An Inquiry into Social Capital and Economic Growth Relation and Determinants of Social Capital: A Worldwide Perspective

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Social capital refers to the stock of social relations, based on norms and networks of cooperation and trust. The discussion about whether social capital has an upshot on the economic growth, has received increasing responsiveness by economists in recent years. Research is now departing from the belief that growth can only be explained by the traditional inputs such as physical capital and labour. Keeping in view this fact, this study analyses the relationship between social capital and economic growth for a number of countries, with overall panel and then for developed and developing economies separately. Secondly, determinants of social capital also have been explored. Panel data has been used for analysis for the years 1990, 1995, 2000, 2005 and 2010. Intergroup cohesion has been used as a proxy for social capital. The results indicate that social capital has positive relation with economic growth in all specifications. Fractionalisation, income level, income inequality and inclusion of minorities are important determinants of social capital. The findings; suggest that, while devising policies, social capital should not be overlook by policy makers. There is need to manage ethnic and linguistic diversity in developing economies, and income inequality reduction measures are needed in both developing and developed economies in order to boost social capital.

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I. INTRODUCTION

Economists have been trying to find out the determinants of growth [e.g., Solow (1956); Swan (1956)] and developments in literature stresses the importance of technological change in determining the economic growth [e.g., Romer (1990); Grossman and Helpman (1991); Aghion and Howitt (1990)]. In the past the role of social relations has not been given due consideration, so existing literature on this link has been very limited. In recent past, however importance has been given to social interactions in explaining the economic growth. Now technical change and gross domestic product (GDP) growth are considered within a socio-economic context consisting of interacting actors [e.g., Cowan and Jonard (2004)]. Innovations take place in multifaceted systems,

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consisted of interacting agents that exchanges knowledge and resources like firms, consumers, research organisations, academia and public sector [e.g., Lundvall (1992)]. This thinking is based upon a number of studies on continual interactions. Economists stresses on the role of social relations in overcoming the problem of free rider and minimising the selfish behavior [e.g., Abreu (1988); Bowles and Gintis (2004)]. Robison and Schmid (2002) explains that the major reason of economic and social disasters is absence of social capital, or it can be said that it is absence of caring, kindness, faithfulness, sense of belonging, sense of community, or social closeness. The main economic effect of social capital may be that it lessens information and transaction costs, under such circumstances there is less risk and more exchange may take place.

In the similar manner the idea of embeddedness emphasises the importance of interpersonal interactions and networking of relations in understanding the functioning of economic systems, by creating norms and trust [e.g., Granovetter (1985)]. To encourage this multilevel, interdisciplinary research, sociology and political science may provide very good support for research on economic growth as Temple (1999) argues. This logic has led to reinforcement in research linking economics to sociology and the concept of social capital firstly given by sociologists Jacobs (1961) and Loury (1977) has got importance for economists and other social scientists. This revitalisation may also be considered as wakening of old ties of sociology-economics that were supposed to be overlooked in the neo-classical tradition. Since few decades the literature on social capital has been growing with very rapid growth. After the introduction of the word social capital by Loury (1977) a large number of research studies conducted in late 1980s with the use of different definitions of social capital [e.g., DiMaggio and Mohr (1985); Bourdieu (1986); Flap and De Graaf (1986); Coleman (1988); Fratoe (1988)]. Economists have recognised that social relations amongst people and their feeling for one another have significant economic upshots [Robison (1996)].

According to Putnam (1995) social capital refers to characteristics of social organisation like networks, norms and trust that assist cooperation and coordination for communal benefit. In the words of Coleman, social capital is "a variety of different entities, with two elements in common: they all consist of some aspect of social structure, and they facilitate certain actions of actors whether personal or corporate actors within the structure" (p. 598). Woolcock (1998) defines social capital as "a broaden term encompassing the norms and networks facilitating collective action for mutual benefit". As per World Bank (1998) social capital consists of institutions, the relationships, the attitudes, values and beliefs which administers connections amongst the masses and add in social development. In current study social capital has been measured by intergroup cohesion, which tells regarding the collaboration among various groups in a society. It also speaks regarding the capacity of a society to cope with hidden conflict before it turns out to be violent.

Keeping in view the importance of social capital it is necessary to explore the factors needed to shape social capital. Recently the researchers have started giving due consideration to find out the determinants of social capital. It is important for evolving a consistent and integrated framework regarding the nature of social capital and its relationship to socioeconomic performance. There are various research papers that have empirically checked the effect of individual- and aggregate-level elements on the components of social capital, which is, on social trust and group membership [e.g.

Helliwell (1996); Brehm and Rahn (1997); Krishna and Uphoff (1999); Glaeser, *et al.* (2000); Costa and Kahn (2001); Rothstein and Stolle (2001)]. Some of these studies emphasised on the importance of individual features in explaining the inducement of individuals to invest in social capital like income, education, family and social status; some others put great emphasises on the institutional factors like income inequality, confidence in government, impartiality of policy making bodies etc. Current study tries to explain the determinants of social capital in aggregate-level environment. Rest of the study is organised as after introduction in Section I, Section II reviews some relevant existing literature, Section III is about theoretical framework, in Section IV model specification has been given, Section V provides empirical results and discussion, Section VI concludes the study.

II. LITERATURE REVIEW

Social capital may have impact on economic growth via various channels. Social relations and trust may help to reduce transaction costs which assist to obtain contracts and expediting the process. Under some circumstances it also helps to obtain the financial credit which may not have been possible. Social capital in the form of trust help people to have faith in public institutions and it also helps in generating more competition by eliminating lobbyism [Knack and Keefer (1997)]. Fukuyama (1995) used trust as a proxy for social capital and described the differences in economic growths of different countries. He suggested that if trust among people did not go beyond the family relations the availability of social capital reduces. He further pointed out; communities with more social capital will be more efficient in adopting new technology and innovations. A very important study in the literature of social capital is by Heliwell and Putnam (1995) in this study the difference in economic growth with similar factor endowments, of different regions of Italy has been discussed. Three different indicators of social capital have been used. Study was based upon survey data. The independent variables include satisfaction with government, degree of civic community and effectiveness of regional governments. It was found that there is positive relation between social capital and per capita GDP. It may be due to the reason of better cooperation and efficiency of government policies.

Knack and Keefer (1997) used trust amongst people and between people and government, membership as indicators of social capital. The dependent variable was GDP growth and independent variables include primary and secondary schooling. The source of the data for social capital was world value survey. Based upon analysis from 1980-1992, it was found that there is significant and positive relation between trust and economic performance, however no significant relation was found between membership and economic performance. Neira, *et al.* (2009) conducted the study in various economies of Europe from 1980 to 2000 by using panel data. It was perhaps the first study which used the panel data for analysis. The variables used for social capital were: social trust and membership; independent variables include per capita investment and human capital. OLS and fixed effect model were used for the estimation purposes. The results indicated positive relation between social capital and GDP growth.

