

ECONOMIC FREEDOM AND ECONOMIC GROWTH: A TIME SERIES EVIDENCE FROM THE ITALIAN ECONOMY¹

Fuat Erdal

Department of Economics, Adnan Menderes University, Aydin, Turkey and
International Centre for Economic Research, Torino, Italy

1. Introduction

I believe that free societies have arisen and persisted only because economic freedom is so much more productive economically than other methods of controlling economic activity
(Milton Friedman, Foreword in Gwartney et al, 1996)

As follows from Friedman's view, it is often maintained that economic freedom fosters economic growth by affecting incentives, productive effort and the effectiveness of resource use. Since the time of Adam Smith, economists have argued that the freedom to choose and supply resources, competition in business, trade with others and secure property rights are central ingredients for economic progress (de Haan and Sturm, 2000).

Economic growth has always been at the heart of economic policy discussions as a higher growth rate means greater national output, potentially higher living standards and an enhanced ability to attain economic and social objectives. Earlier studies focused on the importance of increasing exogenous endowment of physical resources for a higher growth, while more recent evidence suggests that growth is determined by a much larger set of endogenously determined variables, particularly environment and institutional factors. The fact that all decisions are made within a given institutional setting signifies the importance of institutional factors.

Freedom –whether economic, political or civil freedom- makes up what economists refer to as the 'institutions' of an economy. 'Good' institutions are an important determinant, or precondition for, economic growth and development. In that context, increased freedom is indicative of the trend to go to 'good institutions' and thus to economic growth. In fact institutions affect aggregate economic activity indirectly through an effect on investment or directly through an effect on total factor productivity (Dawson, 1998).

Economic freedom is said to be one of the reasons explaining the cross-country differences in economic development. Lack of any clear definition of what is meant by economic freedom and lack of data that applies this definition have limited the test of these views.

Important steps have been taken for the last decade in the definition and measurement of economic freedom. The index of Fraser Institute (Gwartney et al, 1996) and that of the Heritage Foundation/ Wall Street Journal (Holmes et al, 1998) have attracted considerable

¹ This research was completed while I was a Research Fellow at the International Centre for Economic Research (ICER). Financial support from the ICER is gratefully acknowledged.

attention among them. Several empirical growth models have been estimated using these indexes and produced mixed results.

Although it is apparent that countries with high level of growth usually coincide with high level of economic liberty, why do empirical analyses fail to establish a robust significant relationship? This question is the inspiration source of this study. Is it due to using a cross-sectional analysis, which usually ignores country-specific characteristics. If so, a time series analysis on a single country might help capture establish a relationship between economic liberty and growth. This allows researchers to control for country-specific, time-invariant fixed effects and include dynamic, lagged dependent variables which can also help control for omitted variable and for endogeneity bias. Almost all of the studies on economic freedom are restricted to ordinal data that can only be used to carry out some cross-country analysis. No time-series test of the relationship between freedom and growth has –to the author’s knowledge- been done until so far.

In this paper, an attempt has been made to construct an EF index and then to carry out time series analyses. In the next section, definition and measurement of the EF index are described. Then, bivariate relationship between economic freedom and economic growth is explored by Granger Causality tests. This is followed by time series analyses investigating the role of economic freedom in a growth model. The paper is finalised by the evaluation of the results.

2. What is Economic Freedom?

Economic freedom as defined by the Fraser Institute, a think tank that publishes Economic Freedom of the World since 1996, is composed of *personal choice, voluntary exchange, freedom to compete and protection of person and property*. Individuals have economic freedom when: (a) their property acquired without the use of force, fraud, or threat 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. In an economically free society, the fundamental function of government is the protection of property and the enforcement of contracts (Gwartney and Lawson, 2004).

The Heritage Foundation, another think tank which publishes (together with the Wall Street Journal) Index of Economic Freedom since 1995 defines economic freedom as “the absence of government coercion or constraint on the production, distribution or consumption of goods and services beyond the extent necessary for citizens to protect and maintain liberty itself”. In other words, people are free to work, produce, consume and invest in the ways they feel are most productive (Beach and Miles, 2004).

In this definition, there is a substantial difference between the degrees to which people are free individually and collectively to undertake economic activities. Individual freedom means the right to do economic activities free from arbitrary control and interference by the state and other individuals. Collective freedom refers to the extent to which the economic system that controls choice reflects the expressed preferences of majority of the citizenry rather than those of a ruling few (de Haan and Sturm, 2000).

3. An Index of Economic Freedom

Economic freedom is multi-dimensional and therefore its measurement is a difficult –some would say impossible- task. These same arguments were presented prior to the development of the national income accounts used to measure GDP 150 years ago (Gwartney et al, 1996). Important steps have been taken for the last decade in the measurement of economic freedom. However, almost all of them are restricted to ordinal data and subjective evaluation in order to carry out some cross-country analysis. In this paper, an attempt has been made to construct an EF index to carry out time series investigations. The resulting index contains 24 components for the period 1960 to 2000 and 37 components for 1970 – 2000. They are selected among many other potential indicators of economic freedom, which are mentioned in the literature according to availability of continuous data for Italy. Since economic freedom is multi-dimensional and surrounds all the economy, as many variables are included as possible, though sometimes very similar, in order to minimize the dominance of any single variable in the index and to capture more aspects of the freedom. The measures developed in this study might best be viewed as approximations rather than precise measures.

3. 1. Indicators of economic freedom

The components are categorized into 8 factors. While these eight factors are not the sum total of economic freedom, they still might make up an important part of it. The factors and the components of the economic freedom index are listed in Table 1:²

I. Government size:

The variables in this category measure the degree of the dominance of the political process rather than individual choice and the market in the allocation of resources, goods and services. As government size increases relative to private sector, government decision-making is substituted for the choices of individuals, households and businesses, and therefore, economic freedom is reduced. There are four components in this group:

Total government expenditures as a percentage of GDP is the most commonly used indicator of the size of the public sector. Although government has to spend in order to carry out its protective and productive functions, other expenditures are usually inefficient and unproductive due to bureaucracy and corruption. More government spending leaves less resource to relatively more productive expenditures of the private sector, decreasing the economic freedom. This argument is valid for the **government consumption expenditures as a percentage of GDP**, which is the second component in this group. **Subsidies as a percentage of GDP** is also indicative of government size. Government tax people to provide subsidies and transfers to others, but, taxation reduces the freedom of individuals to keep what they earn. Moreover, subsidies, favourable tax treatment and regulations are often used to protect state-operated firms from private competitors. **Social transfers** are also used as an indicator of public size for the same token. However the data for this variable are available from 1970.

² Italic-typed headings indicate the variables exist only in 1970-2000 database.

