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INTELLECTUAL PROPERTY RIGHTS and ECONOMIC GROWTH in EUROPE*

Ebru ARICIOGLU**
Okyay UCAN***

ABSTRACT

Nowadays countries growth rates are determined by technology and innovation capacity therefore the protection and support of technological ideas are very crucial. From this viewpoint we investigate the impact of intellectual property rights (IPRs) and various related variables on economic growth for both developed countries in Europe and Turkey from 1995 to 2005.

Using SUR technique (seemingly unrelated regressions), we try to put forward the impact various variables effects on economic growth. These variables are; GDP per adult worker, physical capital investment, human capital stock, market freedom index, research and development, intellectual property rights index. **In this way, we can analyze the determinants of the growth for the countries which have different development degrees.**
Keywords: growth, intellectual property rights, SUR
JEL Classification: O34, O40, O52

ÖZET

Günümüzde ülkelerin büyüme oranları, teknoloji ve yenilik kapasiteleri tarafından belirlenmektedir dolayısıyla teknoloji ile ilgili fikirlerin desteklenmesi ve korunması oldukça önem taşımaktadır. Bu düşünceden hareketle fikri mülkiyet hakları (FMH) ve çeşitli değişkenlerin Türkiye ve Avrupa'daki gelişmiş ülke ekonomilerin büyümesi üzerindeki etkisi araştırılmıştır. Çalışma 1995 ile 2005 yılları arasındaki dönemi kapsamaktadır.

Bu çalışmada, SUR (görünürde ilişkisiz regresyon) tekniğini kullanarak, iktisadi büyüme üzerinde çeşitli değişkenlerin etkileri ortaya konulmaya çalışılmıştır. Bu değişkenler; kişi başına düşen GDP, fiziksel sermaye yatırımı, beşeri sermaye stoku piyasa serbestliği indeksi, araştırma ve geliştirme ve fikri mülkiyet hakları indeksidir. Bu şekilde farklı gelişmişlik derecelerine sahip ülkeler için büyümeyi belirleyen faktörleri ortaya koymak mümkün olacaktır.
Anahtar kelimeler: büyüme, fikri mülkiyet hakları.

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**Yrd.Doç.Dr., Niğde Üniversitesi, İ.İ.B.F, İktisat Bölümü, ebruaricioglu@nigde.edu.tr
***Doç.Dr., Niğde Üniversitesi, İ.İ.B.F, İktisat Bölümü, okyayu@hotmail.com

1. Introduction

A country's growth is a complex phenomenon and determined by different factors and some of these factors are; knowledge, innovation and in conjunction with these factors technological improvement. Technology and the protection of technological products fruits' in other words intellectual property rights[1] (IPRs) have various effects on economic growth. These effects could be both positive and negative so it can be said that which effect will outweigh is ambiguous. Moreover the protection of intellectual property rights (IPRs) is a quite controversial issue in terms of economic growth.

Countries generally have laws to protect intellectual property for two main reasons. One reason is to give statutory expression to the moral and economic rights of creators in their creations and to the rights of the public in accessing those creations. The second is to promote creativity and the dissemination and the application of its results, and to encourage fair trade, which would contribute to economic social development (WIPO, 2010, p .4).

In 2000, the Lisbon European Council committed to the ambitious strategic goal of making the European economy "the most competitive and dynamic knowledge-based economy in the world capable of sustainable growth with more and better jobs and greater social cohesion". Based on this goal this paper investigates the impact of IPRs and various related variables on economic growth for both developed countries in Europe **and Turkey from 1995 to 2005 so it is possible for us to put forward which effect is outweighed.**

2. Historical and Theoretical Background

Intellectual property law awards to inventors, artists, and institutions certain exclusive rights to produce, copy, distribute, and license goods and technologies within a country. The concept of rewarding innovators or creators for their ideas can be traced back to the debate between Aristotle and Hippodamus of Miletus in the fourth century B.C. (Braga, Fink and Sepulveda, 2000:5). Most historical accounts place the origins of systematic protection of intellectual property firmly in Renaissance Italy and from here it spread first on the continent of Europe (David, 1993: 46). Early examples of technology-related patents are: Brunelleschi's patent on a boat designed to carry marble up to Arno River, issued by Florentine government in 1421; the Venetian patent law of 1474; and various patent monopolies granted by English crown between the fifteenth and seventeenth centuries (Hall, 2007:569).