Narayan and Pritchett (1999) suggested on the basis of their study in India and Tanzania that village level social capital is very important for individual welfare and they also found that social capital on household level was less important. After the collapse of

government in Somalia in 1991, income was decreased everywhere however there was one city of Boosaaso where income rose up due to the support and cooperation of native papulation. There is another example of success story from Bangladesh based upon group based lending as Grameen Bank which significantly contributed to the development of the country.

La Porta, *et al.* (1996) suggested that there is weak correlation between trust and economic growth. Knack (2000) suggested that there is positive relation between trust and investment. Dasgupta (2000) used cultural beliefs as social capital and explained that there is positive relation between civic culture and economic performance, in a similar way Granato, *et al.* (1996) suggested positive relation between personal motivation and economic growth. The studies available on social capital provides important insights, however the effect of social capital may vary among space, so causation may be needed when taking in to account when drawing a conclusion about the impact of social capital on economic performance across different regions. Besides this difference, another issue with studies on social capital may be that social capital may have multiple impacts which are difficult to be isolated. Social capital is associated with higher economic growth [e.g., Knack and Keefer (1997); higher education [e.g., Coleman (1988)]; higher financial development [e.g., Guiso, Sapienza, and Zingales (2004)]; better innovative outcomes [e.g., Akcomak and Weel (2006)]; lower homicide rates [e.g., Rosenfeld, Messner, and Baumer (2001)]; lower suicide rates [e.g., Helliwell (2007)]; better public health [e.g., Kawachi, Kim, Coutts, and Subramanian (2004)]; and higher value creation by firms [e.g., Nahapiet and Ghoshal (1997)]; Happiness [Brown and Harris (1998)]. So these multiple outcomes can be interlinked, reinforce and may also conflict with one another. For example social capital enhances the ability of innovation by firms, so we may consider it will enhances the economic performance. On the side consuming lot of time in civic engagement may enhance health status and happiness, however at the same time it will reduce the working hours which will reduce economic growth. Similarly there may be nonlinear relation between social capital and economic growth. Furthermore some recent research papers also highlighted the abuse of social capital, institutions that were built on social capital has been used against some certain groups in the society [Ogilvie (2005)].

In order to have better insights, it is necessary to explore the determinants of social capital. According to Hall (1999) and Putnam (2000) there is strong correlation between education and different proxies of social capital and this correlation is found almost everywhere in different cross country regions [Glaeser, *et al.* (2002)]. This may be due to the reason that education is required in the development social skills. Mobility may be another important determinant of social capital. As per findings of Dipasquale and Glaeser (1999) duration of stay in a community have positive relation with social capital formation. Glaeser, *et al.* (2002) suggested that there is positive relation between probability of moving and membership with various organisations. Labour force participation may also be significant determinant of social capital as work place is the place where social capital may grow. Putnam (2000) explained that work intensity may have negative effect on social involvement due to pressure on time. Age can be a significant determinant of social capital as social relations grow with the passage of time , however at very old age this may reduce, Glaeser, *et al.* (2000) suggested that people believing in utility maximising behaviour reduce investment in social capital when they

are too old and closer to death, as potential benefits are less. Income can be very important determinant of social capital and it can affect it via different channels. Income may provide the resources to facilitate the investment in social capital. Very high level jobs often require high level social relations and use of personal networks. Dipasquale and Glaeser (1999) suggested strong correlation between home ownership and various indicators of social capitals. Ethnic diversity may reduce social capital due to the reason that individuals may discriminate with people who are different from themselves and in favor of those who belong to their ethnic group. So people will less likely to participate in civic activities in diversified societies Alesina and La Ferra (2000); Glaeser (2001) explains that growth of social capital requires coordination and such is missing in fractionalised societies.

III. THEORETICAL FRAMEWORK

The orthodox economists recognised land, labour, and physical capital as basic inputs for determining the economic growth. In the 1960s, neo-classical economists like T.W. Schultz and Gary Becker presented the idea of human capital, suggested that the availability of educated, well trained and having better health status workers determine that how efficiently the traditional factors can be utilised. Later on Romer (1986, 1990) endogenous growth theory takes technological change as an endogenous factor that is determined by economic decisions of the agents. "New growth theory" takes economic behaviour separate from social dealings. Currently technological change and economic performance are considered within socio-economic structure, Temple (1999) explained that sociology and political science can help to contribute to understand the factors explaining economic growth. The state-of-the-art tools and best new thoughts in the minds or hands of most intelligent people will be less fruitful until that person also has access to others to update, correct, support with, and disseminate his work.

Life at house, in meeting room, or on the floor of the shop may be more worthwhile and productive when traders, colleagues, and customers alike are able to combine their expertise and means in the essence of trust, collaboration, and vow to mutual goals. The large preponderance of public, likewise, living, working, voting, praying, and recreating as affiliates of several but different social groups that form one's very individuality, values, and priorities. In connection to this statement a significant progress in the social science discipline is "the increase in importance of social capital as a device for understanding socio-economic phenomena" [Durlauf (2002:459)]. Social capital has been considered as an important determinant of economic growth in economic literature in recent past.

Consider a simple production function in which output Y is manufactured in an economy by employing inputs capital (K) and labour (L), this function assumes the following form

$$Y = AK^{\propto}L^{1-\propto} \qquad \dots \qquad \dots \qquad \dots \qquad \dots \qquad \dots \qquad \dots \qquad \dots \qquad (a)$$

This function assumes constant returns to labour and capital. *A* is amassed endogenously; it means that production is based on increasing returns. Now suppose that amassing of capital creates new knowledge, which is useful for the entire society. Further suppose that all firms and persons take *A* as given and cannot influence this effect with

investment in capital due to the reason that they have very trivial role in comparison to the economy. In simple way we can express this process in the following way

$$A = SKL^{1-\propto} \qquad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \qquad \text{(b)}$$

Here S represents the stock of knowledge or new ideas as described by Jones (2005). This structure indicates that amassing of capital results in exterior advantages which benefits all the people living in the economy even when capital gets paid its marginal product i.e. $\propto Y/K$

If a and b are put together we get

$$Y = SKL^{1-\propto} \qquad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \qquad \text{(c)}$$

In this framework the addition of knowledge is assumed as an externality of capital accumulation process. If L is normalised to 1, what we will get is the basic growth equation $Y = SK$ Romer (1986). The progress in stock of knowledge ($\dot{S}$) is equivalent to overall effort (E) made in research multiplied by the frequency at which innovations occur. Novelty in current approach is that this frequency is not constant [as in Romer (1986)] or depends upon (part of) the prevailing stock of knowledge [as in Jones (2002)], instead it is also dependent on stock of social capital in the country.