II. Intervention to the market:

This factor is intended to measure the extent to which state uses and takes available resources away from private sector. Data on government expenditures will substantially underestimate the intervention of government when state-operated enterprises are widespread. Thus, the variables in this group will reduce this bias. Seven variables are used to determine the degree of intervention to the market. **Revenue from income and wealth taxes** and **total tax revenue as percentage of GDP** indicate the amount of takings from the people's earnings. Similarly, borrowing of government from the public sector, although voluntarily, prevents resources from investing in more productive places. A need for borrowing, mostly to close public deficits, also indicates indirectly inefficient use of existing public resources. **Public sector borrowing rate** is used as a proxy for that purpose. Higher **share of private savings in GDP** might mean fewer takings from the households and private sector. *Share of the state economic enterprises' actives in total actives of registered firms* in Italy and *share of the state economic enterprises' investments in total investment* are used to represent the dominance of the state in the economy. State-operated enterprises involve the substitution of political coercion for market decision-making. The final component, *share of economic services of government* (apart from the basic services such as defense) *in final consumption expenditure* serves the same purpose. Less restrictive government is expected to minimize doing these kinds of services and to leave them to private sector.

III. Money and banking:

The variables in money and banking reflect the availability of sound money to the citizenry. Since money plays a central role in the exchange process, monetary institutions and arrangements exert an important impact on the security of property and freedom of exchange. Monetary disturbances and unexpected price changes may lead to redistribution of wealth and even ownership of property. Therefore, a stable monetary environment is associated with economic freedom. Six indicators are used to measure monetary freedom:

High **inflation rate** lessens the purchasing power of money so that it erodes the wealth of people. **Excess money supply over the growth rate** also has similar impacts on monetary holdings of people. Therefore high inflation rate and excess supply of money might have a negative effect on economic freedom. Many government regulations restrict entry into various banking activities and increase the cost of transactions between borrowers and lenders. High **short-run and long run interest rates** for credits constrain investment significantly. High and fluctuating interest rates create a risky environment for investors and thus limit their freedom to invest. Similarly, allocating more of **the bank credits to government** takes the investment resources away from the private sector. *Money in circulation* may be used to indicate the degree of restriction into exchanges in the goods market. More money in circulation implies more vigorous economic activities.

IV. Capital market:

Many countries require foreigners to get permission from the government in order to make an investment. Whether they are foreign direct investment or financial investment, capital transactions are often restricted for the reasons such as protecting domestic industries and preventing depletion of foreign exchange reserves. Clearly, such regulations of capital movements are inconsistent with economic freedom. Besides, they might have series side

effects including bribery and corruption. For the economic freedom index, freedom of capital movements are measured by six variables:

Inward and outward foreign direct investment are used as percentages of GDP. Foreign direct investment is expected increase with economic freedom. **Access to (non-EU) foreign capital markets** and **foreign access (from non-EU countries) to the Italian capital markets** are also used as an indicator of freedom of capital movements because removing the obstacles in the movement of capital will make the access to capital markets much easier. Finally **total capital inflows and outflows** (both foreign direct investment and portfolio investment) are used as an alternative but relatively more comprehensive indicator. All variables are taken as percentages of GDP.

V. Legal and institutional structure:

Economic rights, especially the rights to hold property and to have secure contracts make up the legal side of the economic freedom. They are widely considered a premier prerequisite for economic development. By making it possible for citizens to profit from their property, nations presumably create incentives to innovate and produce; by enforcing contracts they reduce transaction costs (Goldsmith, 1997). However, how to operationalise these rights is a puzzle and analysts have been forced to look for oblique measures. Data could be found for only five indicators:

The ratio of the civil cases finished to the total cases in the magistrate's courts and **the finished civil cases per head** might indicate the speed of the solving legal problems. As **the ratio of the R&D expenditures in GDP** rises, one might expect that the knowledge and the technology will increase in the country. This indirectly might contribute the development of the institutions. The **share of the civil R&D financing in the total R&D expenditures** would show the contribution of the non-governmental organizations to this development. Finally, **the number of new firms created** each year is expected to give an idea about how easy to set up a firm is. Less bureaucracy and more incentives for private firms will facilitate the exchange of goods and services and secure property rights and thus increase the economic freedom.

VI. External trade:

Freedom of exchange across national boundaries is a key element of economic freedom in our modern world of high technology and low costs for communication and transportation. Both trading partners gain and the pursuit of the gain provides the motivation for the exchange. Thus freedom to exchange with foreigners also contributes significantly to our modern living standards. The components in the external trade area are designed to measure the presence of policies consistent with free trade. For that purpose, two indicators are used:

The ratio of import duties in total imports and **openness of the economy** (import plus export over GDP) would indicate the degree of intervention to free trade. More taxes and duties on imports would mean more restrictive trade. Removal of any obstacles from exports and imports would facilitate exchange of goods and services internationally, creating a more open economy.

Table 1: Indicators of economic freedom

Factor / Variable	Mean	Factor / Variable	Mean
FACTOR 1: GOVERNMENT SIZE	5.009	FACTOR 5: LEGAL STRUCTURE	4.489
1.1. Government expenditures / GDP	4.972	5.1. Civil cases finished / cases occurred in magistrate's courts*	5.355
1.2. Government consumption / GDP	4.663	5.2. Civil cases (finished) per head*	3.623
1.3. Subsidies / GDP	5.390	5.3. <i>R&D expenditures / GDP*</i>	5.161
1.4. <i>Social transfers</i>	4.319	5.4. <i>Civil R&D financing / Total R&D*</i>	6.000
		5.5. <i>Number of new firms created*</i>	2.907
FACTOR 2: INTERVENTION to the MARKET	5.469	FACTOR 6: EXTERNAL TRADE	5.403
2.1. Income and wealth taxes / GDP	5.311	6.1. Import duties / Imports	5.797
2.2. Public sector borrowing rate	4.990	6.2. Openness ((X+M) / Y)*	5.010
2.3. Private saving / GDP*	5.661		
2.4. Total tax revenue / GDP	5.916		
2.5. <i>SEEs actives / Total actives</i>	3.452		
2.6. <i>SEEs investment / Total investment</i>	6.120		
2.7. <i>Economic services of govnt / Final consumption expenditures</i>	4.746		
FACTOR 3: MONEY and BANKING	5.541	FACTOR 7: LABOUR SECTOR	4.159
3.1. Inflation rate	6.453	7.1. Government employment / Total	3.125
3.2. Excess money supply over growth	5.412	7.2. Unemployment rate	5.193
3.2. Long-term interest rate	6.466		
3.4. Short term interest rate	6.199		
3.5. Bank credits to government / Total	3.176		
3.6. <i>Money in circulation / GDP</i>	2.822		
FACTOR 4: CAPITAL MARKET	3.842	FACTOR 8: LEAKS in the ECONOMY	7.170
4.1. Inward FDI / GDP*	2.690	8.1. Tax revenues collected / estimated*	7.425
4.2. Outward FDI / GDP*	3.511	8.2. Stockbuilding / GDP	6.915
4.3. Access to foreign capital markets / GDP (to non EU area)*	4.313	8.3. <i>Output gap (GDP potential – GDP actual)*</i>	4.364
4.4. Foreign access to capital markets / GDP (from non EU area)*	4.854	8.4. <i>SEEs disinvestment ratio</i>	7.305
4.5. <i>Capital inflows / GDP*</i>	3.462	8.5. <i>Private firms disinvestment ratio</i>	7.409
4.6. <i>Capital outflows / GDP*</i>	2.498		

Notes: 1. Italics indicate the variables included only in the 1970-2000 database, so descriptive statistics correspond to the values within this database.

