



Intellectual Property Rights Protection and FDI: Some Correlational Evidence

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Abstract

In this study, we contribute to the existing literature on the FDI by exploring the effect of intellectual property rights (IPR) protection on economic growth. Using data for 120 countries for the period of 2010-2015 we find that IPR index is non-linearly associated with the FDI. For example, in countries with low levels of IPR protection, increase in IPR is associated with more FDI. However, in countries with established IPR protection further strengthening of IPR discourages investment. This model explains nearly 17% of cross-country variations in FDI.

Keywords: FDI; IPR; IPR protection; Economic Growth.

1. Introduction

With the publication of the pioneering paper by Barro (1996) the determinants of economic growth have received considerable attention in the development literature (Dritsakis et al., 2006; Tolo, 2011; Ledyeva & Linden, 2008). These studies seem to document that economic growth is significantly related to democracy (Przeworski, 2004), quality of institutions (Valeriani & Peluso, 2011), innovation (Braunerhjelm, 2011), trade openness (Tahir & Dk, 2013) and FDI (Chowdhury & Mavrota, 2006).

For example, Alfaro et al. (2009) explore the association between foreign direct investment and economic growth by testing whether FDI and financial development are complementary factors. Moreover, they explore whether FDI is related to economic growth indirectly via increase in total factor productivity (TFP). The study documents that FDI is not significantly related to TFP, but have effect on economic growth in countries with well-developed financial system.

Jyun & Chih (2008), applying a threshold regression techniques formulated by Caner and Hansen(2004) investigate how absorptive capacities moderate the link between FDI and economic growth. There are three absorptive capacities, namely, initial GDP, human capital and the volume of trade, that are used as threshold variables in their research. Their results indicate that FDI do not have significant effect on economic growth in 62 countries covering the period from 1975 through 2000. Applying the threshold estimator they document that quality of human capital and lagged GDP seem to be relevant factors of FDI.

Chowdhury & Mavrota (2006) investigate the causal direction between FDI and economic growth with the aid of novel statistical approach such as Toda-Yamamoto test. To explore the causal link they utilize three developing nations, namely Chile, Malaysia and Thailand, all of them major recipients of FDI with a different history of macroeconomic episodes. Their results suggest that the results are at best mixed. For example, GDP growth is causal to FDI in Chile, while in remaining countries there is two-way causality between FDI and growth. Borensztein et al. (1998) explores how the effect of FDI form developed countries to developing countries may have effect on economic growth. Their results suggest that FDI may serve as a crucial channel for technological improvements. However, the study also finds that the effect of FDI on growth is conditional on the level of human capital.

In this study, we contribute to the existing literature on the FDI by exploring the effect of intellectual property rights (IPR) protection on economic growth. Using data for 120 countries for the period of 2010-2015 we find that IPR index is non-linearly associated with the FDI. This model explains nearly 17% of cross-country variations in FDI.

Therefore, departing from earlier discussion this study tests the following hypotheses:

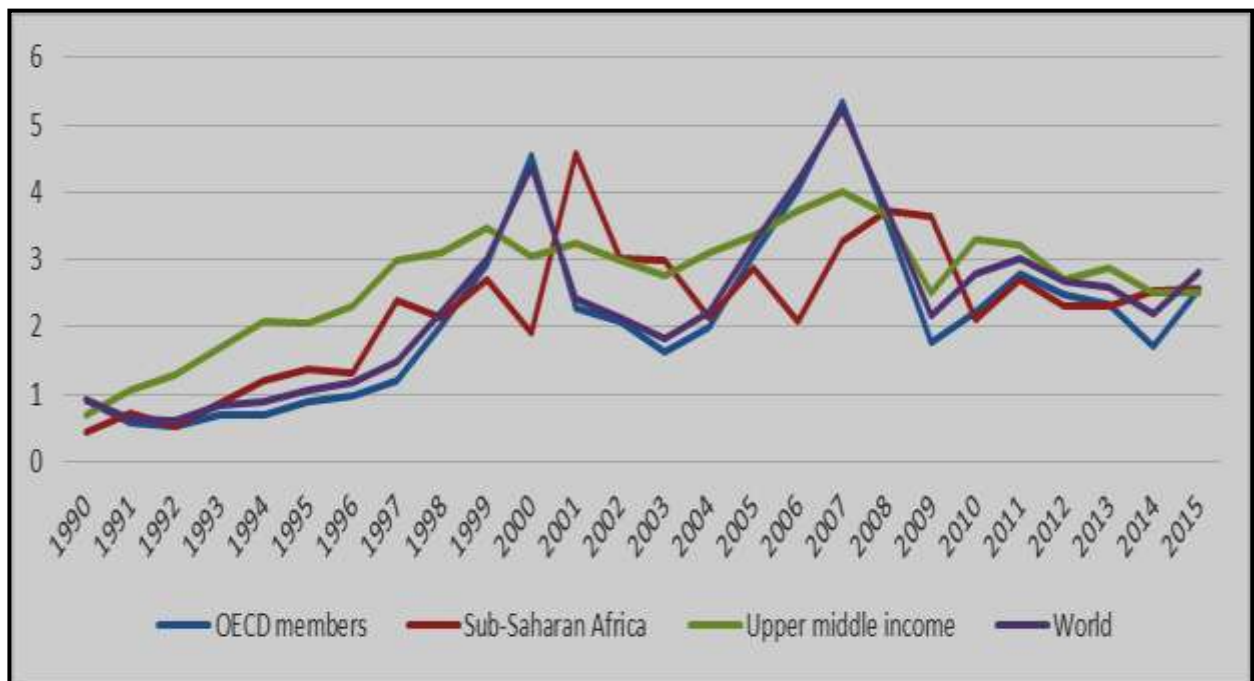
- In countries with low levels of IPR protection, increase in IPR is associated with more FDI.
- In countries with established IPR protection further strengthening of IPR discourages investment.

