cuba, Laos and North Korea received the worst possible score of 5 in every category in every year they were rated, and thus may have over time even become more restrictive, but their decline in freedom would not be revealed.

average every year. Freedom from Government Intervention alternates each year between reductions and increases. The remaining indexes do not reveal a steady pattern. Thus it will be informative to investigate the Granger-causality of the underlying freedom indices as well.

The frequency count for each freedom indicator for each year is given in Table 2. Scanning the table makes clear that the absolute criteria employed by Heritage does not divide the nations into equal groupings as forced by Fraser. For each year, the largest number of countries attain the highest possible score for Monetary Policy, while the fewest attain this for Taxation.<sup>10</sup> At the other extreme, the worst scores are given in Trade Policy to more nations than for any other category, and no nation in the sample attains the worst rating for Wage and Price Controls. It is also important to note that the middle rating of 3 does not necessarily contain a plurality of nations compared to the other possible ratings.

#### **A. Does Freedom Precede Growth?**

Granger-causality test results based on the representation in Equation (2) are presented in the upper portion of Table 3. Using a single lag for freedom and growth, as employed by Farr et al., we can reject the hypothesis that freedom does not Granger-cause growth at the 10% level, but not at the 5% level. This is similar to their findings, which as mentioned above, were based on Fraser freedom ratings and the average GDP per capita over a five year span. Adding additional lags strengthens the Granger relationship, making it significant at less than 5% for two lags, and less than 1% for three lags.<sup>11</sup>

The reliance on the average score is somewhat misleading. For the 1 lag

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<sup>10</sup>The half-point adjustment allowed for Taxation prevents it from tying with other categories for fewest nations attaining a top score except for the first year.

<sup>11</sup>In a footnote (note 5), Farr et al. mention their results do not change significantly when adding a second lag.

Table 2. Frequency Tabulations for Freedom Categories (percent of sample in parenthesis)

Category/Rating	1	1.5	2	2.5	3	3.5	4	4.5	5
1994									
Trade Policy	5 (5.32)	—	20 (21.28)	—	10 (10.64)	—	23 (24.47)	—	36 (38.30)
Taxation	2 (2.13)	1 (1.06)	0 (0.00)	7 (7.45)	19 (20.21)	18 (19.15)	20 (21.28)	10 (10.64)	17 (18.09)
Government									
Intervention	13 (13.83)	—	35 (37.23)	—	32 (34.04)	—	7 (7.45)	—	7 (7.45)
Monetary Policy	22 (23.40)	—	22 (23.40)	—	15 (15.96)	—	9 (9.57)	—	26 (27.66)
Capital Flows	5 (5.32)	—	43 (45.74)	—	36 (38.30)	—	9 (9.57)	—	1 (1.06)
Banking	4 (4.26)	—	26 (27.66)	—	45 (47.87)	—	17 (18.09)	—	2 (2.13)
Wage and Price									
Controls	4 (4.26)	—	39 (41.49)	—	45 (47.87)	—	6 (6.38)	—	0 (0.00)
Property Rights	16 (17.02)	—	22 (23.40)	—	42 (44.68)	—	12 (12.77)	—	2 (2.13)
Regulation	6 (6.38)	—	22 (23.40)	—	30 (31.91)	—	32 (34.04)	—	4 (4.26)
Black Markets	12 (12.77)	—	9 (9.57)	—	27 (28.72)	—	14 (14.89)	—	32 (34.04)
1995									
Trade Policy	3 (3.19)	—	23 (24.47)	—	15 (15.96)	—	24 (25.53)	—	29 (30.85)
Taxation	2 (2.13)	1 (1.06)	0 (0.00)	8 (8.51)	16 (17.02)	22 (23.40)	20 (21.28)	12 (12.77)	13 (13.83)
Government									
Intervention	14 (14.89)	—	39 (41.49)	—	30 (31.91)	—	4 (4.26)	—	7 (7.45)



Table 2. (Continue) Frequency Tabulations for Freedom Categories (percent of sample in parenthesis)

