

Effect of Social Capital on Economic Growth: A Case Study of Pakistan (1980–2016)

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Given the importance of social capital the objective of the present study is to empirically estimate the effect of social capital on economic growth of Pakistan from 1980–2016; furthermore to evaluate the joint effect of social and human capital on economic growth; last to analyse the effect of social capital on physical capital. Results of the Johansen Cointegration test show that not only social capital an important determinant of economic growth but its joint effect with human capital is greater than its individual effect. Further social capital is also an important determinant of physical capital. Results employ that policies should pursue the generation of greater endowments of social capital.

Keywords: Johansen Cointegration, Vector Error Correction, Social Capital, Human Capital, Economic Growth, Contract Intensive Money, Trade Openness

1. INTRODUCTION

The phenomenon “countries with similar endowments of natural, human or physical capital approaching very different levels of economic achievement in developing regions” has led researchers to investigate more deeper and meaningful explanations about what holds people and societies in order to foster economic development. Over time, researchers have constructed various frameworks for understanding the social aspects of this phenomenon and what we currently refer to as “social capital”. Theoretically, these frameworks get much attention in recent decades and many researchers across the globe [Coleman (1988, 1990); Putnam, *et al.* (1993); Putnam (1995); Fukuyama (1995)] and many others have also made significant stride in advancing our knowledge and understanding of the subject “Social Capital”.

Grootaert (1997) investigates “The Missing Link?” in expanding the measure of wealth as an indicator of environmentally sustainable development. He argued that defining sustainable development has traditionally involved the measure of natural, physical and human capital. However, the way in which economic actors interact and organise themselves to generate growth and development has generally been overlooked. He contends that a fourth type of capital—social capital—could account for this “missing link”. The study states that “associations and institutions provide an informal framework

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to organise information sharing, coordination of activities, and collective action decision making". He acknowledges, however, that social capital—like the other forms—has limited value if not combined with other forms of capital. Grootaert shows that social capital is both an input and an output of the development process. Because by definition social capital requires a form of cooperation among individuals, it is a public good. It also requires resources and has associated production costs. The difficulty, however, is in measuring social capital and its impact due to a plethora of definitions, establishing a list of indicators is not an easy task. The discussion about to answer the questions about defining, monitoring, and measuring social capital is beyond the scope of this paper.

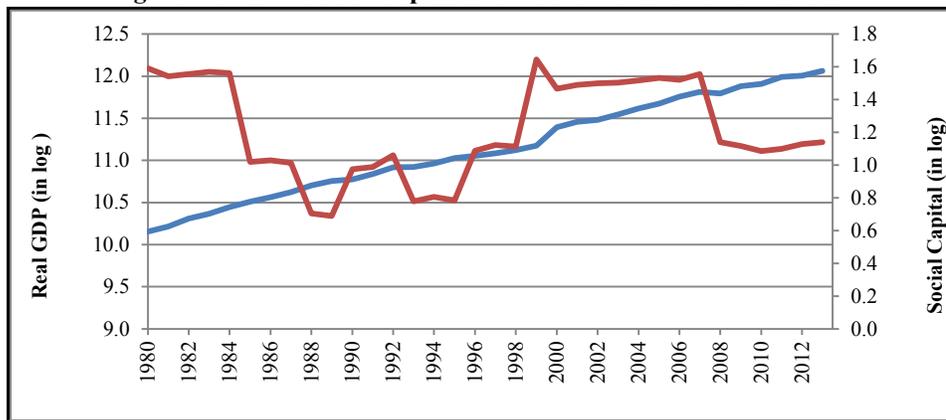
In recent years most researchers empirically tested that how important is social capital in the development of any country and some of them stated that "social capital is an important ingredient for the development recipe of any country across the globe". There is growing empirical evidence that social capital contributes significantly to sustainable development. The traditional composition of natural capital, physical or produced capital, and human capital needs to be broadened to include social capital. Social capital refers to the internal social and cultural coherence of society, the norms and values that govern interactions among people and the institutions in which they are embedded. Social capital is the glue that holds societies together and without which there can be no economic growth or human well-being. Without social capital, society at large will collapse, and today's world presents some very sad examples of this.