2.* indicates those variables indexed with the formula: $I_i = (V_i - V_{\min}) / (V_{\max} - V_{\min}) * 10$, which can be interpreted as the greater is the better. Other variables are indexed as $I_i = (V_{\max} - V_i) / (V_{\max} - V_{\min}) * 10$, which can be interpreted as the greater is the worse.

VII. Labour market:

Many types of labour market regulations infringe on the economic freedom of employees and employers. Ideally, a country must allow market forces to determine wages and establish the conditions of dismissal, avoid excessive unemployment benefits that undermine work incentives and refrain from the use of conscription (Gwartney and Lawson, 2002). Two variables are used to measure the freedom of the labour market:

The share of government employment in total employment might indicate the degree of state influence in labour market. **Unemployment rate** might give an idea about the efficiency of the market.

VIII. Leaks in the economy:

In a free market economy, an invisible hand equates the demand to supply for any good or service and so no excess demand or excess supply would exist at least in the long run. This component is designed to measure how well the markets work. Five measures are used:

The ratio of tax revenues collected to the total estimated tax revenues might indicate the amount of taxes that could not be collected and thus the degree of the informal economy (i.e. the money running out of the economy). **The ratio of stock building to GDP** might indicate the excess supply presumably due to inefficient work of the markets. Large *output gap* (potential GDP minus actual GDP) might mean that there are many unused or inefficient use of resources so that the economy could not reach the potential level of output with the extant resources. ***The State Economic Enterprises disinvestment ratio and private firms disinvestment ratio*** might also give hints about how well the markets operate.

3.2. Construction of the economic freedom index

The following formulas were used to convert the raw time series data into a scale of 0 to 10, 0 being the most restricted and 10 being the least restricted (the most free case over the time period). This will make them easily interpretable and comparable with other factors as well as with the existing EF indexes:

$$I_t = (V_{\max} - V_t)/(V_{\max} - V_{\min}) * 10, \text{ if the greater is the worse; and}$$

$$I_t = (V_t - V_{\min})/(V_{\max} - V_{\min}) * 10, \text{ if the greater is the better}$$

where I_t denotes the index value for year t , V_t the raw data for year t , and V_{\max} and V_{\min} are the maximum and minimum values of the series over the time period.³

A higher component rating for a year indicates that the institutional arrangements and/or policy choices are more consistent at that year with EF in the specific category measured

³ It would be interesting to see how much free is the Italian economy when compared with the EU or industrial economies, by choosing the maximum and minimum values from a sample of these countries. However, this is out of scope of this paper and is left for a further research. The minima and maxima in the existing EF indexes are either taken from the 'worst' and the 'best' value for countries in the sample or designated by the authors or the experts.

by the component. The rating is converted from raw data that are actually realized at a specific year so that it might represent the cumulative effects of the outcomes of the policies applied at/until that year.⁴ However, this deficiency may be offset by the fact that they are objective numbers created in a world of very complex, interrelated, unseparable and dynamic actions and movements done by the economic agents. They are the results of not only the economic policies but also of the social, legal, institutional and political decisions taken in the country as well as in other countries.

3.3. Aggregation of the components:

An index converts various variables into a single number but how should such indicators be weighted to obtain the most precise index? One might think that all components are equally important in measuring the index so give equal weights, as it is done by both the Fraser Institute and the Heritage Foundation for many years. Or one might claim, for example, that property rights are more important to economic freedom than the monetary policy, so property rights should be given a higher weight. Besides equal weighting, various weighting methods are used to construct the economic freedom index.

In this study, we select six alternative ways to put all these components together to form an index of economic freedom:⁵

1. **EF** : Equal weight index. Arithmetic average of the components are taken assuming each component has an equal impact on growth,
2. **WEF** : Each component is weighted by the inverse of its standard deviation divided by the sum of all such inverses (de Haan and Sturn, 2000),
3. **PCOREF** : Each component is weighted by its correlation coefficient to growth divided by the sum of all correlations. Negatively correlated coefficients are excluded from the index.
4. **NCOREF** : Each component is weighted by its correlation coefficient to growth divided by the sum of all correlations.
5. **COREF** : Each component is weighted by the absolute value of its correlation coefficient to growth divided by the sum of all correlations.
6. **HEDEF** : Hedonic weighting. Each component is weighted by the t-ratios from a growth regression with all indicators, divided by the sum of all t-values (Scully and Slottje, 1991).

⁴ For that reason, lag-effects are always taken into consideration in the forthcoming empirical analysis.

⁵ The Fraser Institute employs two other weighting techniques: For the first index, the importance of the components is based on a survey under experts in the field of economic freedom. In the second index, the weighting is also based on a survey, but this time the survey was held under a number of country experts. Wu and Davis (1999) utilize the method of *principal component analysis* to re-group the data set provided by the Fraser Institute. The same method is also used in Scully and Slottje (1991) where detailed information on the principal component analysis as well as the hedonic approach can be found.

4. Economic Freedom of the Italian Economy: 1960 to 2000

Having described the details of the construction of the freedom index, in this section, we look at the freedom of the Italian economy between 1960 and 2000 via both the aggregate index and the components.

4.1. Recent macroeconomic developments in the Italian economy:

Introduction of the floating exchange rate regime after the end of gold standard and the 1973-74 and the 1979-80 oil crises which are the dominant characteristics of the world economy in the 1970s influenced the Italian economy substantially like almost all countries in the world. In Italy, the consequences of these international crises accompanied with those of concurrent internal events: High wage increase demands at the beginning of the decade and in 1975. The strengthening of state commitment to national health, state pensions, unemployment benefits and school age leaving requirements.

The 1970s was one of the most difficult periods of the Italian economy in terms of macroeconomic performance. As can be seen from Table 2, economic growth and industrial production slowed down to 2.78 percent and 1.8 percent respectively, one of the lowest rates of the last 40 years. The decade will be remembered principally for the high rate of inflation which reached more than 17 percent. The young generation of the period had never experienced anything similar. Moreover, the relatively low interest rates experienced during the years of high inflation disguised the seriousness of the public deficit problem (D'adda and Salituro, 1991). That period was the one that the lowest economic freedom, 5.40 was realized. Italy became a member of the European Monetary System in 1979.