Category/Rating	1	1.5	2	2.5	3	3.5	4	4.5	5
Controls	3 (3.19)	—	42 (44.68)	—	43 (45.74)	—	6 (6.38)	—	0 (0.00)
Property Rights	16 (17.02)	—	24 (25.53)	—	38 (40.43)	—	14 (14.89)	—	2 (2.13)
Regulation	5 (5.32)	—	16 (17.02)	—	37 (39.36)	—	31 (32.98)	—	5 (5.32)
Black Markets	12 (12.77)	—	11 (11.70)	—	27 (28.72)	—	25 (26.60)	—	19 (20.21)
1997									
Trade Policy	3 (3.19)	—	29 (30.85)	—	22 (23.40)	—	16 (17.02)	—	24 (25.53)
Taxation	2 (2.13)	1 (1.06)	0 (0.00)	9 (9.57)	17 (18.09)	23 (24.47)	18 (19.15)	13 (13.83)	11 (11.70)
Government									
Intervention	11 (11.70)	—	29 (30.85)	—	44 (46.81)	—	6 (6.38)	—	4 (4.26)
Monetary Policy	25 (26.60)	—	19 (20.21)	—	15 (15.96)	—	9 (9.57)	—	26 (27.66)
Capital Flows	5 (5.32)	—	45 (47.87)	—	34 (36.17)	—	10 (10.64)	—	0 (0.00)
Banking	4 (4.26)	—	33 (35.11)	—	41 (43.62)	—	16 (17.02)	—	0 (0.00)
Wage and Price									
Controls	3 (3.19)	—	43 (45.74)	—	41 (43.62)	—	7 (7.45)	—	0 (0.00)
Property Rights	15 (15.96)	—	23 (24.47)	—	36 (38.30)	—	18 (19.15)	—	2 (2.13)
Regulation	3 (3.19)	—	18 (19.15)	—	35 (37.23)	—	33 (35.11)	—	5 (5.32)
Black Markets	14 (14.89)	—	12 (12.77)	—	25 (26.60)	—	25 (26.60)	—	18 (19.15)

Source: Heritage Foundation.

structure, although the estimated coefficient on the past freedom indicator for each component is negative as expected, only the Monetary Policy index is significant at conventional levels. The lack of strong relationship for the other nine components weakens the overall score's Granger result. Interestingly, the inclusion of an additional lag improves the significance level for each component, *except* Monetary Policy. Four others now join Monetary Policy as significant within the 10% rule, including Capital Flows, Wage/Price Controls, Property Rights, and Regulation, but only the first and last are significant at 5%. Adding a third lag for each component and growth once again improves the significance level for each index except for one, this time Trade Policy which just failed the 10% significance test before. Banking and Black Markets also join the list of significant Granger tests, each within a 5% error range.

Thus, accepting the 10% error bounds as the critical determination, the only robust results across all three lag structures are that Average Freedom and Monetary Policy Granger-cause growth, and Trade Policy, Taxation, and Intervention do not. The Capital Flows, Wage/Price Controls, Property Rights, and Regulation indexes are interpreted to Granger-cause growth for the cases of 2 and 3 lags, and Banking and Black Markets do only for 3 lags.

### **B. Does Growth Precede Freedom?**

The special nature of the component indexes and averaged score may create some difficulty for OLS estimation in running the Granger tests using them as the left-hand side variable as in Equation (3). Since each of the freedom component indexes are limited to a ranking between 1 and 5, the overall freedom score is also constrained to the 1 to 5 scale. In some respects, the Heritage final freedom scores are potentially censored, as further distinctions cannot be made for improvements for nations that already received a score of 1, or for further restrictions among those nations that had already received the worst score of 5. However, no nation was rated a 1 for the final score, and only Laos, Cuba and North Korea received a "perfect" 5 (which they had in every rated year). As explained above, none of

**Table 3. Granger Test Results**

Economic Freedom does not Cause Economic Growth						
Freedom Measure	1 lag (N=282)		2 lags (N=188)		3 lags (N=94)	
	F-stat	p-value	F-stat	p-value	F-stat	p-value
Average Score	2.96	.087	3.96	.021	4.25	.0075
Trade Policy	0.23	.63	2.22	.11	1.47	.23
Taxation	1.38	.24	1.81	.17	1.83	.15
Gov. Intervention	0.58	.45	1.14	.32	1.77	.16
Monetary Policy	6.17	.014	2.35	.098	3.58	.017
Capital Flows and						
Foreign Investment	2.19	.14	3.75	.025	4.00	.010
Banking	0.50	.48	1.93	.15	2.82	.044
Wage and Price						
Controls	0.77	.38	2.59	.077	3.51	.019
Property Rights	1.25	.26	2.81	.063	2.77	.046
Regulation	0.66	.80	5.00	.0077	2.88	.040
Black Markets	1.20	.27	1.50	.23	2.99	.035
Economic Growth does not Cause Economic Freedom						
Freedom Measure	1 lag (N=282)		2 lags (N=188)		3 lags (N=94)	
	F-stat	p-value	F-stat	p-value	F-stat	p-value
Average Score	0.11	.74	0.064	.94	0.011	.99
Trade Policy	0.097	.76	0.31	.74	0.19	.90
Taxation	0.34	.56	0.38	.68	0.86	.46
Gov. Intervention	2.57	.11	3.54	.031	1.51	.22
Monetary Policy	0.092	.76	1.14	.32	0.18	.91
Capital Flows and						
Foreign Investment	0.12	.73	0.34	.71	0.21	.89
Banking	0.94	.33	0.87	.42	0.80	.50
Wage and Price						
Controls	0.0066	.94	0.10	.90	0.0097	.99
Property Rights	1.79	.18	0.47	.63	0.71	.55
Regulation	0.25	.62	0.32	.72	0.54	.66
Black Markets	0.99	.32	1.19	.31	1.06	.37



these nations are included in the sample here: Laos was not rated by Heritage for the first year of 1995, and growth data for Cuba and North Korea are not included in *World Economic Outlook*. Thus, the sample data are not censored.