2. Econometric Model and Data

The study is a cross-section study for the period 2010 – 2015 and covering a sample of 120 low-, middle- and high-income countries. We rely on cross-section data taking into account that our main variable of interest intellectual property rights protection variable is not available on annual basis.

The dependent variable in our study is the FDI as a share of GDP (Figure 1). The data comes from World Development indicators. The average global level of FDI is 86% of GDP and ranges from 0.65% to 4707%. Taking into account the large standard deviation, we take log of FDI in our estimations.

Fig 1: FDI as a Share of GDP, 1990 – 2015, UNCTAD



The main independent variable is IPR protection index from Park (2008). In his study, Park (2008) provides a revised edition to the index of patent protection published in 1997. The earlier papers has offered the index for 1960–1990 for 110 countries. The index has now been revised to 2005 and enlarged to 122 countries. The IPR index ranges from 1.78 in Iraq to 4.88 in the USA. The higher values indicate stronger protection of intellectual property.

To estimate the effect of IPR on FDI a simple regression model that can be expressed as:

$$FDI = b_0 + b_1*Patent + b_2*Patent^2 + b_3*GDP + b_4*EF + e \quad (1)$$

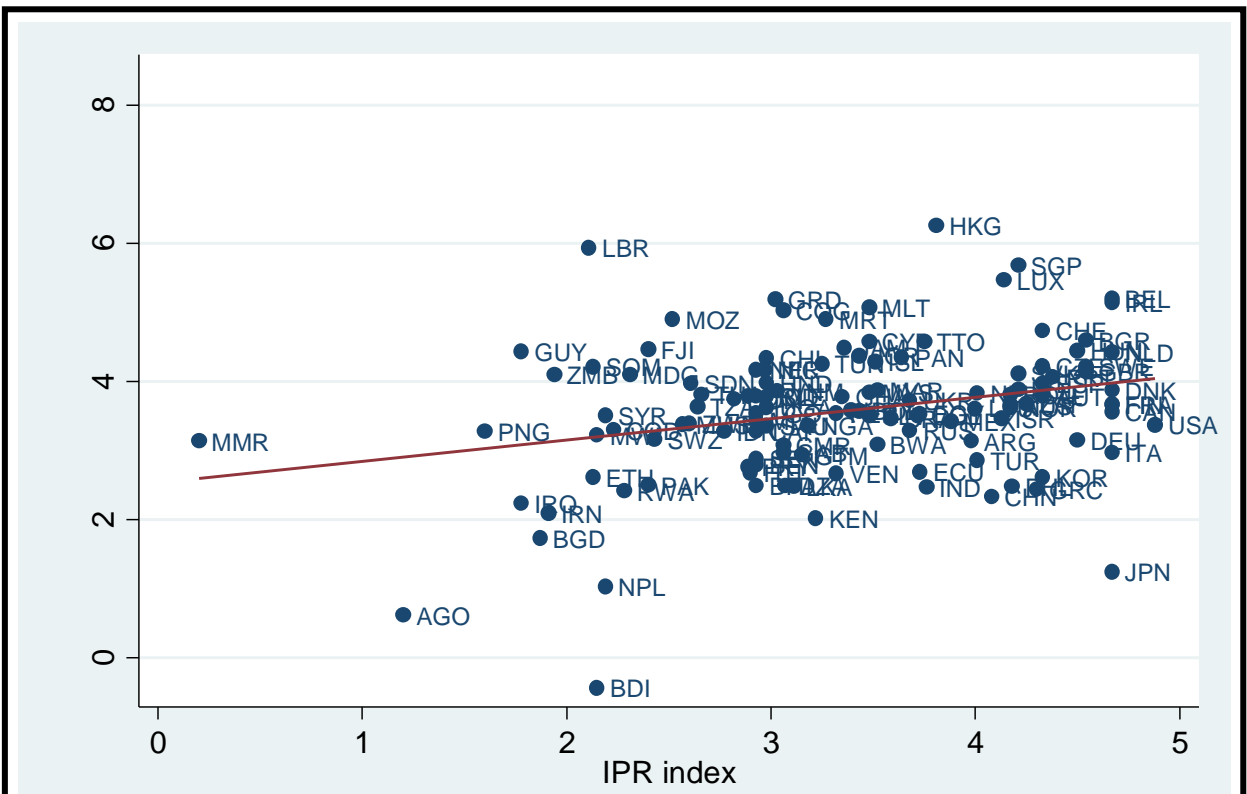
where FDI is FDI as % of GDP, patent is the IPR protection index, GDP is GDP per capita in PPP, EF is Economic freedom index from the Heritage Foundation and e is an error term. We control for GDP per capita and EF as they seem to be a catch all variable in our model. Moreover, EF may capture the effect of other institutions on FDI. We also control for squared IPR index to capture any non-linear relationship. The main data stats are presented in Table 1.