Table 2: Macroeconomic developments in Italy: 1960 – 2000*

	EF [±]	EF (FI) ⁺	Growth %change	Investm %ofGDP	Ind.prod. %change	Export %ofGDP	FDIinflow %ofGDP	Inflation %change	Unempl. %change
1960	6.26	-	6.33	26.70	10.00	9.16	0.96	2.80	5.70
1965	6.11	-	5.22	26.60	7.02	9.61	0.95	5.56	4.42
1970	6.27	6.80	6.22	23.92	7.02	11.64	0.86	3.54	5.22
1975	5.62	5.40	2.78	25.64	1.80	14.48	0.71	12.64	5.50
1980	4.50	5.60	4.46	24.98	5.54	18.42	0.27	17.50	6.38
1985	4.12	5.90	1.60	23.14	-0.86	18.14	0.38	14.32	7.84
1990	3.74	7.20	2.86	21.18	4.76	15.62	1.16	7.12	9.48
1995	4.22	7.20	1.28	19.24	1.48	17.20	0.84	4.90	10.06
2000	5.70	7.80	1.75	18.74	1.56	20.43	1.47	2.74	11.40

* 5-year averages, ⁺Fraser Institute's economic freedom index, [±] Our freedom index.

Source: Various publications and issues of ISTAT and OECD.

Towards the end of the decade there was an exceptional industrial restructuring process somehow reinforced by the experience. This process was most clearly characterized by the phenomenon of 'diffused industrialization' and by the marked success and innovation capability of small to medium sized firms. As a consequence, the territorial makeup of the

Italian industrial system has been remarkably modified: The notable development of industry in certain peripheral areas on the one hand; restructuring in the established industrial centres on the other hand (Garofoli, 1991).

As a result of this industrial development, high rate of investment and increased productivity raised the capital accumulation and profits. The Italian economy, as a result, grew 4.46 percent over the period. Industrial production and exports increased substantially, however the inflation and unemployment rate were still high. The production and economic growth could not be sustained and they fell sharply over the period 1980-1985 mainly due to expansionary policies

The stance of economic policy became more restrictive through the end of the 80s. The rapidly worsening foreign trade situation and the prospect of a surge in the government deficit following the difficulties encountered in implementing the budget prompted the authorities to raise interest rates and to take immediate fiscal consolidation measures. The interest rate differential between Italy and its partners led to capital inflows, its share in GDP reaching 1.16 percent on average (OECD, 1990). Inflation and interest rate differentials were expected to disappear in the next decades with joining the narrow exchange rate band of the EMS. Remarkable regional differences in growth between the South and the North, so called dualism, and high unemployment still stayed as the main problems of this decade.

In the 90s, important institutional changes have affected both the degree of economic and political independence of Bank of Italy as well as the environment in which monetary policy is decided and implemented. In terms of central bank independence, between 1992 and 1994 series of laws were passed giving the central bank governor the exclusive responsibility to set and change the monetary policy instruments. Opening of screen-based market for Treasury Bills in 1988 and the one for interbank deposits in 1990 were among the important developments in the money market (de Arcangelis and di Giorgio, 1999).

A wide range of legislation and initiatives were introduced to liberalise product and factor markets, especially to make labour market less rigid. Tackling the remaining structural problems, or increasing the pace of reform was made urgent and more difficult by the weaknesses evidenced by Italy's marked territorial dualism. While the most advanced regions of the Centre-North have continued to boost living standards, the growth rate of the *Mezzogiorno* has been poor (OECD, 2000).

A rebound in economic activity has been under way in the recent years, stimulated by a recovery in external demand. Almost all macroeconomic indicators except unemployment present improvement in the economy. Italy achieved a stable reduction in inflation rate. This was accompanied lower-than-average rate of economic growth with respect to previous decades. Economic growth was considerably lower, in this period, than the other European countries that were facing similar problems in terms of fiscal adjustment required to meet the Maastricht budget criteria. The recovery in economic activity has benefited from the easing monetary conditions in the EMU area, where monetary policy remains accommodating. From an Italian perspective, short-term interest rate are at a historical low and money and credit have continued to expand briskly, signalling that there

is no financial constraint on growth. Longer-term growth potential has improved with added labour market flexibility, with the privatisation and liberalization of previously monopolized utility and transport sectors and with improvements in the functioning of the financial market.

The creation of a more favourable overall business environment, measure to complete the market liberalization process and the modernization of the public administration are essential for reducing still-high unemployment and are especially important for correcting the slow development of the *Mezzogiorno* (OECD, 2000).

4.2. Descriptive statistics:

Table 1 indicates the index values of all components of the EF index as well as the eight factors aggregated from the relevant components. The highest score, 7.17 is obtained from the Leaks in the Economy. Increasing efficiency in tax collection and less amount of stock building might have contributed to that. The lowest score, 3.842, comes from the Capital Market. Relatively low level of FDI inflow and low financial investment produced a low score of EF index. It seems that some measures need to be taken to attract more capital into Italy. Freedom in the legal and institutional structure as well as in the labour sector seems to be still less satisfactory, while improvements in the money and banking sector and external trade led to a higher economic freedom.

Graph 1: Freedom index



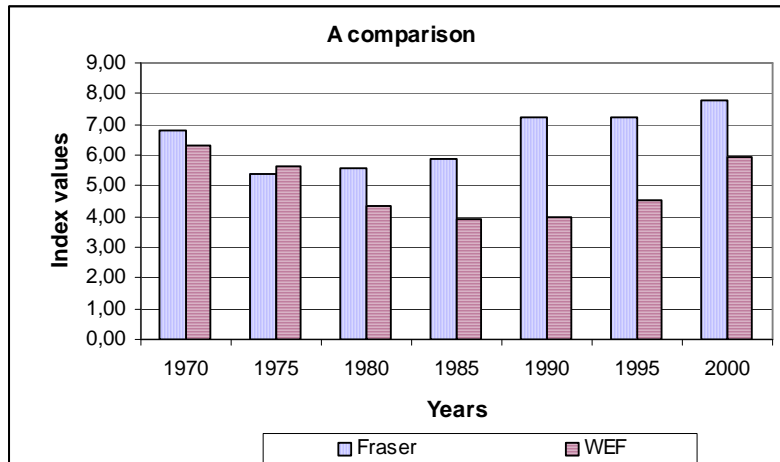
As depicted in Graph 1, overall economic freedom of the Italian economy can be analysed into three parts. From 1960 to the mid 1970s, freedom index moves around 6 with small variation. However from the 1970s freedom starts to decline substantially. As many countries in the world, Italy was also influenced from the two oil crises to a great extent and governments were forced to take restrictive measures to overcome the problems and to improve the economy again. One can observe the clear declining trend especially in the areas of money and banking, government size and capital market. The inclination is reversed from the early 1990s. As more liberal and flexible policies are adopted in the

product and factor markets, economic freedom rises significantly. After the removal of many impediments in the movement of goods and factors, capital flows and foreign trade accelerated. As explained above in detail, a wide range of institutional changes have been implemented to create a secure business environment for investment and to facilitate the exchange of goods. The index of Legal Structure reflects clearly that rising trend in freedom. The only index that indicates a constantly downward trend in that period is that of Labour Market. The still-high unemployment and territorial dualism might account for that fall.