The objective of the present study is three fold; first to evaluate the effect of social capital on economic growth of Pakistan from 1980–2016 using time series econometric technique. In addition given the importance of both social and human capital second objective is to empirically estimate the combined effect of social and human capital on economic growth. Third and last objective is to analyse empirically the effect of social capital on physical capital.

The rest of the paper is organised as follows: Section 2 highlights graphically relationship between social capital and economic development in Pakistan. Some empirical literature review is briefly discussed in Section 3 and the methodology and data used in this paper is discussed in Section 4. Estimation results are presented in Section 5 and finally Section 6 concludes the paper results, policy implications and future directions.

2. THE BEHAVIOUR OF SOCIAL CAPITAL AND ECONOMIC GROWTH IN PAKISTAN

Figure 1 plots data on real economic growth and social capital in Pakistan for the period. After the 2001 recession, Pakistan's economy grew at an impressive annual average of 7 percent until 2007. This growth is largely attributed to better capacity utilisation of the existing capital stock. Macro stability and economic growth spurred both private and foreign investment [Pakistan (2007)]. The impressive economic growth performance of Pakistan after the 2001 recession was accompanied by higher household income and reduction in poverty. Only during 2005-06, the per capita income rose to \$847; up from \$742 in the preceding year. However, the social capital on the other side has more fluctuations over the study time period, especially from the time period 1983–1999 and then after 2007. However, no clear relationship between the directions of the two variables can be discerned from Figure 1 data.

Fig. 1. Trends in Social Capital and Economic Growth of Pakistan

Source: International Financial Statistics (Real GDP), State Bank of Pakistan (Social Capital).
The Global Economy (Social Capital).

3. LITERATURE REVIEW

Fukuyama (1995) is of the view that greater level of trust in society will enhance economic efficiency. While, Helliwell (1996) concludes that social capital and institution quality are not very important factors in economic growth process. Knack and Keefer (1997) analyse cross country data of 29 economies and conclude that social capital and economic growth are directly correlated while in poor countries social sector gain very importance because they are not financially developed. Study also concluded that social capital reduces poverty rates, or at least does not exacerbate income inequality.

Rupasingha, *et al.* (2000) examined the impact of social capital on economic growth using linear regression analysis on U.S. county-level data from 1990 to 1996. Results from expanded Barro type empirical growth model reveal that social capital has a statistically significant independent positive effect on the per capita income growth. Study find significant evidence that per capita income grows more rapidly in counties with high levels of social capital, measured using the density of membership organisations, crime rate, charitable giving and voter participation.

Whitley (2000) expanding the neo-classical growth model of Solow and Swan for analysing the effect of social capital on economic growth of 34 countries of second course data of World Value Surveys (WVS) from 1970-1992. Results of the study show that social capital¹ has significant positive influence on economic growth. Zak and Knack (2001) extend the study of Knack and Keefer (1997) by adding 12 more countries and using general equilibrium growth model. Results of the study confirm the significant positive effect of social capital on the economic growth of 41 countries by taking third course data of World Value Surveys (WVS) from 1995-1996.

Guiso, *et al.* (2004), concludes that countries or regions with high social capital endowments, their inhabitants can gain better access to credit. Social capital also increases the transparency of the available information and, putting all together, economic activity may be positively affected. Lyon (2005) investigates the impact of social capital on economic growth for 20 regions of Italy. Study uses value added, labour

¹Trust and its various indicators like human capital factor.

force, productivity indicator, physical capital, social capital and concludes that social capital has significant positive influence on economic growth in southern Italy, but has much less effect in northern Italy.

Iyer, *et al.* (2005) explore the link among social capital, economic growth and regional development by using the social capital data² of more than 24000 individuals from 40 communities, which are grouped in nine regions of USA. Results of multivariate analysis clear that education is important in all indicators of social capital, and that ethnic diversification is attached with lower levels of social capital.