Variable	Description	Mean	Std. Dev.	Min	Max
FDI	FDI as a share of GDP, %	86.49078	343.0965	0.650539	4707.596
IPR	IPR index	3.3405	0.894494	0.2	4.88
Freedom	Economic freedom index	60.69602	10.34302	29.6	89.6
GDP	GDP per capita, '000 PPP	17.77692	20.60943	0.640589	132.9723

The correlation matrix is reported in Table 2. According to the table IPR is correlated positively with FDI, although the linear bivariate correlation is only moderate ($r = .11$). We also find that FDI strongly and positively correlates with economic freedom and GDP per capita. Figure 2 reports a scatterplot between IPR index and FDI in our sample.

	I	II	III	IV
FDI	1			
IPR Index	0.115	1		
Freedom	0.344	0.592	1	
GDP	0.376	0.699	0.716	1

Fig 2: Scatterplot between IPR Index and FDI.



3. Results

The main results are presented in Table 3. We depart from a simple bivariate regression model where we regress FDI on IPR index. The numbers reported in column 1 suggest that IPR index is positively and significantly, at the 1% level, is associated with FDI. For example, a one unit increase in IPR is associated with 34% increase in FDI. The R-squared suggests that IPR index alone in its linear specification explains nearly 7% of FDI.

In column 2, we incorporate the squared term of IPR index. First, we find that now there is inverted U shape association between FDI and IPR, although it is insignificant. However, the insignificance of this specification may be driven by omitted variables.

Therefore, in column 3 we include GDP per capita and index of economic freedom. Turning to control variables we find that:

- Greater economic freedom is associated with larger inflow of FDI. For example, a 10 points increase in overall index of economic freedom is associated with 25% increase in inflow of FDI relative to GDP.
- The FDI inflow is larger to countries with higher levels of economic development, the market size effect. The coefficient for GDP per capita is positive and significant at the 1% level. For example, when GDP per capita increases by 10,000 USD, FDI inflow increases by 18%.

Most importantly, we document that now IPR index is non-linearly associated with the FDI. For example, in countries with low levels of IPR protection, increase in IPR is associated with more FDI. However, in countries with established IPR protection further strengthening of IPR discourages investment. This model explains nearly 17% of cross-country variations in FDI.

	(1)	(2)	(3)
IPR index	0.3088***	0.8377	1.5797*
	(0.0993)	(0.5209)	(0.8436)
IPR index squared		-0.0839	-0.2572**
		(0.0812)	(0.1275)
Economic freedom			0.0233**
			(0.0117)
GDP per capita			0.0176**
			(0.0081)
Constant	2.5364***	1.7731**	-0.4022
	(0.3432)	(0.8140)	(1.4770)
N	120	120	112
adj. R²	0.0680	0.0685	0.1687

Standard errors in parentheses, * p<0.1, ** p<0.05, *** p<0.01

4. Conclusion

The findings of this paper shed light that intellectual property rights protection and inward FDI are non-linearly associated. In particular, we find that the highest level of FDI is in countries with moderate levels of IPR protection. Of particular interest is that Post Soviet countries are associated with very weak protection of IPR. This implies that improvements in IPR should foster inflow of FDI in the economy. The main question arises ‘how developing countries can foster IPR protection?’

Research suggests that there are a number of ways. First, human capital is instrumental to IPR. For example, Odilova & Gu (2016) show that intelligence is positively related to IPR protection. Moreover the effect of patent

protection on economic growth is conditional to the level of IPR protection.

Second, implementation of IPR protection is related to quality of institutions and legal environment. For example, in this vein, corruption and low rule of law is negatively related to IPR protection.

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