$$(V): S = \chi E^{\beta} S^{\lambda} V^{\phi} \qquad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \qquad \text{(d)}$$

For ease we deduce from the effects of total research inputs and prevailing stock of knowledge on economic performance and focus exclusively on the impact of social capital on economic growth, it is equal to using naivest form of Romer-model by incorporating social capital in this model

$$S = \Lambda V^{\phi} \qquad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \qquad \text{(e)}$$

Here Λ is a constant catching the impacts of stock of knowledge and total research inputs. In the above equation $\phi > 0$ indicates that the productivity of research is growing in the stock of social capital, it indicates that prevailing stock of social capital adds in the realisation of research. If $\phi < 0$, it indicates that social capital stock is harmful for research, if $\phi = 0$ it indicates that there is no role of stock of social capital on productivity of research and it is independent. It is supposed that $\phi < 1$ eradicates perpetual growth differences among regions, as we are mainly interested in changes in levels of income and the fact that permanent growth effects are not consistent with the data [Jones (1995)]. The rate of growth in this model is determined by the parameters of the production function for knowledge and the population growth rate (which is zero here). The inference is that $0 < \phi < 1$, it means that stock of social capital enhances the productivity and realisation of research, which enhances production.

IV. MODEL SPECIFICATION

The basic specification of the econometric model may be written as

$$Y_{it} = X_{it}\,\beta + Z_i\,\alpha + \varepsilon_{it}$$

This is the pool equation; it has K x 1 vector of independent variables in vector X_{it}, excluding a constant term. In this equation there may be heterogeneity among

cross sections. The cross-section effect is shown by Z_i and it also contains a constant term α, cross section specification is supposed to be remain constant over time t. we may estimate the above model by using simple Ordinary Least Squares if we assume all cross-sectional effects are measurable and included in Z_i. It may be noted that this is the most simple and generic form of the model, there are some restrictions to be imposed on the coefficients. If same individuals are sampled over time, it may be unrealistic to suppose that error term would be uncorrelated from various time periods [Verbeek (2012)]. Under such circumstances OLS is assumed not to be efficient in relation to an estimator which uses this correlation in error term over the time. This error term may be written as

$$\varepsilon_{it} = \alpha_{it} + \mu_{it}$$

This is considered to be homokedastic and independent over time. On the other side this term is an unobservable or cross sectional time invariant variable. For a most appropriate estimation technique, it is important to know that if or not the unobserved cross sectional effect is linked with the independent variables included in the model. Generally two approaches are used to handle this issue. The "Random Effects" model assumes that all those factors that may have impact on the dependent variable are not included in the model as explanatory variables; it may be abridged by the random error term [Verbeek (2012)]. However it may also be considered that cross section specific effects are not correlated with the independent variables, under such circumstances it may be better to model the cross section specific constant term as randomly distributed across cross-sectional units [Greene (2013)].

The second technique is known as fixed effect model, it is based upon the assumption that the excluded independent variables are correlated the regressors. The fixed effect model may be represent in the following manner

$$Y_{it} = \alpha_i + X_{it}\beta + + \varepsilon_{it}$$

It is a linear regression and to estimate the fixed effect model, there is need to transform the equation so that cross section specific unobservable effects are eliminated. This can be done in various ways; one way is that we may include a dummy variable for each cross section in the model like given as

$$Y_{it} = \sum_{j=1}^{n} \alpha_i + d_{ij} + X_{it}\beta + \mu_{it}$$

d_{ij} Will be $= 1$ if $i = j$ and 0 elsewhere. It provides set of N dummy variables in the model. The parameters for the β and $\alpha_1 \ldots\ldots \alpha_N$. The coefficient β can be estimated by OLS that is why it is known as "least squares dummy variable estimator" (LSDV). There is another way to estimate the β in efficient manner that is by running the regression after taking deviations from the individual means [Verbeek (2012)]. By doing this eradicate the individual or cross sectional effects.

$$Y_{it} - \bar{y}_I = (X_{it} + X_i)\hat{\beta} + (\mu_{it} + \bar{\mu}_i)$$

By doing so we get the observations that differ from individual means and this may be termed as "within transformation". The OLS estimator obtained from this regression is known as "Fixed effect estimator". This is assumed to be consistent if

independent variables are exogenous [Neira, *et al*. (2008)]. This estimator is based upon differences within individuals and explains that why Y_{it} is different from $\bar{y}_i$ and it is unable to clarify why $\bar{y}_i$ is different from $\bar{y}_j$ [Verbeek (2012)].

Based upon the discussion in the previous sections the following models have been developed. Model 1 is to be estimated to check the impact of social capital on economic growth and model 2 is based on the determinants of social capital. Least Square Dummy Variable (LSDV) model has been used for the estimation purposes because it may be better suited due to the reason that the countries included in the panel are different from one and other and LSDV model captures the effect of country specific characteristics and we get the pure effect of independent variables on dependent variable. Various but similar specifications (for ovell panel, developing and developed economies) have been used for robustness check.

Model 1

$$Y_{it} = \alpha_i + X_{it}\beta + + \varepsilon_{it}$$

Y_{it} = Real Gross domestic product (GDP) in in i[th] country in t[th] time period.

X_{it} = Matrix of independent variables, including: 20 years initial level of GDP growth, social capital, labour force, physical capital, human capital, inflation, industrial value added, globalisation, and domestic savings in i[th] country in t[th] time period.

Model 2

$$Y_{it} = \alpha_i + X_{it}\beta + + \varepsilon_{it}$$

Y_{it} = social capital in i[th] country in t[th] time period.

X_{it} = matrix of independent variables including: Ethnic diversity, Linguistic diversity, Religious diversity, GDP, Inequality, education and inclusion of minorities, in i[th] country in t[th] time period.

In present study Panel data (five-year average[1]) has been used from 1990 to 2010[2] (1990, 1995, 2000, 2005, and 2010). Data has been collected from the World Bank's database world development indicators (WDI), data base of International Institute of Social Studies (*Indices of Social Development)*, The Quality of Government Basic Dataset by University of Gothenburg, and the standardised world income inequality data base (SWIID Version.5). Following is a brief description of variables used in the study.

Measuring Social Capital

One of the most basic and important problem in economic research on social capital is measurement of social capital. Various methods have been used in the literature to develop a proxy which can precisely measure social capital and is useful for within and between countries comparisons. Surveys have been the main source in this regard [for

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[1]Average of the variables for the five years around each of years: 1990, 1995, 2000, 2005 and 2010 has been calculated in such a way that for 2010 value will be an average of the 2008, 2009 2010,2011,2012.