[1] The term intellectual property refers broadly to the creations of the human mind. IPRs protect the interests of creators by giving them property rights over their creations. (WIPO, 2010: 3) In this paper IPRs are defined as the rules about how to protect patents copyrights, trademarks, i.e.

The first international procedure to include patents on industrial innovations was Paris Convention for the Protection of Industrial Property (1883) and thereafter The Berne Convention for the Protection of Literary and Artistic Works (1886) dealt with copyright and the Madrid Agreement Concerning the international registration of marks (1891) covered trade marks. These three agreements became part of a larger umbrella organization, the Bureaux Internationaux Réunis pour la Protection de la Propriété Intellectuelle (BIRPI) in 1893 and later, after this became the World Intellectual Property Organization (Akkoyunlu 2011:5).

When considering the process of technological change, there are two important characteristics of innovations. First innovations are non-rival goods. That is, use of a particular innovation by a producer does not preclude other entrepreneurs from using it. Second, innovations are partially non-excludable goods. This implies that the innovator is often unable to completely prevent others from unauthorized using the innovation. These properties of innovations that form the basis of the argument in favor of intellectual property protection, which serves to decrease the degree of non-excludability of innovations by assigning to the inventor the property rights over his innovation for a given period of a time (Kanwar and Evenson, 2003, p. 237).

When IPRs protection is weak firms would be less willing to incur the costs of investing and uncertainty of R&D. Moreover it is strongly emphasized that IPRs are necessary to stimulate economic growth by stimulating invention and new technologies, they will increase agricultural or industrial production, promote domestic and foreign investment, facilitate technology transfer and improve the availability of medicines necessary to combat disease (CIPR, 2002,). IPRs can impact on potential output directly by affecting the technical efficiency of production, or indirectly by stimulating factor accumulation (particularly R&D capital) by enhancing the returns to investment (Park, 2005, p. 2).

On the other hand an overly protective system of IPRs could limit the social gains from invention by reducing incentives to disseminate its fruits. By granting temporary exclusive rights, IPRs are intended to allow property-holders to price their products above marginal cost and to recoup the initial knowledge or information-generating investment (Braga, Fink and Sepulveda, 1998, p. 27). Monopolistic or oligopolistic behavior among intellectual property holders (i.e., relatively smaller output and higher prices) can lead to less than (statically) optimal dissemination of new knowledge and information (Braga, Fink and Sepulveda, 1998, p. 31). This situation prevents the benefits of the new product from being enjoyed optimally by consumers. It is for this reason, some have argued, that patent protection is granted for only a limited time, so as to achieve a desirable balance between incentives to invent and gains to consumers from products after they have been invented.

The IPRs protection can also facilitate technology disclosure in anticipation of outsourcing, licensing, and joint-venture arrangements. The IPRs system thus plays a role in the creation of markets for information and knowledge by providing buyers and sellers of technology with more information. IPRs also influence the diffusion of knowledge between economics by influencing international transactions. Internationally, technology is diffused through various channels such as trade, FDI, international licensing agreements, and technical assistance. In fact, for most

developing countries, access to technology occurs mainly through these channels of diffusion rather than via domestic innovation (Braga, Fink and Sepulveda, 1998, p. 31).

So IPRs protection has benefits and costs and Table 1 shows these effects from the point of innovation and market.

Table:1 The IPRs protection effects

	Benefit	Cost
Innovation	promotes R&D and differentiated product and leads competitiveness and economic growth	causes dissemination of information and leads to sleeping patents
Market	promotes diffusion of knowledge between international markets	causes temporary monopolies and reduce consumer welfare

Deardorff (1992) evaluate patent protection's the benefit and cost effects and emphasized that at some point the costs due to extending monopoly pricing to existing inventions come to outweigh the benefits of generating new ones therefore patent protection should be limited for both time and geographically(Deardorff, 1992:49).

Boldrin and Levine (2002: 209) also emphasize that cost side of the IPRs outweighed the benefits and indicate that intellectual property does not mean only the right to own and sell ideas, but also the right to regulate their use. This creates a socially inefficient monopoly, and what is commonly called intellectual property might be better called "intellectual monopoly". Boldrin and Levine (2002) acknowledge that no economic agent exercises productive effort without the certainty of controlling its fruits but what is true for physical effort must be true for the intellectual one: if strong property rights provide good incentives for the production of potatoes, they must provide good incentives for the production of ideas. They argue that intellectual property rights are different from property rights, so they must be different evaluated. But it does not mean stealing potatoes is bad, stealing ideas is good.