Baliamoune-Lutz (2005) examines the effects of institutions³ and social capital in the form of generalised trust⁴ on economic development of 39 African countries from 1975 to 2000 with control variables of human capital and trade openness. Results show that there is a robust positive influence of social capital on income, while institutions do not seem to have an independent positive effect on income. In addition, the interaction between social capital and institutional quality, and the interaction of social capital with human capital have a positive impact on economic development. Moreover, generalised trust affects economic performance directly by lowering transaction (information and monitoring) costs, and indirectly through its interaction with human capital and institutions. Overall, the empirical results suggest that social capital is a substitute for institutions when institutions are weak, but becomes a complement to institutions as institutional quality improves in Africa

Kaldaru, *et al.* (2005) analyses the impact of macro-level social capital⁵ on economic development in 34 European countries. Regression analysis finds that all these components i.e. human and social capital, income equality, and redistribution have a positive effect on economic development. Casey, *et al.* (2005) analyse the Putnam's hypothesis by using technology parameter, labour input, human capital, social capital index measures against state level output (GDP) data from 1980 to 2001. The results show that social capital is not a significant factor compared to other drivers of economic performance, with the exception of a small but positive relationship with employment.

Akçomak and Weel (2008) explore the link between social capital, innovation and growth in per capita income for 102 European region from 1990 to 2002. Study shows that higher innovation performance is conducive to per capita income growth and that social capital affects this growth indirectly by increasing innovation. Dinda (2008) finds that increased human capital, improved labor force productivity consequently increased the social capital causes to development and thus to be followed by more economic growth. Study concludes that social capital has significant positive influence on income levels and growth of 63 countries.

Kaasa, *et al.* (2008) investigates the cross effects of social and human capital on economic development in 28 European economies from 1999 to 2007 and 160 European region from 19 economies over the period of 1999 to 2005. Regression results shows that education plays crucial role with political activity and institutional trust at national level

²Social Capital Community Benchmark Survey 2000.

³Property rights and civil liberties proxies by contract-intensive money.

⁴Proxies by contract-intensive money.

⁵Comprises different aspects of institutional quality and is closely related to the income distribution and social cohesion.

while, interaction of education with formal and informal networks has positive influence on change in growth rates and GDP per capita.

Dearmon and Greer (2009) examine the link among social trust and economic development by using data from 51 economies. Study concludes that trust has major role in economic development by improving factor of production efficiency to increase the economic growth. Sequeira and Ferreira-Lopes (2009) investigate the contribution of human and social capital in economic growth by employing the endogenous growth model and study concludes that there is a inverse U shaped link among social and human capital over time.

Fenghue and Canfei (2010) try to explore the regional disparities in social capital and the effect of social capital on economic growth at provincial level in China from 1978 to 2004. Empirical analysis clears that social capital is measuring through the indicators of associations, charities and blood donations rates and has significant positive effect on a long-term provincial economic growth. The findings indicate that institutions, culture and social relations are critical for regional development in China.

Westlund and Frane (2010) summarise 15 years of empirical research at various levels on social capital and economic performance. Results are unambiguous on the firms' level while; the results become less clear with a large number of anonymous actors. The contradictory results of studies on national and regional levels can be explained in part by insufficient measures of the main component parts of social capital: social networks and the norms and values distributed among them.

Rizwan, *et al.* (2011) is of the view that social capital plays a very crucial role in securing economic and social progress by improving income distribution and raises people's productivity, creativity and promotes entrepreneurship and technological advances. Macro-level social capital comprises different aspects of institutional quality and is closely related to the income distribution and social cohesion. Social capital improves the quality of lives and leads to broad social benefits to individuals and society.

Tatsi and Zafar (2011) analyse the impact of social capital on economic growth in the framework of the augmented Solow model for 21 OECD economies over the period of 1984 to 2007. The empirical findings of the study clear the statistically significant and positive effect of the social capital on income growth in the absence.

Akbari, *et al.* (2012) analyse the influence of social capital on economic growth of Iran from 1966 to 2007 in the short and long run by using autoregressive distributive lag model. Study uses gross domestic product (GDP), capital stock (K), human capital index (H), total government expenditure (G), social capital indicators⁶ and results of the study show a significant positive effect of social capital on economic growth in the long run but there is not any significant effect in the short run.