[2]As data from *Indices of Social Development* was available only for the years 1990, 1995, 2000, 2005 and 2010, so we have used data of other variables for the same years.

example La Porta, *et al.* (1997); Knack and Keefer (1997); Whitely (2000); Neira, *et al.* (2009); Beugelsdijk and Schaik (2001)].

Different variables have been used for social capital like membership or participation rate in informal and formal associations, [Heliwell (1996); Knack and Kefeer (1997)]. Putnam (2000) used civic engagement of the society in various events or groups. Another variable frequently used for social capital is trust, in different forms like confidence in members of the family, neighbours, and the people of one's country [Neira (2008); Whitely (2000)]. As levels of corruption, democracy, crime rates, divorcee, levels of unemployment [Babb (2005); Putnam (2000)].

The problem arising with such kind of measures is that it can vary over time and among countries. The norms of membership may differ between cultures, shaped by cultural or historical events further more different activities are not documented in developing economies due to various constraints.

There is international institute of social studies in Netherland which compiles very comprehensive data regarding social indicators like: intergroup cohesion, civic activism, clubs and associations, inclusion of minorities etc. the indicators of this institute are: more relevant, more comprehensive, however there is hardly any study related to social capital that have utilised this dataset. Current study utilises this data set for the analysis and measures the social capital with intergroup cohesion.

Intergroup Cohesion: Intergroup Cohesion tells regarding the collaboration among various groups in a society. It also speaks regarding the capacity of a society to cope with hidden conflict before it turns out to be violent. This variable is an index constructed by using the matching percentiles methodology. Various variables are included in this index like: Level of civil disorder, Level of internal conflict, Risk of terrorism, Level of ethnic tensions, Level of religious tensions, level of minority agitation in the society, level of discernment against minorities, inequalities between minorities in the society, number of events reported regarding violent riots and guerrilla activity etc. [for further details see Foa and Tanner (2012)].

Gross Domestic Product (GDP): GDP is the Gross domestic product at constant prices. Log of GDP has been used in this study. In first model it is dependent variable and in second model it is independent variable. In second model, an increase in GDP is anticipated to augment social capital in the economy as it will result in greater well-being and less deprivation. An increase in overall well-being means greater life satisfaction and lower level of bitterness for each other. Hence higher GDP is expected to enhance social capital.

Education: Education has been measured by average years of total schooling, secondary education, tertiary education; data is taken from the data set by Barro and Lee (2013). We may presume encouraging role of education in improving the economic growth in first model and social capital in second model. An educated individual is anticipated to be more forbearing and well conscious of his moralities and responsibilities, and more capable of dealing and resolving conflicts.

Globalisation: Globalisation is represented by KOF index of globalisation, it is an amalgamated index comprising of economic, political and social globalisation, and it

ranges from 0 to 100. If the value is nearer to 100, it represents high level of globalisation and if the value of this index is closer to 0, it represents a very low level of globalisation. It may result in positive or negative effect on economic growth. Dreher (2006) developed this index.

Inclusion of Minorities: This variable has been used in second model as a determinant of social capital. Inclusion of Minorities Index provides an assessment of how minorities are treated in a society. This index highlights that if there is general partiality amid managers, administrators, and other members of the society in the allocation of jobs, benefits regarding particular social groups, the level of discrimination against susceptible groups such as native peoples, nomads, expatriates, or lower caste groups. Inclusion of minorities is used to incorporate the dimension of Inclusiveness. Minorities are expected to play a positive role if they are treated fairly and they feel satisfied. A higher value of this index is expected to exert positive influence on social capital.

Linguistic Diversity: This variable has been used in second model as independent variable. Linguistic diversity represents the likelihood that if two individuals have been randomly selected from a given country they will belong to diverse linguistic groups. This likelihood is presented in an index form which lies from 0 to 1, where as a value nearer to zero means there is less linguistic diversity and a value closer to hundred indicates that there is high diversity in linguistic terms. Alesina, *et al.* (2003) developed this index. It can be expected that linguistic diversity may effect in either ways i.e. negatively or positively. If individuals in a society are tolerant enough and have gradually learnt to live together in a peaceful way, linguistic diversity should not have any negative implications for social capital, otherwise it may endanger social capital.

Religious Diversity: This variable has been used in second model as independent variable. it represents the likelihood that if two individuals have been randomly selected from a given country they will belong to diverse religious groups. This likelihood is presented in an index form which lies from 0 to 1, where as a value nearer to zero means there is less religious diversity and a value closer to hundred indicates that there is high diversity in religious terms. Alesina, *et al.* (2003) developed this index. We may also anticipate either helpful or damaging outcome of religious diversity. If there exist huge number of religious groups and there is absence of harmony, patience and esteem for each other's religion it can adversely affect social capital and may result in intra religion conflicts.

Ethnic Diversity: This variable has been used in second model as independent variable. It represents the likelihood that if two individuals have been randomly selected from a given country they will belong to diverse ethnic groups. This likelihood is presented in an index form which lies from 0 to 1, where as a value nearer to zero means there is less ethnic diversity and a value closer to hundred indicates that there is high diversity in ethnic terms. Alesina, *et al.* (2003) developed this index. Ethnic diversity can have positive or negative implications for social capital. Ethnic diversity is not a threat to social capital if various groups are living in synchronisation but it can be a serious threat if various ethnic group are biased towards each other and do not believe in mutual co-existence.

Income Inequality: This variable has been used in second model as independent variable. It has been measured by standardised Gini coefficient. This standardised coefficient has a range from 0 to 100. A zero value indicates that there is perfect equal distribution of income and a value of hundred indicates that there is perfect inequality in distribution of income. Higher income inequality may be expected to reduce social capital as it will divide the society into mutually exclusive groups of "haves" and "have-nots". The individuals falling in lower income brackets will develop a hatred towards rich people while rich may look down upon people. An increase in Income inequality will lead to inequitable access to opportunities and hence social capital will be reduced.

Gross Fixed Capital Formation: Gross fixed capital formation shows the net rise in fixed capital. Gross fixed capital formation comprises of expenditure on land developments, plant, device, and equipment acquisitions; the edifice of roads, railways, secretive housing, and marketable and industrialised buildings. This variable has been used in first model and is expected to enhance economic growth.

Labour Force: The labour force is the actual number of people able to work and willing to work. The labour force of a country includes both the employed and the unemployed. This variable has been used in first model and is expected to enhance economic growth.

Domestic Savings: Gross Domestic Saving comprises of savings of household sector, private corporate sector and public sector. This variable has been used in first model and is expected to enhance economic growth.