Gilbert and Newbery (1982:514) remark "sleeping patents" phenomenon and a firm with monopoly power has an incentive to maintain its monopoly power by patenting new technologies before potential competitors and that this activity can lead to patents that are neither used nor licensed to others. In other words the firm may spend resources on research and development of new technologies only to produce "sleeping patents" which are withheld from society's use, and the firm with monopoly powers maintains its monopoly position (Gilbert and Newbery, 1982).

Maskus (2000) stressed the relationship between economic development and IPRS protection and emphasizes that the optimal protection of intellectual property is an increasing function of income and technology capacity and that national regimes of intellectual property protection strongly depend on the level of economic development. Least-developed countries devote virtually no resources to innovation and have little intellectual property to protect. As incomes and technical capabilities grow to intermediate levels, some adaptive innovation emerges but competition flows primarily from imitation. Thus, the majority of economic and political interests at this stage prefer weak protection. As income rise, the demand for higher quality, differentiated products also rises, the demand for higher-quality, differentiated products also rises, leading to growing preferences for protection of trademarks and copyrights or, in political economy terms, an increase in the supply of IPRs. Therefore an economy's technological sophistication increases, investors and creators require stronger protection for their works; thus demand for IPRs rises (Maskus, 2000:102).

3. Literature Review

There are two results can be emerged from the empirical literature; according to the first one is IPRs protection affects economic growth positively. Introducing or strengthening IPRs leads an increase in innovation and economic growth. According to the second group of papers IPRs protection leads monopoly power and reduces consumer welfare therefore affects economic growth negatively.

3.1 Empirical Literature about IPRs Protection affects Economic Growth Positively

Torstensson (1994) analyzed the effects of the property rights on growth for 68 developed and developing countries over the 1976-1985 time period with using cross-section estimation method. According to the results arbitrary seizures of property decelerate economic growth and also a country might increase its growth rate by more than one percentage point by putting a stop to such seizes. Torstensson (1994: 242) emphasizes that insecure property rights lead to an inefficient allocation of investment funds and to an inefficient use of the available human capital.

Gould and Gruben (1996) analyzed the role of intellectual property rights in economic growth for 95 countries for the period 1960-1988 by using OLS estimation technique. According to the findings intellectual property protection is an important determinant of economic growth and this effect is slightly stronger in open economies than in closed economies.

Park and Ginarte (1997), using a sample of 30 developed countries and 30 developing countries for 1960-90 period, noted that IPRs affect economic growth indirectly by stimulating the accumulation of factor inputs like research and development capital and physical capital. Moreover R&D is an important determinant of developed and developing country growth rates, IPRs matter for the R&D activities of the developed economies but not for those of the less developed economies.

Kanwar and Evenson (2003) analyze the influence of intellectual property protection on innovation at technological change for 32 countries from 1981 to 1990. According to their results intellectual property protection (proxied by Park and Ginarte 1997 index) has a strong positive effect on technological change and economic growth.

Schneider (2005) analyzes the role of high technology trade, IPRs protection and FDI in determining a country's rate of innovation and economic growth for a group of 47 developed and developing countries over the period 1970-1990 with panel estimation method. According to the results market size, high technology imports from developed countries, the stock of human capital, and the level of R&D expenditures, infrastructure and the level of IPRs protection are all important factors in explaining in the rate of innovation. A country's stock of physical capital is significant in explaining per capita GDP growth and besides this result foreign technology (measured as the growth of per capita high technology imports) has a stronger impact on per capita GDP growth than domestic technology. The results show that market size and infrastructure are dominant factors in explaining innovation in developing countries but on the other hand high technology imports, human capital and R&D expenditures have a stronger impact on developed countries. Moreover the findings about IPRs protection show that IPRs have a stronger impact on domestic innovation for developed countries and might even negatively impact innovation in developing countries (Schneider, 2005:543).

Park (2005) used a different methodology from other papers; with two datasets he examined the role of IPRs in the productivity growth and R&D activities. In the first dataset with 41 countries sample for 1980-1995 time period, the results show that IPRs do not stimulate productivity growth directly, but do indirectly by stimulating R&D investments. In the second dataset 21 countries and 18 manufacturing industries are analyzed and in this sample IPRs contribute to productivity directly and indirectly by stimulating R&D. At this stage, Park differentiates between IPRs kinds and emphasizes that IPRs kind are matter. Patent protection and enforcement are important for raising the technical efficiency of production on the other hand; when patent rights and/or enforcement levels are controlled for, copyright and trade-marks have no statistically significant effect on productivity growth. Thus, the results show on balance that IPRs contribute significantly to productivity growth.