Palomino and Ausina (2015) investigates the effect of social capital on provincial economic growth of Spain from 1985 to 2005. Findings of the panel data approach shows that social capital has significant positive effect on GDP per capita growth. Study also report that physical private investment may be one of the important transmitters to enhance the influence of social capital to GDP per capita growth.

It should be noted that although several studies have been conducted using different models, but the results of model with regard to the model used, the data used, at a time were studied and the economic conditions of countries have been different result.

⁶Number of per capita invalid check.

Studies addressing the relationship between social capital and economic performance are increasing in volume; therein, we find two strands of literature. One is concerned with the establishment of a theoretical link between social capital and economic growth, placing emphasis upon the refinement of the concept [Putnam (2000); Temple (2001); Durlauf (2002a, 2002b, 2002c); Francois (2002); Piazza-Georgi (2002); Gradstein and Justman (2002); Durlauf and Fafchamps (2005); Granovetter (2005)]. The second strand provides empirical evidence on the effect of social capital on income growth. Therein, the attempt to uncover a direct, or even, an indirect impact of social capital on economic performance/growth is witnessed in the work of Helliwell and Putnam (1995), Granato, Inglehart, and Leblang (1996), Helliwell (1996), Knack and Zak (2001), Beugelsdijk and van Schaik (2005), Akcomak and Weel (2009), and Ishise and Sawada (2009).

4. METHODOLOGY

Model

The model of social capital accumulation considered is based for its construction on similar ideas as models of physical capital accumulation. This implies that social capital is understood as an additional input in the production process and a stock of it is available for each society, which depreciates over time as any other type of capital stock. Individuals invest in social capital because they expect positive returns in the future derived from that investment.

The basic Solow growth model uses output, capital, labour, and technology to determine a country's growth path. The model takes the savings rate, population growth, and technological progress as exogenous variables. Capital and labour are the two inputs to production and are paid their marginal products. Mankiw, Romer, and Weil (1992) explored the effects of including human capital into the model. However, the model still does not provide a deep understanding of economic growth. North (1990) argued that institutions (both formal and informal) in a country determine its long-run economic performance. Grigorian and Martinez (2000) and Breton (2002) further augment the Solow growth model by introducing formal and informal institutions. As social capital is described as informal institutions therefore from these specifications, using a Cobb-Douglas production function, production at time t is;

$$Y_t = K_t^\alpha H_t^\beta (S_t A_t L_t)^{1-\alpha-\beta}$$

where Y is output, K is capital, L is labour, and A is the effectiveness of labour, S shows social capital that affects economic growth. Under the Solow growth model, capital and technology grow exogenously at rates n and g respectively. From this, capital per effective unit of labor is defined as

$$k_t = s_k y_t - (n + g + \delta)k_t = s_k S^{1-\alpha-\beta} k_t^\alpha - (n + g + \delta)k_t$$

And human capital per effective unit of labour is defined as;

$$h_t = s_h y_t - (n + g + \delta)h_t = s_h S^{1-\alpha-\beta} h_t^\beta - (n + g + \delta)h_t$$

The economy converges to the steady state when;

$$k_t^* = S_t \left[\frac{s_k^{1-\beta} s_h^\beta}{\delta + n + g} \right]^{\frac{1}{1-\alpha-\beta}}$$

$$h_t^* = S_t \left[\frac{s_k^\alpha s_h^{1-\alpha}}{\delta + n + g} \right]^{\frac{1}{1-\alpha-\beta}}$$

Substituting above two equations into the production function we get the equation of per capita income.

$$\ln y_t/L_t = \ln A_0 + g_t + \ln S_0 + \frac{\alpha}{1-\alpha-\beta} \ln(s_k) + \frac{\beta}{1-\alpha-\beta} \ln(s_h) - \frac{\alpha+\beta}{1-\alpha-\beta} \ln(\delta + n + g)$$

Last equation states that income per worker is dependent on population growth, accumulation of physical capital, accumulation of human capital and social capital.