Inflation (GDP Deflator): It is a measure of the level of prices of all new, domestically produced, final goods and services in an economy. It is obtained by dividing the nominal GDP by real GDP. Unlike the CPI, the GDP deflator is not based on a fixed basket of goods and services; the "basket" for the GDP deflator is allowed to change from year to year with people's consumption and investment patterns. This variable has been used in first model and may be expected to have negative effect on economic growth.

Industry Value Added: The value added of an industry, also referred to as gross domestic product (GDP)-by-industry, is the contribution of a private industry or government sector to overall GDP. The components of value added consist of compensation of employees, taxes on production and imports less subsidies, and gross operating surplus. Value added equals the difference between an industry's gross output (consisting of sales or receipts and other operating income, commodity taxes, and inventory change) and the cost of its intermediate inputs (including energy, raw materials, semi-finished goods, and services that are purchased from all sources). This variable has been used in first model and is expected to enhance economic growth.

V. EMPIRICAL RESULTS AND DISCUSSION

The Table 1 provides the summary statistics of variables used in the current study.

Table 1

Summary Statistics of Variables

Variables	Dimension	Mean	Std. Dev.	Min.	Max	Observations	
Initial level of GDP growth	Overall	1.5968	6.6355	-50.235	53.932	N =	574
	Between		3.645	-12.791	16.810	n =	128
	within		5.593	-36.221	38.718	T-bar = 4.484	
Gross capital formation	Overall	1.03e+11	3.21e+11	3.79e+07	3.11e+12	N =	509
	Between		2.77e+11	4.73e+07	2.45e+12	n =	125
	within		1.08e+11	-7.86e+11	1.68e+12	T-bar =	4.072
Social capital	Overall	.592	.102	.0318	.788	N =	479
	Between		.084	.305	.742	n =	120
	within		.0648	.255	.772	T-bar = 3.991	
Total Labour Force	Overall	1.91e+07	7.34e+07	32742	7.85e+08	N =	660
	Between		7.33e+07	37302.16	7.21e+08	n =	132
	within		6909115	-5.60e+07	8.29e+07	T =	5
Average years of total schooling	Overall	6.611	2.993	.277	13.27	N =	570
	Between		2.901	.957	12.908	n =	114
	within		.773	4.066	8.522	T =	5
Real GDP	Overall	3.64e+11	1.27e+12	2.50e+08	1.51e+13	N =	652
	Between		1.24e+12	3.15e+08	1.22e+13	n =	131
	within		2.76e+11	-2.89e+12	3.60e+12	T-bar =	4.9771
Savings	Overall	18.1451	15.068	-95.496	56.529	N =	627
	Between		14.196	-54.518	49.287	n =	130
	within		6.799	-22.832	94.757	T-bar = 4.823	
Income inequality	Overall	39.545	9.135	17.963	63.933	N =	493
	Between		8.771	22.566	63.933	n =	121
	within		2.796	27.316	52.422	T-bar = 4.074	
Globalisation	Overall	51.491	18.747	15.677	91.846	N =	638
	Between		17.681	22.603	89.169	n =	128
	within		6.312	32.299	72.392	T-bar = 4.984	
Ethnic diversity	Overall	.4383	.273	0	.930	N =	675
	Between		.274	0	.930	n =	135
	within		0	.438	.438	T =	5
Linguistic diversity	Overall	.393	.300	.0021	.922	N =	650
	Between		.301	.002	.922	n =	130
	within		0	.393	.393	T =	5
Religious diversity	Overall	.435	.246	.0022	.860	N =	680
	Between		.247	.0022	.860	n =	136
	within		0	.435	.435	T =	5
Inclusion of minorities	Overall	.500	.107	.172	.900	N =	331
	Between		.084	.302	.696	n =	102
	within		.059	.282	.751	T-bar = 3.245	

The results given in Table 2 represents the panel of overall countries included in the study.

Table 2

Results of LSDV Model with Robust Standard Errors (Overall Panel)
Dependent Variable: Real GDP

	1	2	3	4	5	6	7	8	9
Initial level of GDP growth	-0.004**	-0.004**	-0.009***	-0.006**	-0.007**	-0.005**	-0.004**	-0.002**	-0.004**
	(0.012)	(0.049)	(0.008)	(0.018)	(0.014)	(0.019)	(0.023)	(0.046)	(0.012)
Social Capital	0.476***	0.764***	1.044***	0.542***	0.866***	0.436***	0.471***	0.610***	0.481***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Human Capital	0.235***					0.242***	0.236***	0.111***	0.232***
	(0.000)					(0.000)	(0.000)	(0.000)	(0.000)
Physical Capital	.00014*	.00028***	.0001	.00001	.00003	.0001***	.0001***	.0002***	.0001***
	(0.062)	(0.000)	(0.268)	(0.858)	(0.815)	(0.000)	(0.005)	(0.000)	(0.003)
Labour force in Billion	6.194***	5.574***	12.27***	8.618***	11.89***	5.516***	6.22***	4.26***	6.030***
	(0.000)	(0.000)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
No schooling		-0.027***							
		(0.000)							
Primary education			0.0052						
			(0.433)						
Secondary education				0.036***					
				(0.000)					
Tertiary education					0.0603***				
					(0.000)				
Industry value added						.004			
						(0.296)			
Inflation							.00001***		
							(0.350)		
KOF Index								.019***	
								(0.000)	
savings									.0033*
									(0.089)
cons	23.039	25.142	24.044	23.91	23.813	22.917	23.035	22.785	23.011
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R-Sq (within)	0.77	0.658	0.389	0.6197	0.563	0.789	0.78	0.854	0.790

Note: in parenthesis () are probabilities, and ***, **, * represent 1, 5 and 10 percent level of significance.

The results given above indicate that the coefficient of social capital measured by intergroup cohesion has positive sign and the variable is statistically significant. In order to check the robustness of the results various specifications have been estimated. Social capital measured by intergroup cohesion is statistically significant in all specifications. It means that if there is an increase in stock of social capital there will also be an increase in economic growth. The first row of the table represents the results of twenty years initial level of GDP growth, this variable has been used in order to investigate the phenomenon of convergence. For the validation of convergence hypothesis it is necessary that the coefficient of initial level of GDP growth is negative and variable is statistically significant. It is clear from the results that the coefficient of this variable is negative in all specifications and variable is statistically significant as well; it indicates that there is convergence over time in the economies included in the study.