The indices present different conceptual problems. The Heritage classifications from “very low” to “very high” suggest the assigned category values from 1 to 5 are only important as an ordinal ranking rather than for their cardinal values. If this were so, then under the assumption that  $v(t)$  is distributed as a standard normal, an ordered probit model would be appropriate. However, the construction of Heritage’s “score” value is based on the cardinality of the assigned ratings. Therefore, to maintain consistency with the Heritage methodology, the indexes are treated as cardinal values and OLS is used for the component indices as well. Results from Granger testing for growth causing freedom are reported in the lower portion of Table 3.

For the single lag specification, none of the indexes are able to reject the null hypothesis that growth does not precede freedom, although Intervention comes close. Furthermore, only half of the freedom indicators have a negative lagged coefficient. Under the 2 lag structure only Government Intervention yields a statistically significant Granger test statistic. Adding a third lag to growth and freedom eliminates the significance of Intervention and nothing else comes close. Thus, one could weakly conclude that growth Granger-causes Intervention but the result is not robust.

## V. Conclusions

Granger-causality tests suggest certain freedoms typically precede growth but not the other way around. Across all three lag specifications, the Average Score and Monetary Policy consistently Granger-cause growth. It is also found that freedom regarding Capital Flows, Wage/Price Controls, Property Rights, and Regulation, Granger-cause growth when more than one lag is applied. Less robust are findings for freedoms in Banking and Black Markets Granger-causing growth (only for 3 lag structure) and growth Granger-causing Intervention (2 lag structure).

No relationship is found between growth and Trade Policy or growth and Taxation.

Although Granger-causality tests do not test for “causality” between variables in the traditional econometric sense, the findings of a consistent intertemporal relationship lends additional support to past studies which have found economic freedom to be an important contributor to growth (Dawson 1998, De Vanssay and Spindler 1994). Unlike many of the other freedom studies, the investigation here also incorporates direct evidence regarding the importance of the individual freedom components. The most robust result is the finding that freedom in Monetary Policy, which Heritage measures by the average inflation rate over the previous 10 years, Granger-causes growth. Thus, nations may well be advised to concentrate on maintaining low inflation to see immediate short-term growth. Other strong findings include the tendency for more freedom in the areas of Capital Flows and Foreign Investment, Wage and Price Controls, Property Rights, and Regulation to intertemporally precede annual economic growth rates.

Since the Heritage ratings begin in 1994, it is not yet possible to determine the effect of economic freedom, using Heritage’s criteria, on long-term growth. But the results here, along with the findings of Heckelman and Stroup (1999) for the case of Fraser’s economic freedom indicators and growth, and Scully and Slottje (1991) for the case of their own determinants of economic freedom and the level of GDP, suggest not all economic freedoms can be neatly aggregated into an overall summary index without distorting the relationship between freedom and prosperity. It would be helpful for additional studies to present disaggregated results to better assist policy-makers in determining their areas of concentration for reform.

**Appendix. Nations Included in Sample (Listed Alphabetically)**

Albania	France	Pakistan
Algeria	Germany	Panama
Angola	Ghana	Paraguay
Argentina	Greece	Peru
Australia	Guatemala	Philippines
Austria	Guinea	Poland
Bahamas	Guyana	Portugal
Bahrain	Haiti	Romania
Bangladesh	Honduras	Russia
Belarus	Hong Kong	Sierra Leone
Belize	Hungary	Singapore
Bolivia	India	Slovakia
Botswana	Indonesia	South Africa
Brazil	Ireland	South Korea
Bulgaria	Israel	Spain
Cameroon	Italy	Sri Lanka
Canada	Jamaica	Swaziland
Chile	Japan	Sweden
China	Jordan	Taiwan
Colombia	Kenya	Tanzania
Congo	Madagascar	Thailand
Costa Rica	Malawi	Tunisia
Czech Republic	Malaysia	Turkey
Dominican Republic	Mali	U.K.
Ecuador	Malta	U.S.
Egypt	Mexico	Ukraine
El Salvador	Moldova	Uruguay
Estonia	Morocco	Venezuela
Ethiopia	Mozambique	Vietnam
Fiji	Nicaragua	Yemen
	Nigeria	Zambia
	Oman	Zimbabwe

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