Empirical literature has suggested many different variables and methods to measure social capital in order to test its ability to influence social, economic, and political outcomes particularly during the last decade. Since economic agents are very important for institutional environment in determining the social, economic and legal effect of their decisions, it is obvious that generalised trust can supply us with a unilateral concept of social capital as it represent one of its key components. In order to measure social capital our intention is that any important measure should not neglect to incorporate the overall quality of institutions reflected in the quality of governance, political regime and rule of law, court system and civil and political liberties. Different studies like Guiso, *et al.* (2004); Ahlerup, *et al.* (2009); Balamoune-Lutz (2011) discussed the complementarity or substitution of generalised trust and institutions. But the interaction of the two can provide an appealing measure of social capital.

We are using Contract-Intensive-Money (CIM) as an indicator for generalised trust, introduced by Clague, *et al.* (1999). CIM reflects the extent of generalised trust when an individual entering a transaction (i.e. holding money inside banks and the money will be used by the banks for various economic transactions like loan, investment, etc.) by trusting a large number of individuals not necessarily known to him, as well as trusting the capability of repayment since the individual enters the transaction in the present and receive income or collect payoffs in the future. The authors defined it as the ratio of non-currency money to the total money supply, or (M2-C)/M2, where M2 is a broad definition of the money supply and C is currency held outside banks. The second key component of social capital is institutional development. Institutional quality enhances the rate of return on investment there by increasing the growth. Measures of institutional quality in the empirical literature include a host of indicators such as property rights [Knack and Keefer (1995)], bureaucratic structure [Rauch and Evans (2000)], and political rights and civil liberties—we use political rights index ranges from 1 to 7 as a proxy of institutional development.

Data and Variables

In our case, as we are estimating three equations from which first equation is the standard growth equation including specifically social capital along with the physical and human capital, the dependent variable is GDP per capita which is used as a proxy of economic growth. In the second equation our focus is to understand the impact of the interaction of human and social capital on economic growth. Lastly in the third equation our main concern is to find out the impact of social capital on physical capital. The explanatory variables used in our analysis are interest rate, physical capital, human capital, gross domestic product, inflation, trade openness and labour force. All variables are expressed in logarithms except inflation and interest rate. We are taking the data from 1980 to 2016. We estimate the following model:

$$RGDPPC_t = \alpha_0 + \alpha_1 PK_t + \alpha_2 LF_t + \alpha_3 HK_t + \alpha_4 SK_t + \alpha_5 TO_t + \mu_{1t} \quad \dots \quad (1)$$

$$RGDPPC_t = \beta_0 + \beta_1 PK_t + \beta_2 LF_t + \beta_3 (SK_t * HK_t) + \beta_4 TO_t + \mu_{2t} \quad \dots \quad (2)$$

$$PK_t = \gamma_0 + \gamma_1 RGDP_t + \gamma_2 \Delta CPI_t + \gamma_3 SK_t + \gamma_4 IR_t + \mu_{3t} \quad \dots \quad (3)$$

Data Description and Sources

Variables	Explanation	Source	Unit
Real GDP per Capita (RGDPPC)	Real GDP per head of population	State Bank of Pakistan (SBP)	Million Rupees
Physical Capital (PK)	Gross fixed capital formation	International Financial Statistics (IFS)	Million Rupees
Human Capital (HK)	High School Enrolment	State Bank of Pakistan (SBP)	Million Numbers
Social Capital (SK)	Interaction term of Generalised Trust and Political rights index		
Generalised Trust	Contract Intensive Money (CIM); computed based on M2 and currency © held outside banks following Clague. <i>et al.</i> (1999) [(M2-C)/M2]	State Bank of Pakistan	Million Rupees
Political Rights Index	7 (weak) - 1 (strong)	Global Economy	An index lies b/w 1-7
Inflation (Δ CPI)	Change in consumer price index (CPI)	World Development Indicators (WDI)	Annual %
Interest Rate (IR)	Money market rate	International Financial Statistics (IFS)	Annual %
Trade Openness (TO)	Exports plus imports divided by GDP (X+M/GDP)*100	World Development Indicators (WDI)	Million Rupees
Labour Force (LF)	Civilian labour force total	Economic Survey of Pakistan	Million Numbers
Real GDP (RGDP)	Real GDP deflated by CPI	International Financial Statistics (IFS)	Million Rupees

5. ESTIMATION RESULTS AND SENSITIVITY ANALYSIS

The empirical results are presented under Tables. Primary interest of the empirical analysis lies in uncovering the effect of social capital on economic growth for Pakistan.