Chen and Puttitanun (2007), investigate the relationship between innovation and growth for developing countries 1975-2000 time periods. Chen and Puttitanun (2007) show that innovation in a developing country increases with the protection of IPRs, and it is possible that a country's optimal IPRs depend on its level of development in a non-monotonic way, first decreasing and then increasing. Chen and Puttitanun (2007) evaluate these theoretical results empirically, using a panel data set including 64 developing countries over the1975-2000 period. The empirical evidence confirms both the positive impact of IPRs on innovations in developing countries and the presence of a U- shaped relationship between IPRs and levels of economic development (Chen and Puttitanun 2007:489).

Branstetter et al. (2011) analyzes the responses of U.S. based multinational enterprises and domestic industrial production to a set of intellectual property rights

reforms for the 1982-1999 time period in 16 countries. According to the results stronger IPR in the South accelerates the transfer of production to these countries. In addition to this, the findings show that U.S. multinational enterprises affiliate activity increases following reform and that increases are most apparent in the affiliates which use technology intensively so these firms more likely benefit from reform. Branstetter et al. (2011: 36) emphasize that stronger IPR in the South appears to lead to an acceleration of production shifting, enhancing Southern industrial development.

Hu and Png (2009), investigated whether IPRs especially patent rights foster innovation and economic growth on 54 manufacturing industries over 72 countries between 1981-2000 time periods. According to the results more patent intensive industries had a higher growth as a result of the strengthening of patent rights and also the growth-promoting effect of patent rights is stronger in 1990s relative to 1980s and patents promote industrial growth through technical progress and factor accumulation (Hu and Png, 2009:22).

Yueh (2009) examines whether the patent laws and intellectual property rights system in China have resulted in innovation during 1991-2003 time period. This time period coincides with the "open door" policy taking off in China and accession to the WTO. In the paper Poisson Quasi Maximum Likelihood (PQML) regression method is used to put forward the determinants of patent production function and Yueh emphasizes that in spite of poor enforcement of patent laws and vastly different levels of regional economic development, the patent laws in China have produced a steady rate of growth of patents across the country. According to the results innovation in China is not determined merely by legal system, R&D personnel is a significant determinant of innovation, but this effect differs notably across China's regions. So the key drivers of innovation are found to be closely related to China's R&D expenditure on researchers.

3.2. Empirical Literature about IPRs Protection affects Economic Growth Negatively

Mansfield et al. (1981) analyze the effects of patents on imitation costs and on the rate of innovation by asking each innovating firm in four USA industries (chemical, drug, electronics and machinery industries). According to the paper unlike to the conventional opinion, patent protection could not prevent entry to the market and in their sample 60 % of the patented successful innovations within 4 years of their introduction were imitated. But on the other hand patents generally increased the imitation costs especially in drug industry but when this industry is excluded it has been seen that patent protection isn't essential for the development and introduction for the most part of the patented innovations. Therefore contrary to conventional opinion this paper emphasizes that patents doesn't usually lead up to monopoly over the relevant innovation (Mansfield et al., 1981:917)

Mansfield (1986) investigates whether the rate of development and introduction of inventions decline in the absence of patent protection over 100 U.S. manufacturing firms from twelve industries for 1981-83 time period. From each firm an estimate was obtained of the proportion of its inventions developed and commercially introduced if it could not have obtained patent protection. According to the results firms attributed different importance to the patent protection and within

these industries patent protection is most important for the development or introduction in only two industries – pharmaceutical and chemicals. In another three industries (petroleum, machinery and fabricated metal products) patent protection was less important according to the former two industries but on the other hand in office equipment, motor vehicles, instruments, rubber and textiles industries patent protection was not essential for the development or introduction of any of their inventions during the period. So Mansfield (1986) emphasized that patent protection has a very small effect in most of the industries that analyzed.