4.3. Comparison with the existing indexes

It may be useful to compare our index with the existing indexes in order to see its performance. As demonstrated in Graph 2, Fraser Institute's index and our index are different especially in terms of turning points. The three phases as described above can be observed in the Fraser's index but in different periods. Economic freedom seems to fall from 1970 to the early 1980s and then it improves continuously in the Fraser Institute's index. However in our index, improvement begins in the 1990s. There seem to be 5-10 years lag between the two indexes. Our index reflects the continuous trend of the indicators not a spot in one time, therefore it is more likely to capture the turning points truly.

Graph 2: Comparison of the indexes



Cummings (2000) compares the Fraser Institute's index and the Heritage's index and finds that two indexes yield very different assessment about the Egypt's performance. Egypt ranks much higher with regard to the Fraser Institute's index.

5. Economic Freedom and Economic Growth

The relationship between economic freedom and growth or per capita income has been analysed by many studies. Some of these studies have used one or two indicators of economic freedom such as government size or free trade, while others have used different economic freedom indexes, mostly the Fraser Institute's index or the Heritage Foundation's index. Although many of them found a positive influence of freedom on growth, the choice of measure is still important. A single measure does not fully reflect the

economic environment and a highly aggregated index makes it difficult to draw policy conclusions.

Before these two comprehensive measures of freedom are published, Barro (1994) tested the effect of market distortions on growth by using some proxies such as government consumption, black market premium on foreign exchange and a rule-of-law index (from International Country Risk Guide). His empirical results for a panel of 100 countries indicated adverse effects of government consumption and black market premium on growth and that greater maintenance of the rule of law is favourable to growth. Knack and Keefer (1995) compile data from the International Country Risk Guide and Business Environmental Risk Intelligence and set up an index to measure institutional characteristics, particularly protection of property rights, of economic freedom. They find that the institutional variables are important for investment and growth.

Scully and Slottje (1991) constructed various indexes of economic liberty for a large group of countries. On the basis of single correlation coefficients, they report that nine indicators out of fifteen are statistically significantly related to growth. Using their aggregated freedom index in a growth model covering the period 1984-1987 for 100 countries, de Vanssay and Spindler (1994) also find a positive relationship between growth and freedom. Scully and Slottje index is used also by de Haan and Siermann (1998) for a sample of 78 countries over the period 1980-1992. They conclude that the link between freedom and growth depends upon the measure used.

De Haan and Sturn (2000) compare the two indexes mentioned and find similar rankings of the countries according to both indexes. Several growth models are estimated for the period 1975-1990 for 80 countries, using both the level of economic freedom in 1975 and the change in freedom between 1975 and 1990. The Fraser Institute's indicators are employed and extreme bound analyses are done with some control variables such as investment share and population growth. Their findings suggest that more freedom will bring countries more quickly to their steady state level of economic growth, but that the level of steady state growth is not affected from the level of economic freedom.

Based on the Fraser Institute's freedom index, Wu and Davis (1999) confirm the relationship between freedom and growth by their contingency analyses for a panel of about 100 countries from 1975 to 1992. Dawson (1998) investigates the roles of political, civil and economic freedom in economic growth. His empirical results with the Fraser Institute's data indicate a significant contribution of economic freedom to growth for a large sample of countries over the period 1975-1990.

Economic freedom is shown to influence both economic growth and human development in Goldsmith's (1997) bivariate and multivariate analyses. He utilizes both Heritage Foundation's and Fraser Institute's freedom indexes. Gwartney, Lawson and Holcombe (1999) provide further evidence on the impact of freedom on growth. Using the Fraser Institute's data for 82 countries from 1975 to 1995, they indicate the positive effect of freedom even when human and physical capital and demographics are taken into account. In the short-run causality investigation between freedom and growth, Farr et al (1998) find that economic freedom Granger-causes the level of economic well being for both industrial

and non-industrial countries. They utilize The Fraser Institute's indexes for more 100 countries over the period 1975-1995.

Carlson and Lundström (2002) disaggregate the economic index of the Fraser Institute for 74 countries and using a traditional growth model, find positive effect on growth of only legal structure and freedom to use alternative currencies. Islam (1996), using the same index values for 94 countries indicates that freedom influences per capita income positively for low-income countries, while it affects growth for only high-income countries. Heckelman (2000) carries out a short-run causal analysis between freedom and growth by using the disaggregated Heritage Foundation's index. It is found that almost all components, except intervention, trade policy and taxation, positively influence growth. In his other study with Stroup (Heckelman and Stroup, 1999), five of the fourteen components measured by the Fraser Institute's index are found to have adverse effect on growth. Similarly, Ayal and Karas (1998) estimate a neoclassical growth model with each component of freedom added successively, using 13 components from the Fraser Institute's index. Only six elements are shown to be statistically significant and elements in the areas of stable monetary environment, small government participation and freedom for citizens to transact with foreigners are shown to be insignificant.

To sum up, cross-sectional and panel data analyses do not give as clear evidence for the relationship between growth and freedom as it is stated in the neoclassical economics, conversely, sometimes produce ambiguous and even conflicting outcomes. The empirical results are found to be sensitive to the measures of freedom, indicators used and model specification. The reaction to liberalization attempts of economies in different development levels may well be different. The question if a single-country approach with time series data might produce more robust results is still needs to be explored.

For that reason, using time series data on Italy from 1960 to 2000, the effect of economic freedom on economic growth will firstly be analysed by Granger causality tests and then by a growth model (Mankiw, Romer and Weil, 1992).

5.1. Granger-Causality tests

A series is said to "Granger-cause" another series if past values of the first are useful in predicting the second. Specifically, to see if economic freedom precedes growth, the regression:

$$GROWTH_t = \alpha + \sum_{j=1}^q \beta_j GROWTH_{(t-j)} + \sum_{j=1}^q \gamma_j FREEDOM_{(t-j)} + u_t \quad (1)$$

is estimated and an F-test is used to determine if the coefficients on the lagged FREEDOM variables are jointly significant. The length of the lag (q) can be chosen by some information criteria or by diagnostic checks.

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

$$FREEDOM_t = \kappa + \sum_{j=1}^q \theta_j FREEDOM_{(t-j)} + \sum_{j=1}^q \lambda_j GROWTH_{(t-j)} + v_t \quad (2)$$

If the vector of γ coefficients from (1) are significant but the λ coefficients from (2) are not, we can conclude that freedom precedes growth. If the F-tests reject the significance of γ but not λ , 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. Finally if we reject the significance of both sets, we can conclude freedom is not related to growth.

Does freedom cause growth?

Granger causality test results based on the equation (1) are presented in the upper part of Table 3. In order to check the robustness of the results, the analyses are repeated by using six EF indexes. The lag length is limited to one to not lose degrees of freedom. However, the information criteria, Schwartz's and Final Prediction Error as well as diagnostic tests including the Breusch-Godfrey serial autocorrelation test and auto-regressive conditional heteroscedasticity test supported our decision. It can be said from the prob-values of F-statistics that the hypothesis that freedom does not cause growth are rejected for all EF indexes at 5% significance level, a result meaning that economic freedom Granger-causes economic growth. Having the same results with six freedom indexes confirms the existence of a relationship between freedom and growth.