In order to check the stationarity of variables we first apply the Augmented Dickey Fuller test and then decide which estimation technique is suitable for our analysis.

Result of ADF Test

In order to check the stationarity we use augmented dickey fuller test which is the advanced version of dickey fuller test. If one can reject the null hypothesis that a series possesses a unit root, then the series is stationary at level, or integrated of order zero (I(0)). If one cannot reject the null of a unit root, then the series is difference stationary. We can write the general form of ADF au level and first difference as:

$$\Delta Y_t = \alpha y_{t-1} + \sum_{i=1}^n \beta \Delta Y_{t-1} + \delta + Y_t + \xi_t$$

$$\Delta \Delta Y_t = \alpha_1 \Delta y_{t-1} + \sum_{i=1}^n \beta \Delta \Delta Y_{t-1} + \delta + \gamma_t + \xi_t$$

We test the null hypothesis of unit root against the alternative of stationarity through the ADF test statistics. Probability values of t statistics in the table show that all the variables are integrated of order one so we reject the null hypothesis of unit root at first difference of variables.

Variables	Level			1 st difference			Order of Integration
	Intercept	Trend and Intercept	None	Intercept	Trend and Intercept	None	
PK	0.8704	0.3351	1.0000	0.0008*	0.0051*	0.0234*	I(1)
LF	0.9871	0.4049	1.0000	0.0000*	0.0001*	0.0145*	I(1)
RGDPPC	0.9461	0.7500	1.0000	0.0000*	0.0002*	0.0004*	I(1)
RGDP	0.8161	0.3178	1.0000	0.0000*	0.0001*	0.0127*	I(1)
SK	0.2526	0.5237	0.3271	0.0000*	0.0001*	0.0000*	I(1)
HK	0.5963	0.7754	1.0000	0.0029*	0.0129*	0.0152*	I(1)
TO	0.1483	0.1266	0.5683	0.0000*	0.0000*	0.0000*	I(1)
IR	0.2945	0.5454	0.5430	0.0002*	0.0011*	0.0000*	I(1)
Δ CPI	0.0746	0.1801	0.1906	0.0000*	0.0000*	0.0000*	I(1)

*MacKinnon (1996) one-sided p-values.

Results of Co-integration Test

As results of unit root test show that all the variables are I(1). So we use Johansen (1998) and Johansen and Juselius (1990) Maximum Likelihood Co-integration Approach to test the long run relationship between social capital and economic growth. Two or more series are co-integrated if they observe same kind of stochastic behaviour. It is statistical property of time series variables and uses when all the variables are stationary at I (1). The co-integration approach in a multivariate system is similar to the ADF test, but requires the use of vector autoregressive (VAR). When two series are co-integrated it suggests that even both processes are non stationary, there is some long run relationship linking both series so that it is stationary. There are two likelihood ratio test statistics in the Johansen (1998) and Johansen and Juselius (1990) Maximum likelihood Co-integration Approach; the trace and the Maximum Eigen value. The Trace test is a joint test with null hypothesis of number of co-integrating vectors is less than or equal to r ,

against alternative hypothesis that there are more than r co-integrating vectors. The Maximum Eigen value test conducted separate tests on each Eigen value with null hypothesis that there are r co-integrating vectors exist against the alternative hypothesis that there exists $(r+1)$.

As the first step in co-integration we test the lag order of model. We determine the lag order (1) through AIC (Akaike information criterion) using VAR (vector auto regressive). In the second step we test the null hypothesis of no co-integration against the alternative through trace statistics and maximum Eigen statistics.