Human capital has been indicated by average years of total schooling, this variable has positive sign and it is statically significant as well in all specification it is being used, this is consistent with the new growth theory. As the average of total years of schooling of a nation increases, its stock of human capital increases, as highly educated labour force

is technically equipped with modern techniques which enhance the efficiency of workers which contribute significantly in the economic growth of a country. In order to confirm the results, in one of the specifications population with no schooling variable has been used, it is interesting to note that the coefficient of this variable is negative and the variable is statistically significant as well. It indicates that if the proportion of the illiterate population increases in the economy it is very harmful for economic growth, the reason behind may be that illiterate population is unable to meet the labour demands of the modern era and they will become burden on the economy there by reducing economic growth of the economy. In order to find out that what minimum level of education is needed to accelerate the pace of economic growth we have used different levels of education, starting from no schooling, the level of education has been increased gradually, to tertiary level of education. It is interesting to note that the coefficient of non-schooling is negative and statistically significant; however when the level of education of population is increased from no schooling to population with primary level of education, the coefficient of the variable turns its sign from negative to positive but the variable is statistically insignificant yet. It indicates that the primary level of education is unable to contribute significantly, however at least it is not harmful for economic growth. When the share of population with secondary level of education is used, the variable turns out to be statistically significant. It means that at least secondary level of education is needed to accelerate the pace of economic growth. After secondary level of education, tertiary level of education has been used, it is also statically significant. It is worth noting here that although secondary level of education is too positive and statistically significant but the coefficient of tertiary level of education (0.06) is larger than the coefficient of secondary level of education (0.03). It indicates that tertiary level of education accelerates the pace of economic growth more than that of secondary education. Results further indicate that labour force and physical capital both contribute significantly to economic growth which is in accordance to growth theory. Some other control variables also have been used, which include industrial value added, inflation, globalisation and domestic savings. Under present analysis inflation and industrial value added and inflation are insignificant. Globalisation has positive sign and this variable is statistically significant, it means that over all globalisation is beneficial for economic growth. The results indicate that domestic savings also contribute significantly in economic growth; it is also as per expectation and theory.

After analysing the overall panel, for further insights the overall panel has been divided into developing[3] and developed economies. The results given in the above table are for developing economies. In order to get the comparable results, the specifications of the model used for developing economies are similar to the specifications used for overall panel. With some exceptions, the results are similar to overall panel up to large extent, like the coefficient of initial level of GDP growth validates the convergence hypothesis; social capital has positive and significant impact on economic growth, labour force contribute significantly to economic growth, globalisation and domestic savings also contribute significantly in economic growth. Human capital is significantly contributing

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[3]As per World Bank Classification High income and upper middle-income countries are considered as developed countries, they are 74 in number, lower middle income and lower income countries are considered as developing countries, these are 61 in number, overall there are 135 countries in the panel.

Table 3

Results of Fixed Effect Model with Robust Standard Errors.
Dependent Variable: Real GDP (Developing Economies)

	1	2	3	4	5	6	7	8	9
Initial level of GDP	-0.005*	-0.004*	-0.006**	-0.009**	-0.003	-0.007**	-0.005**	-0.002	-0.0065**
	(0.063)	(0.108)	(0.050)	(0.013)	(0.438)	(0.011)	(0.066)	(0.207)	(0.010)
Social Capital	0.519***	0.882***	1.205***	0.791***	0.968***	0.550**	0.510*	0.560***	0.531**
	(0.061)	(0.002)	(0.006)	(0.024)	(0.008)	(0.037)	(0.067)	(0.007)	(0.040)
Human Capital	0.273***					0.260***	0.274***	0.101***	0.277***
	(0.000)					(0.000)	(0.000)	(0.048)	(0.000)
Physical Capital	.0001	5.08e-06	-.0012	-.0003	-.0007	-.00004	.00009	.0005	.00004
	(0.824)	(0.994)	(0.479)	(0.766)	(0.584)	(0.932)	(0.867)	(0.244)	(0.929)
Labour	5.94**	5.844**	13.573*	10.02**	12.33**	6.172**	6.031**	3.100	5.760**
	(0.018)	(0.036)	(0.091)	(0.019)	(0.053)	(0.013)	(0.019)	(0.173)	(0.016)
No schooling		-0.028***							
		(0.000)							
Primary education			0.026***						
			(0.007)						
Secondary education				0.054***					
				(0.000)					
Tertiary education					0.115***				
					(0.000)				
Industry value added						.008			
						(0.253)			
inflation							0.00001***		
							(0.000)		
KOF index								0.023***	
								(0.000)	
savings									0.0038**
									(0.103)
cons	21.89	24.13	22.109	22.32	22.323	21.78	21.89	21.713	21.83
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R-Sq (within)	0.819	0.767	0.531	0.703	0.606	0.828	0.820	0.871	0.837

Note: in parenthesis () are probabilities, and ***, **, * represent 1, 5 and 10 percent level of significance.

to economic growth in all specifications. No schooling is negatively effecting economic growth. However, there are some differences in comparison to overall panel like: the gross physical capital formation is not significantly contributing to economic growth, which may be due to the reason that it is not used efficiently due to less skilled workers. Second difference is that the impact of primary education was insignificant now it is significant; it means that in developing economies, minimum level of education required for enhancing economic growth is less. The magnitude of coefficient increases as the level of education increases, the coefficient of primary education is 0.026 and it increased to 0.054 with secondary education level, and there is significant increase in the magnitude of the coefficient of tertiary education and it increases form 0.05 (coefficient of secondary education) to 0.115, which is more than double, it means that although the minimum education required to contribute significantly in economic growth is primary however tertiary education contribute much more in economic growth of developing economies. Interestingly inflation rate has positive and significant impact on economic growth, it may be due to the reason that some consistent rise in price level is needed to enhance the economic activities, as in developing economies there is much potential available for economic boost, so a rise in price level enhances economic growth, further more average inflation rate during this period was not very much high.

Table 4

Results of Fixed Effect Model with Robust Standard Errors.
Dependent Variable: Real GDP (Developed Economies)

	1	2	3	4	5	6	7	8	9
Initial level of GDP	-0.003 (0.270)	-0.003 (0.284)	-.0009** (0.058)	-0.004 (0.344)	-0.009 (0.039)	-0.0039 (0.213)	-0.003 (0.271)	-0.002 (0.168)	-0.002 (0.361)
Social Capital	0.424*** (0.001)	0.716*** (0.000)	0.736*** (0.000)	0.366*** (0.020)	0.794*** (0.000)	0.377*** (0.002)	0.425*** (0.001)	0.592*** (0.000)	0.422*** (0.001)
Human Capital	0.219*** (0.000)					0.231*** (0.000)	0.218*** (0.000)	0.114*** (0.000)	0.211*** (0.000)
Physical Capital	0.0002*** (0.032)	0.0002*** (0.001)	0.00004 (0.555)	0.0002** (0.027)	- 0.00001** (0.839)	0.0002** (0.024)	0.0002** (0.019)	0.0002*** (0.004)	0.0002** (0.022)
Labour	5.35** (0.023)	6.857*** (0.002)	15.31*** (0.000)	4.870** (0.058)	13.86*** (0.000)	3.974 (0.163)	5.29** (0.015)	3.245* (0.080)	5.365** (0.017)
No schooling		-0.026*** (0.000)							
Primary education			-0.012 (0.194)						
Secondary education				0.033*** (0.000)					
Tertiary education					0.051*** (0.000)				
Industry value added						0.0006 (0.894)			
inflation							-0.00001 (0.888)		
KOF Index								0.017*** (0.000)	
savings									0.0042 (0.328)
cons	23.83 (0.000)	25.73 (0.000)	25.43 (0.000)	24.96 (0.000)	24.68 (0.000)	23.75 (0.000)	23.83 (0.000)	23.52 (0.000)	23.81 (0.000)
R-sq (within)	0.764	0.585	0.415	0.611	0.582	0.774	0.764	0.847	0.77