Table 3: Granger-causality test results

Economic Freedom does not cause Economic Growth		
<i>EF index used</i>	<i>F-stat</i>	<i>p-value</i>
LEF	6.174	0.017
LWEF	4.541	0.039
LPCOREF	9.119	0.005
LHEDEF	20.118	0.000
NCOREF	11.556	0.002
COREF	11.556	0.002
Growth does not cause Economic Freedom		
<i>EF index used</i>	<i>F-stat</i>	<i>p-value</i>
LEF	0.582	0.450
LWEF	0.269	0.607
LPCOREF	1.321	0.257
LHEDEF	10.860	0.002
NCOREF	1.421	0.240
COREF	1.421	0.240

Note: Lag length is one in each regression and it is determined according to the diagnostic statistics and information criteria (not reported here and may be supplied upon request).

Does growth cause freedom?

Empirical results of the estimation of equation (2) are presented in the lower part of Table 3. The regressions testing the reverse causation are carried out by the same procedure described above. In five regressions, we are *not* able to reject the null hypothesis that

growth does not cause freedom at 5% level. Only the index with hedonic weighting is able to reject that hypothesis.

In conclusion, Granger causality tests suggest that economic freedom precedes growth but not the other way round.

5.2. Multivariate analyses

Having analysed the bilateral relationship between economic freedom and growth by using the Granger causality technique, in this part, the behaviour of freedom variable in a growth model will be explored. Testing the hypothesis by controlling some variables that are frequently used in classical growth models will enable us to check the robustness of this relationship. The basic theoretical framework to be used in this analysis is an extension of Mankiw, Romer and Weil's (1992) human capital augmented version of Solow. The variables initial income and initial freedom are dropped, as they are rather necessary for cross-country analyses.⁶ Thus the following equation is estimated:

$$Y_t = \alpha_0 + \alpha_1 K_t + \alpha_2 L_t + \alpha_3 H_t + \alpha_4 F_t + ut \quad (3)$$

where Y is growth of output, K is physical capital, L is raw labour, H is human capital and F is economic freedom.

Economic theory predicts positive signs for all coefficients as they all contribute to growth.

Growth rate of real Gross Domestic Product is used as dependent variable. K is represented by the growth rate of real Gross Fixed Capital Formation share in GDP. Growth rate of working population (ages of 15-64) is used as a proxy for raw labour. Human capital is approximated by growth rate of high school registered students in the population of 15-19 ages. Finally, six economic freedom indexes that are constructed with various weighting methods as described above are used to see the effect of freedom on growth.⁷ Data are compiled from the various publications of ISTAT (National Statistical Office of Italy), CRENOS (Centre for North-South Economic Research), OECD, Medio Banca and Economia Europea.

Re-writing the equation with the proxies as follows may be more explanatory:

$$GROWTH_t = \alpha_0 + \alpha_1 GRINV_t + \alpha_2 GWPOP_t + \alpha_3 HCAP_t + \alpha_4 EF_t + ut \quad (4)$$

Existence of a common trend between any two data series does not always imply that there is a meaningful economic relationship between them. If the series are not *stationary* (i.e.

⁶ For empirical applications of MRW-type models with cross-sectional and panel data, see for example, Levine and Renelt (1992); de Haan and Sturn, 2000; Dawson, 1998; de Haan and Siermann, 1998; Gwartney et al, 1999; Ali and Crain (2002) and so on.

⁷ Some other proxies were tried for these variables such as growth rate of real per capita GDP for Y, the share of secondary school registered students in total population for H, population growth, change in labour force for L and share of savings in GDP for K. The regression results with the indicators mentioned above were superior both economically and statistically.

their mean, variance and auto-covariances are *not* independent of time), the regressions involving these series can falsely imply the existence of a relationship. This is called as *spurious regression* by Granger and Newbold (1974). Ignoring this fact and estimating a regression model containing nonstationary variables might lead to insensible results. Moreover such a regression ignores important information about the underlying statistical and economic processes generating the data. Therefore, it is important to test the presence of unit roots and if they are present, to use appropriate modelling. Augmented Dickey-Fuller test is done to check the stationarity of variables and all variables except the growth are found to be stationary. Thus all variables are used as growth rates as they become stationary when differenced once. Freedom indexes are used as levels because they are already scaled and taking differences might lead to loose information.

Table 4: Growth and Economic Freedom: Sensitivity analyses to various EF indexes
(OLS estimations 1960-2000, Dependent variable is the annual growth rate of real GDP)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Constant	1.86** (16.47)	-1.28 (0.70)	-1.17 (0.50)	0.46 (0.68)	1.79** (17.37)	1.79** (17.37)	1.99* (7.59)
GRINV	0.06** (15.57)	0.04** (15.43)	0.03** (16.69)	0.04** (13.39)	0.05** (6.94)	0.05** (6.94)	0.04** (7.16)
GWPOP	0.21 (0.60)	0.21 (0.79)	0.32 (1.60)	0.23 (0.95)	0.14 (0.34)	0.14 (0.34)	0.14 (0.22)
GHCAP	0.33** (6.69)	0.27** (5.96)	0.28** (6.08)	0.23** (4.85)	0.17 ⁺ (2.81)	0.17 ⁺ (2.81)	0.31** (4.71)
LEF		2.14* (3.37)					
LWEF			2.06 ⁺ (3.05)				
LPCOREF				1.24* (2.99)			
NCOREF					0.14* (3.88)		
COREF						0.37* (3.88)	
LHEDEF							0.60** (9.45)
R ²	0.78	0.82	0.82	0.83	0.85	0.85	0.89
SC info	0.99	0.96	0.98	0.98	0.90	0.90	0.54
AC	1.05	0.01	0.13	0.38	0.16	0.16	1.37
ARCH	2.04	4.20	2.53	1.34	0.79	0.79	0.04

Notes:

1. The coefficients are taken from the solved static long-run equation,
2. All regressions include two lags of the variables, except GWPOP which is taken as exogenous,
3. * and ** denote the rejection of the relevant null hypothesis at 5% and 1% levels (⁺ at 10% level),
4. The numbers in brackets are F-test of significance,
5. SC: Schwartz information criterion, AC :Breusch-Godfrey serial correlation test (F-test),
ARCH: Autoregressive conditional heteroscedasticity test (F-test)

As can be seen from the Table 4, initially a growth regression is estimated with usual variables and then each freedom index is added to the regression. Therefore one can see the contribution of freedom to growth given that the main determinants of growth are already added as control variables. Repeating the regressions with various freedom indexes will enable us to check the robustness of the relationship between freedom and growth.

For all models, the coefficients (α_i in equation 4), F-statistics indicating (in)significance of the coefficient at 1%, 5% and 10% levels, Schwartz information criteria to compare the models, coefficient of determination (R-squared) for giving information about the overall explanatory power of the model and finally some diagnostic statistics (for serial autocorrelation and conditional heteroscedasticity) to control the statistical acceptance of the model and its statistics' reliability are also given in the Table.