Unrestricted Co-integration Rank Test (Trace)

Eq1		Eq2		Eq3	
Hypothesised No. of CE(s)	Prob.** Trace Statistic	Hypothesised No. of CE(s)	Prob.** Trace Statistic	Hypothesised No. of CE(s)	Prob.** Trace Statistic
None *	0.0017	None *	0.0057	None *	0.0360
At most 1 *	0.0314	At most 1	0.1241	At most 1	0.0881
At most 2	0.1179	At most 2	0.2864	At most 2	0.3739
At most 3	0.2457	At most 3	0.3146	At most 3	0.4901
At most 4	0.2507	At most 4	0.8210	At most 4	0.6563
At most 5	0.5599				

* Denotes rejection of the hypothesis at the 0.05 level. **MacKinnon-Haug-Michelis (1999) p-values..

Results of trace statistics show the evidence of two long run co integrating relationships for the first equation, one co-integrating relationship for second and third equation respectively at the 0.05 level. Results of maximum Eigen statistics below in given table shows the evidence of one long run co integrating relationship for first and second equation respectively and no co-integrating relationship for the third equation at the 0.05 level.

Unrestricted Co-integration Rank Test (Maximum Eigenvalue)

Eq1		Eq2		Eq3	
Hypothesised No. of CE(s)	Prob.** Max-Eigen Statistic	Hypothesised No. of CE(s)	Prob.** Max-Eigen Statistic	Hypothesised No. of CE(s)	Prob.** Max-Eigen Statistic
None *	0.0372	None *	0.0207	None	0.2947
At most 1	0.1851	At most 1	0.2679	At most 1	0.1216
At most 2	0.2995	At most 2	0.4856	At most 2	0.4549
At most 3	0.4898	At most 3	0.2449	At most 3	0.4237
At most 4	0.2075	At most 4	0.8210	At most 4	0.6563
At most 5	0.5599				

* Denotes rejection of the hypothesis at the 0.05 level.

**MacKinnon-Haug-Michelis (1999) p-values.

As the results of Trace statistics and maximum Eigen statistics provide evidence for the existence of long run relationship. So we precede further to estimate the long run coefficients. The estimated long run coefficients are given below.

Normalised Co-integrating Coefficients

Variable	RGDPPC	RGDPPC	PK
	Eq1	Eq2	Eq3
L	1.142496 (5.5520*)	2.052598 (6.1925*)	
PK	0.204690 (3.23927*)	0.179306 (2.7105*)	
SK	0.047627 (1.89749**)		0.168959 (1.6174**)
HK	0.441406 (4.83044*)		
TO	0.750718 (5.2468*)	1.078515 (4.6700*)	
SK*HK		0.064770 (2.54519*)	
RGDP			2.160413 (41.9497*)
Δ CPI			-0.015054 (-1.50089)
IR			-0.085122 (-5.9945*)

Note: * Shows significance at 1 and 5 percent level of significance while ** shows significance at 10 percent.

Impact of Social Capital on Economic Growth

In the first equation our dependent variable is economic growth. In the long run analysis coefficients show the expected signs consistent with economic theory, and are highly significant except social capital which is significant at 10 percent. Comparatively, the variable labour force (*LF*) has the largest impact on the dependent variable in the considered period. A 1percent increase in physical capital (*PK*) generates, ceteris paribus, a 0.2 percent increase in economic growth. The positive and significant sign of the variable human capital (*HK*) denotes that the role of the education on the economic performance is also quite important. The coefficient is surprisingly high if it is compared with physical capital (*PK*). Our variable of interest, social capital (*SK*), is positive and significant, a 1 percent increase in social capital yields a 0.04 percent increase in economic growth. Our results are in line with Pérez, *et al.* (2005), who carried out a growth accountant exercise for Spain, found a positive contribution from social capital to growth for the period 1964–2001. This fact supports the idea that social capital is a significant variable for explaining the level of economic performance in Pakistan.

Impact of Interaction of Social and Human Capital on Economic Growth

Our second objective is to analyse the impact of interaction of social and human capital on economic growth. Long run analysis shows that all the variables have the expected signs and all are highly significant. Our main focus is to analyse that how the human capital along with the social capital affects the economic growth shown by Equation 2. The result shows that 1 percent increase in the interaction term leads to increase economic growth by 0.06 percent. If we compare the coefficient of social capital in Equation 1 with the coefficient of interaction term of human and social capital we come to know that the social capital along with human capital or the more educated people along with better economic and institutional development have more positive impact on economic growth.