Note: in parenthesis () are probabilities, and ***, **, * represent 1, 5 and 10 percent level of significance.

The results in above table are for the developed economies. The results indicate that the coefficient of initial level of GDP is negative however it is significant only in one specification; it may be an indication that convergence in developed economies takes more time as compared to developing economies. As the initial level of GDP was 20 years, it seems to be inadequate time for convergence in developed economies. Social capital has positive sign and it is statistically significant in all specifications. Human capital, physical capital and labour force, all have positive impact and variables are statistically significant, which is in accordance with the growth theory. No schooling has similar impact as in overall panel and in developing economies i.e. negative, however interestingly the sigh of the coefficient of primary education is negative but it insignificant, in case of developing economies primary education was contributing significantly. The coefficient of secondary education is positive and variable is statistically significant, it indicates that at least secondary level education is needed to contribute significantly in economic growth of developed economies. Tertiary level education also have positive and significant impact on economic growth, however the coefficient (0.051) of tertiary level of education is larger than the coefficient (0.033) of secondary level of education. It is also worth mentioning that the coefficients of primary, secondary and tertiary level of education (0.026, 0.054, and 0.11 respectively) are larger

in case of developing economies in comparison to developed economies (–0.012, 0.033, 0.051 respectively) which indicate that education level is more useful, similar is the case for social capital. Most of the control variables (inflation, industry value added and savings) are insignificant, globalisation has positive sign and it is statistically significant as well.

Table 5

Results of LSDV Model (Overall Panel) Dependent Variable: Social Capital

	1	2	3	4	5	6	7
Ethnic Diversity	-0.005***	-0.005***					
	(0.000)	(0.000)					
Linguistic Diversity			-1.917***	-1.939***			
			(0.000)	(0.000)			
Religious diversity					0.693***	0.698***	
					(0.000)	(0.000)	
LGDP	0.050***	0.046***	0.047***	0.044***	0.050***	0.046***	0.127***
	(0.000)	(0.008)	(0.000)	(0.011)	(0.000)	(0.008)	(0.000)
Income Inequality	-0.0053***	-0.005***	-0.005***	-0.005***	-0.005***	-0.005***	-0.007***
	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
No schooling	0.00006		0.00007		0.00006		
	(0.247)		(0.206)		(0.248)		
Secondary education		0.0002		0.0001		0.0002	0.001
		(0.850)		(0.905)		(0.850)	(0.236)
Inclusion of minorities							0.249***
							(0.009)
cons	-0.065	0.052	0.530	0.641	-0.898***	-0.786**	-2.657***
	(0.829)	(0.893)	(0.084)	(0.100)	(0.005)	(0.055)	(0.000)
R-Sq	0.60	0.60	0.61	0.60	0.60	0.60	0.71

Note: in parenthesis () are probabilities, and ***, ** represent 1 and 5 percent level of significance.

The above results are for overall panel. The dependent variable for this analysis is social capital measured by intergroup cohesion, now we are trying to explore the determinants of social capital. The estimations for this analysis have been done through Least Square Dummy Variable (LSDV) model. The results indicate that ethnic fractionalisation have negative impact on social capital. It may be due to the reason that people like to mix up and make relations to those who are like them, belong to their caste. With an increase in proportion of people belonging to different ethnic groups there may be more chances of ethnic conflicts and social capital may be damaged. Similarly linguistic fractionalisation also have negative impact on social capital, on similar grounds people may like to deal and mix up with people of similar background. If there is an increase in proportion of people with different linguistic backgrounds, it may lead to linguistic conflicts which may result in decrease in social capital. The coefficient of religious diversity has positive sign and variable is also statistically significant, it represents very interesting outcome. It shows that if there is an increase in proportion of population with various religious backgrounds it will enhance social capital. It may be due to the reason that people learn to live together in harmony and have respect for the religious thoughts of other people. The log of GDP was used as a proxy for income, it has positive sign and variable is also statistically significant. It means that an increase in income level enhances social capital, which may be due to the reason that high level of income provides more opportunities for social interactions which may be via membership of various organisation or involvement in various charitable activities. However social

capital in turn may also provide more chances of earning more income. Income inequality has negative impact on social capital, it may be due to the reason that income inequality leads to enhancing the gulf between have and have not and may create feelings of hatred to each other thereby reducing social capital. Literacy or illiteracy have no significant impact on social capital as the variable representing no schooling and secondary education level are statistically insignificant. Although education should have been significant determinant of social capital, however it exhibits surprising result. The variable inclusion of minorities has positive impact on social capital, which indicates that if minorities are given proper rights and they are included in different spheres of life it will help to increase the stock of social capital.

Table 6

Results of LSDV Model (Developing Economies)
Dependent Variable: Social Capital

	1	2	3	4	5	6	7
Ethnic Diversity	-0.025***	-0.011***					
	(0.000)	(0.000)					
Linguistic Diversity			-3.974***	-1.746***			
			(0.000)	(0.000)			
Religious Diversity					1.350***	0.626***	
					(0.000)	(0.000)	
LGDP	0.142***	0.045*	0.145***	0.046*	0.142***	0.045*	0.115**
	(0.000)	(0.105)	(0.000)	(0.101)	(0.000)	(0.106)	(0.020)
Income Inequality	-0.003***	-0.003*	-0.003*	-0.003	-0.003**	-0.003*	-0.004
	(0.054)	(0.096)	(0.078)	(0.138)	(0.055)	(0.097)	(0.209)
No schooling	0.005***		0.005***		0.005***		
	(0.002)		(0.000)		(0.002)		
Secondary education		0.0007		-0.0006		0.0007	0.004
		(0.820)		(0.837)		(0.820)	(0.480)
Inclusion of minorities							0.082
							(0.696)
cons	-2.158***	-0.118	-0.922	0.414	-3.604***	-0.789	-2.32**
	(0.006)	(0.849)	(0.139)	(0.66)	(0.000)	(0.228)	(0.038)
R-sq.	0.60	0.55	0.62	0.55	0.60	0.55	.68

Note: in parenthesis () are probabilities, and ***, **, * represent 1, 5 and 10 percent level of significance.