Helpman (1993) analyze IPRs effects in an international context and developed a dynamic general equilibrium model which is composed of two countries, North and South. Innovation takes place in the North while South imitates technologies that have been in invented in the North. In this model there are four channels through which IPRs affect these regions: (a) terms of trade; (b) interregional allocation of manufacturing; (c) product availability (d) R&D investment patterns. Helpman emphasizes that developing countries or South don't benefit from tight intellectual property rights. The effect of protection of IPRs has different effect therefore it cannot be said "one size fits all"

Takalo and Kanniainen (2000), examine the widely accepted view that patents promote technical progress in their paper and they constitute a model of an innovating firm with uncertain property right to its innovation and they analyzed the impact of an increase in patent protection on technological progress. It is shown that a patent may have two entirely different effects in this process. Firstly a patent raises the ex ante present value of the rents of each potential project so enhance the incentives for early market introduction and contrary to the first effect according to the second effect a patent creates an option to delay market introduction of new products, thereby slow down technical progress. So Takalo and Kanniainen (2000) reject the view that patents clearly speed up technical progress but they emphasized that patents provide more time for development phase at reduced risk.

Léger (2005) analyzed the hypothesis that whether IPRs would support innovation in maize-breeding industry in Mexico for the 1990-99 time period. Mexico was one of the first developing countries to effectively strengthen its intellectual property legislation after joining NAFTA in 1991 and then in 1997 accepting TRIPs Agreement. According to the results in the whole of the industry IPR are not important for breeders in general, but that they are important for certain breeders' categories. The paper also emphasizes that the quality of the institutional environment and the confidence in the judiciary system, the importance of transaction costs related to obtaining and securing protection, as well as the level of technological development of the country are important factors affecting IPR's use and perceived efficiency (Léger, 2005:1866).

Qian (2007) evaluates the effects of patent protection on pharmaceutical R&D expenditures and innovations for 26 countries over the period 1978-2002 with using matched sampling and fixed country effect panel estimator. According to the paper; for a group of countries the implementation of patent laws by itself does not instantaneously stimulate domestic innovation but this finding differentiates for developed countries, patent laws in nations with high levels of development, education and economic freedom stimulate innovation. So patents are important for

innovation depending on a country's development level. The paper also provides empirical support for an "inverted U" shape relationship between innovation and the IPR strength, so there is an optimal level of IPR appears to exist, above it additional strengthening actually tends to discourage innovations.

Bessen and Maskin (2009) object to the standard economic rationale that patents protect inventors from imitation and thereby give them the incentive to incur the cost of innovation conventional wisdom and they analyzed the effects of patent protection by two different models. First model is a static (nonsequential) model and this model underlies the traditional justification for patents as mentioned above, on the other hand the second model is a dynamic (sequential) model and in this model innovation is both sequential (standing on other innovation's shoulders) and complementary (each potential innovator takes a different research line) therefore in this model imitation may promote innovation and strong patents might actually inhibit it. Bessen and Maskin (2009) emphasized that patent protection's effects differentiate from industry to industry. The prospect of being imitated inhibits inventors in a static world but in a dynamic world imitators can provide benefit to both the original inventor and to society more generally. So it can be concluded that patents may encourage innovation in a static world, but they are less important in a sequential setting, since they may actually inhibit complementary innovation. So the stronger is better common view is not always valid for all type of industries.

Adams (2009) examines the impact of intellectual property rights (IPRs) on economic growth for 73 developing countries between 1985-2003 time period through Seemingly Unrelated Regression method. According to the results, strengthening IPR has a negative effect on growth of these countries but on the other hand domestic investment, foreign direct investment and lower levels of political investment have a positive effect on growth so these variables are key determinants of economic growth. According to Adams (2009) the reason of the negative effect of IPRs on economic growth is in these countries majority of innovation may be imitative or adaptive nature so stronger IPRs protect foreign firms at the expense of domestic firms.

4. Data, Methodology and Results

4.1. Data

The empirical analysis is based on two separate periods 1995-1999 and 2000-2005, concerning chosen developed countries and Turkey. The countries besides Turkey are Austria, Denmark, Finland, Ireland, Luxembourg, Portugal, Sweden, France, Germany, Italy and England. That is, we have panel datas. In this analyze besides Turkey, the countries are both developed and have been chosen from the list that have high IPR grades.

The data are obtained from Penn World Table 7.0, OECD, Barro and Lee's webpage, Park's webpage and website of Economic Freedom of Network. These are used for the time series of the variables. E-views 7.0 econometric program is used for the analyses because this version of E-views permits us to analyze 5 years data. IPR, SCHOOL, MARKET, INVEST and R&D are taken into natural logarithm. While GROWTH variable has negative values it is going to be taken as usual.