Model 1 presents estimation results of a Mankiw et al type growth with capital and labour variables. It is statistically acceptable as none of the diagnostic tests indicate a defect. 78% of the changes in growth can be explained by these three variables. Wald's restriction tests indicate the rejection of the null hypothesis, which states the coefficients of human capital as well as physical capital are zero, meaning that the two variables contribute to growth. Human capital seems to be more important than the physical capital or investment ratio, a case that is consistent with the recent endogenous growth models. One unit increase in the value of human capital is expected to raise growth by 0.33 units, but the rise is only 0.06 units in the case of physical investment. In the basic model, the coefficient of raw labour is found to be statistically insignificant.

When the first freedom index, EF, is added to the growth model, R-squared increases from 0.78 to 0.82, indicating a significant increase in explanatory power. A smaller SC information criterion also supports that. It is evident from the regression that economic freedom significantly contributes to growth, besides investment and human capital. The addition of the freedom index causes approximately 30% decrease in the estimated coefficient on investment (capital accumulation). This evidence is consistent with the hypothesis that institutions, powered by more freedom, affects growth at least partially through an effect on investment (Dawson, 1998). A similar argument can apply to the human capital variable. A 20% decrease in the estimated coefficient of human capital is observed upon the inclusion of freedom index. That indicates the operation of the factor productivity channel on growth due to increased freedom. That is, the increased productivity of skilled labour fosters economic growth.

In the second index WEF, each component is weighted by the inverse of its standard deviation divided by the sum of all such inverses. The model 3 with WEF presents similar results with model 2. Again the coefficients of investment, human capital and freedom are significantly different from zero, but not that of labour. The statistical indicators such as R-squared and information criteria give further support to the hypothesis that freedom contributes to growth.

Some other economic freedom indexes in which their correlation coefficients with growth are used as weights are employed also in the growth regressions in the models 4, 5 and 6. Economic freedom is found to be a significant determinant of growth in these models.

Finally a growth regression is run with only the selected indicators of freedom and the t-values of the estimated coefficients are summed and each component's t-value is divided by the sum to obtain its weight to be used in aggregation. This is known as hedonic weighting. The model 7 with hedonic weighting produces the most significant coefficient because the highest coefficient of determination, the lowest information criteria and the highest F-test of restriction are obtained in this regression. One should notice, however, that that weighting scheme already injects a high degree of correlation to the regression.

In conclusion, the empirical results suggest that economic freedom is significantly related to economic growth. This relationship is remarkably robust as the regression results are similar regardless of the freedom index used.

5.3. Which economic freedoms contribute to growth?

The above results indicated the relationship between a country's overall measure of economic freedom and its economic performance over time. However, economic freedom is a very comprehensive broad indicator, covering many different areas of an economy. It may be more helpful for the policy makers to know the source this relationship so that they can take the necessary measures to improve the freedom in the relevant area. By disaggregating the specific components of economic freedom and measuring the relevant independent impact on growth exhibited by each component, one can derive an empirically weighted summary index of growth-promoting economic freedoms (Heckelman and Stroup, 2000).

Table 5 presents the estimation results of the equation 4 with each component added separately. The components of the unweighted index EF are used in the regressions as the other indexes weighted by the correlation coefficients or t-ratios have more or less bias towards the significance of the variable. However it is highly possible to find more powerful relationships between the EF and growth when they are used.

Nine models are estimated: The coefficients, t-ratios and some other statistical tests are given in the Table. From the Wald test, AC and ARCH statistics, all models are statistically acceptable. Coefficient of determination (R-squared) and Schwartz information criterion shows that addition of the EF component contributes the regression in five models (with significant coefficients). Over 80% of the variation in the growth can be explained by the four variables in the models. In almost all models, physical capital and human capital variables are statistically significant at 1% level and their coefficients have similar magnitudes, indicating the robustness of the model. However unskilled labour is not significant in the models except the models 9. With positive signs, all three variables contribute to growth as expected in the neoclassical economics.

Concerning the components of the economic freedom; limiting the size of the government in the economy leaves more resources to the private sector that accelerates the growth. A highly significant and positive coefficient for GOVERN, a higher R-squared and a smaller SC information than the basic model support this argument. Similarly, a significant positive sign for INTERVEN implies that less restriction to the market (so bigger index value) is more beneficial to the economic growth. A stable and reliable money and banking

sector with low inflation, no excess money supply and low interest rate facilitates the economic growth. However the estimation results fail to give statistical evidence for that argument. The sign of the variable MONEY is positive but not significant at the usual levels.

Table 5: Which components contribute to growth?

(OLS estimations: 1960-2000, Dependent variable is the annual growth rate of real GDP)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
intercept	1.86** (16.47)	0.63 (1.57)	0.33 (0.26)	1.55 (2.23)	2.91* (6.41)	1.22 (1.40)	-0.76 (0.01)	1.93** (14.45)	1.92 (1.67)
Grinv	0.06** (15.57)	0.03** (9.82)	0.04** (11.99)	0.03** (13.36)	0.10** (14.93)	0.05** (17.98)	0.03** (17.82)	0.05** (13.59)	0.08** (15.14)
Gwpop	0.21 (0.60)	0.41 (2.51)	0.08 (0.11)	0.37 (1.22)	0.03 (0.01)	0.25 (0.67)	0.06 (0.06)	0.12 (0.12)	0.24* (0.74)
Ghcap	0.33** (6.69)	0.25** (5.15)	0.25** (6.34)	0.32** (5.02)	0.26** (6.56)	0.36** (5.67)	0.37** (9.95)	0.31* (4.14)	0.30* (4.13)
lgovern		1.05** (5.54)							
linterven			1.23 ⁺ (2.82)						
lmoney				0.21 (1.38)					
icapital					-0.21 (1.12)				
Llegal						0.43 ⁺ (2.87)			
Ltrade							1.59* (4.24)		
Llabour								0.08 (0.10)	
Lleaks									-0.03 ⁺ (2.88)
R ²	0.78	0.86	0.83	0.81	0.80	0.83	0.85	0.78	0.82
SC info	0.99	0.78	0.99	1.12	1.15	0.99	0.87	1.26	0.98
AC	1.05	0.09	0.93	1.48	0.79	1.89	0.01	0.81	0.25
ARCH	2.04	0.00	1.03	1.27	0.01	0.16	0.43	2.26	0.05

Notes: See Table 4.

Improved legal and institutional structures secure the property rights and encourage the production and making profits. More profits will mean more investment that fosters the growth. The fact that the variable LEGAL has a positive and significant sign supports that theory. Reducing the barriers in external trade facilitates the exchange of goods and services with other nations. Enlarged demand motivates more production and more investment that in turn leads to more economic growth. This is validated by our empirical results: Freedom index on TRADE contributes significantly to economic growth. In a less restrictive market, labour, like any other factor, can move to the most productive employment (and a higher pay). Being the labour at its most productive places increases

the efficiency and productivity and in turn promotes economic growth. Although this theory is validated by the present study, the statistical test of significance fails to support it. The two relevant variables in the model, namely labour force and human capital might capture or omit the influence of free labour market on growth.