Impact of Social Capital on Physical Capital

According to our third objective we estimate Equation 3 to analyse the impact of social capital on physical capital. Long run estimation results show that all variables have significant impact on economic growth with the expected signs. We find a positive and significant relationship between social capital and physical capital. Specifically an increase of 1 percent of social capital is corresponded by a 0.16 percent increase in total physical capital. The regression allows us for determining other important relationships. Interest rate has a negative but significant effect. Thus, from that analysis we can extract that social capital is relevant for explaining the investment levels in Pakistan.

Vector Error Correction Model

A main quality of co-integrated variables is that their time paths are affected by the extent of any deviation from the long-run equilibrium [Anders (2004)]. The error correction mechanism (ECM) term presents the percentage of correction to any deviation in the long-run equilibrium of dependent variable in a single period and also represents how fast the deviations in the long-run equilibrium are corrected. Depending on the presence of how many co-integrating vectors, we can then test for the short run dynamics using a vector error correction model.

In short run analysis error correction term is negative and significant for all three equations which show that last periods error is corrected 0.33 percent, 0.41 percent and 0.39 percent respectively.

6. CONCLUSION AND POLICY IMPLICATION

Traditionally, economic growth has been one of the topics which have attracted more interest in the economic literature. The first step in the matter is attributed to Solow (1957), who proposed a model including physical capital investment, labour and technological change. In the last few years, a new variable has been considered by several studies on this issue: social capital. So this paper analyses the role of social capital on economic growth in Pakistan during the 1980–2016 period.

According to our results, we determine in the first part of the study that social capital has a positive influence on economic growth of Pakistan. This result is highly relevant in the sense that confirms that social capital is, among other factors, that

Variables	DRGDPPC	DRGDPPC	DPK
	Eq1	Eq2	Eq3
ECT	-0.339100	-0.417805	-0.397899
	-1.74494**	-2.78816*	-2.08076*
D(RGDPPC(-1))	-0.294787	-0.149937	
	-1.01098	-0.62446	
D(L(-1))	-0.484066	-0.538941	
	-1.13373	-1.33123	
D(PK(-1))	0.037695	0.048219	0.368340
	0.39932	0.57596	1.71729**
D(SK(-1))	0.019895		0.192961
	0.42458		2.25854*
D(HK(-1))	-0.099085		
	-0.58422		
D(TO(-1))	0.078608	0.152666	
	0.59992	1.27340	
D(SK*HK(-1))		0.007513	
		0.47031	
D(RGDP(-1))			0.321894
			0.68673
D(Δ CPI(-1))			0.009285
			1.75266**
D(IR(-1))			3.32E-05
			0.00317
C	0.054321	0.045419	0.065084
	2.755918*	2.96840*	2.14961*
R-squared	0.421227	0.382376	0.444232
Adj. R-squared	0.145621	0.202235	0.310848
F-statistic	1.528368	2.122655	3.330471
Log likelihood	66.93467	65.89514	40.94417

Note: * Shows significance at 5 percent level of significance while ** Shows significance at 10 percent.

contributes a lot in economic growth of Pakistan. These results might have interesting policy implications in the sense that if social capital is one of the mechanisms to achieve a higher stage of economic performance, policies should pursue the generation of greater endowments of social capital.

A second conclusion we draw from our analysis is related to the importance of the interaction of human and social capital. Our results show that more educated people along with better economic and institutional development have more positive impact on economic growth.

A third conclusion we can extract from this paper is the importance of social capital to foster physical capital. We have shown that investment is the very important factor in the increase of economic growth. Investment is an activity which needs trust. We all know that the major of the investment activities are made borrowing financial resources. The presence of social capital in a given society or region makes easier and

cheaper this kind of activities. The theory of social capital declares the importance of the social features in the reduction of transaction costs. If banks can save costs in supervision and checking the reliability of clients, the last can obtain cheaper credit. Trust can extend the relationships between banks and clients and this fact induces lower transaction cost in future economic transactions.

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