4.2. Method

Seemingly Unrelated Regression is a generalization of a linear regression model that consists of several regression equations, each having its own dependent variable and potentially different sets of exogenous explanatory variables. Each equation is a valid linear regression on its own and can be estimated separately, which is why the system is called seemingly unrelated although some authors suggest that the term seemingly related would be more appropriate, since the error terms are assumed to be correlated across the equations. The model can be estimated equation-by-equation using standard ordinary least squares (OLS). Such estimates are consistent, however generally not as efficient as the SUR method, which amounts to feasible generalized least squares with a specific form of the variance-covariance matrix. Two important cases when SUR is in fact equivalent to OLS, are: either when the error terms are in fact uncorrelated between the equations (so that they are truly unrelated), or when each equation contains exactly the same set of regressors on the right-hand-side.

Seemingly Unrelated Regression (SUR) is going to be used in the study. In this model, each equation is estimated using standard Ordinary Least Square (OLS) separately, which is why the system is called seemingly unrelated. The error terms are used to forecast the variance covariance matrix via Generalized OLS.
System of equations in the SUR model may be shown as following:

$Y1 = a0 + a1X1 + a2X2 + e1$
$Y2 = b0 + b3X3 + b4X4 + e2$
$Y3 = \gamma 0 + \gamma 5X5 + \gamma 6X6 + e3$
$E(e1\ e2) \neq E(e1\ e3) \neq E(e2\ e3) \neq 0$

The only relation of these equations is error terms of each equation are assumed to be correlated. If error terms (e1, e2, e3) of the equations are truly unrelated, there will be no relation across the equations. (Tarı, 2010, s.299-300).

To determine the effects of IPRs we need a quantitative measure of intellectual property rights. Park and Ginarte (1997) constructed an index of the strength of patent protection. The index takes on values between zero and five, higher numbers reflecting stronger levels of protection. The index consists of five categories: (i) coverage, (ii) membership in international patent agreements, (iii) provisions for loss of protection, (iv) enforcement mechanisms, and (v) duration. The sum of these five values gives the overall value of the IPR index for a particular country (Park and Ginarte, 1997, p.52).

Our estimation equation is:

GROWTH= F (INITIAL, INVEST, SCHOOL, R&D, IPR, MARKET)

Using two estimation techniques (Ordinary Least Squares and seemingly unrelated regressions), we try to put forward the impact various variables effects on economic growth. These variables are; INITIAL; GDP per adult worker, INVEST; physical

capital investment, SCHOOL; human capital stock, R&D; research and development, IPR; intellectual property rights index, MARKET; market freedom index. In this way, we can analyze the determinants of the growth for the different countries.

4.3. Empirical Results

SUR analyze results are given in the Table 2. According to the results INVEST, IPR and MARKET variables are statistically significant.

We have the following resulted equation:

GROWTH = 22.5 -3.23*INVEST + 0.68*IPR -5.05*MARKET + 0.05*R&D - 0.54*SCHOOL

According to this equation, 1 % rise in physical capital investment decreases growth by 3.23 units. 1 % increase in market freedom index again decreases growth by 5.05 units. Finally dealing with the subject of this study, 1 % increase in intellectual property rights index gives rise growth by 0.68 units.

Table.2 Seemingly Unrelated Regression Results

	Coefficient	**Std. Error**	**t-Statistic**	**Prob.**
Constant	22.52779	5.916310	3.807743	0.0006
Investment	-3.225076	1.085966	-2.969775	0.0058
IPR	**0.678073**	**0.255569**	**2.653182**	**0.0454**
Market	-5.049401	2.343854	-2.154316	0.0394
R&D	0.051308	0.372655	0.137682	0.8914
School	-0.540284	0.537842	-1.004541	0.3232
Sample: 1995- 2005				

5. Conclusion

This paper identifies the determinants of growth using SUR method to European developed countries and Turkey. Looking from economic theory framework, it is accepted that investment and market freedom variables affect

economic growth positively. On the other hand, as to results they are statistically significant but there is a negative relationship between growth and them. Therefore, they are economic variables and they affect each other in the long term. However, taken period is not long enough. IPRs variable, which constitutes the primary concern of the analysis, is both statically and economically significant. So it can be concluded that IPRs is an important determinant of growth rates. Moreover, IPRs protection matters for these countries. The sample countries are developed countries so that it is usual that the IPRs protection affects growth positively.

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