Two surprising outcomes come from the CAPITAL and the LEAKS regressions. Economic theory suggests that besides the endowment of factors of productions of an economy, their efficient use and increased productivity are equally important for growth. A slightly significant and negative coefficient on LEAKS indicates an adverse effect on growth. Although the existence of an enormous informal economy and inefficiency of tax collection and unproductive use of public sources are among the main problems of the Italian economy, our indicator (proxied by the ratio of the collected over estimated tax revenues and the share of stock building) appears to be insufficient to measure its effect. The negative, though not significant, coefficient of the variable Capital Market is perhaps a surprising result. A similar result was found in Heckelman and Stroup (2000). The Italian economy has witnessed a remarkable capital inflow especially since the last two decades. This is accompanied by the slow-down of the economic growth because of some other reasons than capital flows. The unexpected negative sign may be explained by that incidence. However that does not undermine the importance of the fact that reducing the impediments and the bureaucracy in capital markets facilitate the movement of capital and provide a secure and profitable environment for investment. As a result, flourishing investment and accumulation ignite economic growth.

6. Concluding Remarks

The empirical results indicate that economic freedom has a significantly positive impact on growth of the Italian economy, even after controlling for other often-cited correlates of growth. This finding is robust to the use of various aggregated freedom indexes and regressions as both bivariate and multivariate regressions produce similar outcomes. The evidence also suggests that economic freedom powered by improved institutions works through both a direct effect on total factor productivity of human capital and an indirect effect on investment.

The findings of the study supports our hypothesis that despite the sound theoretical background from the neoclassical economics, the reason for failing to find robust relationship between growth and freedom might be due to the nature of cross-country analyses. Economic liberty is a very long-lasting road as it can only be accomplished through development of the institutions. Thus continuous data might better capture those efforts of freedom than discrete data.

The novelty of this study comes from being the first work –to my knowledge- that constructs a freedom index – though far from being perfect- and analyses the influence of freedom on growth with time series data. This index may be developed, extended with new and better proxies and used in investigating the impact of economic freedom on other macroeconomic magnitudes including investment, trade, even technology. This is left for further research.

REFERENCES:

- Ali, A.M. and W.M. Crain** (2002): "Institutional distortions, economic freedom and growth", *Cato Journal*, 21(3): 415-426.
- de Arcangelis, G. and di Giorgio, G.** (1999): "Monetary policy shocks and transmission in Italy: A VAR analysis", *Conference Ricerche Quantitative per la Politica Economica*, Bank of Italy and CIDE, Perugia: 15-18 December 1999.
- Ayal, E.B. and G. Karas** (1998): "Components of economic freedom and growth: An empirical study", *Journal of Developing Areas*, 32(3): 327-338.
- Barro, R.J.** (1994): "Democracy and growth", *NBER Working Paper Series*, no: 4909.
- Beach, W.W. and M.A. Miles** (2004): "Explaining the Factors of Index of Economic Freedom", *2004 Index of Economic Freedom*, Washington D.C.: The Heritage Foundation and New York: The Wall Street Journal.
- Cummings, J.T.** (2000): "Economic freedom indices: Their use as tools for monitoring and evaluation", *Strategy Coordination And Support Division Working Papers*, No:1, USAID, Cairo.
- D'adda, C. and B. Salituro** (1991): "The Italian economy in the seventies and eighties", in C.Bianchi and C. Casarosa (eds): *The Recent Performance of the Italian Economy, Market Outcomes and State Policy*, Milano: FrancoAngeli: pp.46-66.
- Dawson, J.W.** (1998): "Institutions, investment and growth: New cross-country and panel data evidence", *Economic Inquiry*, 36: 603-619.
- Farr, W.K., R.A. Lord and J.L. Wofenbarger** (1998): "Economic freedom, political freedom and economic well being: A causality analysis", *Cato Journal*, 18(2): 247-262.
- Garofoli, G.** (1991): "Over the three Italies: A typology of local development patterns", in C.Bianchi and C. Casarosa (eds): *The Recent Performance of the Italian Economy, Market Outcomes and State Policy*, Milano: FrancoAngeli: pp.149-165.
- Goldsmith, A.A.** (1997): "Economic rights and government in developing countries: Cross-national evidence on growth and development", *Studies in Comparative International Development*, 32(2): 29-44.
- Granger, C.W.J. and Newbold, P.** (1974): "Spurious regressions in econometrics", *Journal of Econometrics*, 2, 111-120.
- Gwartney, L. and R. Lawson** (2004): *Economic Freedom in the World 2004 Annual Report*, Vancouver: The Fraser Institute.

Gwartney, L. and R. Lawson (2002): *Economic Freedom in the World 2002 Annual Report, Vancouver*: The Fraser Institute.

Gwartney, L., R. Lawson and W. Block (1996): *Economic Freedom in the World: 1975-1995*, Vancouver: The Fraser Institute.

Gwartney, L., R. Lawson and R.G. Holcombe (1999): "Economic freedom and the environment for economic growth", *Journal of Institutional and Theoretical Economics*, 155(4): 643-663.

Gwartney, L., R. Lawson and D. Samida (2000): *Economic Freedom of the World, 2000 Annual Report*, Vancouver: The Fraser Institute.

de Haan, J. and Siermann CL.J. (1998): "Further evidence on the relationship between economic freedom and economic growth", *Public Choice*, 95: 363-380.

de Haan, J. and J.E. Sturm (2000): "On the relationship between economic freedom and economic growth", *European Journal of Political Economy*, 16: 215-241.

Heckelman, J.C. (2000): "Economic freedom and economic growth: A short-run causal investigation", *Journal of Applied Economics*, 3(1): 71-91.

Heckelman, J.C. and M.D. Stroup (2000): "Which economic freedoms contribute to growth", *Kyklos*, 53 (4), 527-544.

Holmes, K.R., B.T. Johnson and M. Kirkpatrick (1998): *1998 Index of Economic Freedom*, Heritage Foundation, Wall Street Journal, Washington D.C.

Knack, S. and P. Keefer (1995): "Institutions and economic performance: Cross-country tests using alternative institutional measures", *Economics and Politics*, 7(3): 207-227.

Levine, R. and D. Renelt (1992): "A sensitivity analysis of cross-country growth regressions", *American Economic Review*, 82(4): 942-963.

OECD (1990): *OECD Economic Surveys: Italy 1989/1990*

OECD (2000): *OECD Economic Surveys: Italy, May 2000*.

Scully, G.W. and D.J. Slottje (1991): "Ranking economic liberty across countries", *Public Choice*, 69: 121-152.

de Vanssay, X. and Z.A. Spindler (1994): "Freedom and growth: Do constitutions matter?", *Public Choice*, 78: 359-372.

Wu, W. and O.A. Davis (1999): "The two freedoms, economic growth and development: An empirical study", *Public Choice*, 100: 39-64.