The above results are for developing economies. The results are almost similar as that of overall panel. Ethnic and linguistic diversity have negative and statistically significant impact on social capital. Religious diversity has positive impact on social capital, income level has positive relation with social capital, income inequality has negative relation, secondary level of education has no significant impact, no schooling has positive and significant impact on social capital, it is quite interesting, it indicates that illiterate people have greater tendency for having more social relations. It may be due to the reason that illiterate people needs help from each other in different spheres of life, so it seems it affects social capital by compulsion. Inclusion of minorities has no significant impact on social capital in case of developing economies.

Table 7

LSDV Model (Developed Economies)
Dependent Variable: Social Capital

	1	2	3	4	5	6	7
Ethnic Diversity	0.317	0.339					
	(0.82)	(0.481)					
Linguistic Diversity			-0.133	-0.142			
			(0.414)	(0.481)			
Religious Diversity					0.396	0.424	
					(0.414)	(0.481)	
LGDP	0.048***	0.047**	0.048***	0.047**	0.048***	0.047**	0.126***
	(0.004)	(0.043)	(0.004)	(0.043)	(0.004)	(0.043)	(0.000)
Income Inequality	-0.007***	-0.007***	-0.007***	-0.007***	-0.007***	-0.007***	-0.009***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
No schooling	7.61e-06		7.61e-06		7.61e-06		
	(0.954)		(0.954)		(0.954)		
Secondary education		0.0001		0.0001		0.0001	0.001
		(0.917)		(0.917)		(0.917)	(0.257)
Inclusion of minorities							0.257**
							(0.015)
cons	-0.577	-0.541	-0.410	-0.363	-0.473	-0.430	-2.572***
	(0.174)	(0.289)	(0.349)	(0.556)	(0.262)	(0.448)	(0.002)
R-Sq	0.53	0.53	0.53	0.53	0.53	0.53	0.66

Note: in parenthesis () are probabilities, and ***, **, * represent 1, 5 and 10 percent level of significance.

The above results are for developed economies which indicate that there are some differences as compared to overall panel and developing economies. Now ethnic diversity has positive relation with social capital which was negative in overall panel and in developing economies. It means that as there is an increase in proportion of population with different ethnic backgrounds it leads to increase in stock of social capital. It may be due to the reason that at higher level of development attitudes of the people also matured and they learn to live together in harmony irrespective of their ethnic backgrounds, however this variable is statistically insignificant. Linguistic diversity has negative sign but the variable is statistically insignificant which indicates that linguistic diversity has no negative impact on social capital. It may be due to the reason that in developed economies the institutions are well established and they can manage linguistic fractionalisation. Religious diversity has positive sign but now the variable is statistically insignificant. Income level has positive and significant relation with social capital, income inequality has negative relation and these relations are robust in different specifications. Literacy or illiteracy have no significant relation with social capital. Inclusion of minorities has significant and positive relation with social capital.

VI. CONCLUSION

Social capital refers to the stock of social relations, based on norms and networks of cooperation and trust. The conversation about whether social capital has an implication on the growth of a country, has received increasing attention by economists in recent years. Research is now diverging from the belief that growth can only be explained by the traditional inputs such as physical capital, labour and natural resources.

Keeping in view this fact, this study has been an effort to analyse the relationship between social capital and economic performance, and it has also explored the determinants of social capital. The analysis has been done on various levels i.e. firstly a

large number of countries (both developing and developed) are put together in to a panel and then analysis has been done separately for developing and developed economies. Five-year average panel data has been used for the years 1990, 1995, 2000, 2005 and 2010. Various specifications of the model have been used by applying fixed effect model with robust standard errors. The results reveal that social capital has positive impact on economic growth in all specifications and in all classifications (overall, developing and developed). Twenty years initial GDP growth has been used to check for convergence. It has been found that the convergences is robust in overall panel and in case of developing economies, however in case of developed economies the results of convergence are not robust. It indicates that developing economies converge more quickly as compared to developed economies. As for as determinants of social capital are concerned, it has been found, ethnic, linguistic and religious fractionalisation, income inequality, education, income and inclusion of minorities are significant determinants of social capital. However ethnic and linguistic fractionalisation has negative impact on social capital in overall panel and in developing economies, however in case of developed economies the effect of ethnic fractionalisation is positive. Interestingly religious fractionalisation has positive impact on social capital in overall panel, as well as in developing and developed economies, which indicates that religious fractionalisation has no harm on social capital. Likewise, income inequality has negative effect throughout and income level measured by GDP has positive impact on social capital. Keeping in view the results of the study we may suggest that social capital should not be overlook by policy-makers while framing policies and due consideration may be given to social capital enhancing elements. These elements also have been explored by this study like there is need to manage ethnic and linguistic diversity in developing economies, and income inequality reduction measures are needed in both developing and developed economies in order to boost social capital.

APPENDIX

List of Countries included in the Study

Afghanistan	El Salvador	Luxembourg	Solomon Islands
Algeria	Ethiopia	Madagascar	Somalia
Angola	Fiji	Malawi	South Africa
Argentina	Finland	Malaysia	Spain
Australia	France	Mali	Sri Lanka
Austria	Gabon	Malta	St. Lucia
Bahamas	Gambia	Mauritania	St. Vincent and the Grenadines
Bahrain	Germany	Mauritius	Sudan
Bangladesh	Ghana	Mexico	Suriname
Barbados	Greece	Morocco	Swaziland
Belgium	Grenada	Mozambique	Sweden
Benin	Guatemala	Myanmar	Switzerland
Bolivia	Guinea	Nepal	Syrian Arab Republic
Botswana	Guinea-Bissau	Netherlands	Taiwan, China
Brazil	Guyana	New Zealand	Tanzania
Burundi	Haiti	Nicaragua	Thailand
Cameroon	Honduras	Niger	Togo
Canada	Hong Kong, China	Nigeria	Tonga
Cape Verde	Hungary	Norway	Trinidad and Tobago
Central African Republic	Iceland	Oman	Tunisia
Chad	India	Pakistan	Turkey
Chile	Indonesia	Panama	Uganda
China	Iran, Islamic Rep.	Papua New Guinea	United Arab Emirates
Colombia	Iraq	Paraguay	United Kingdom
Comoros	Ireland	Peru	United States of America
Congo, Dem. Rep.	Israel	Philippines	Uruguay
Congo, Rep.	Italy	Poland	Vanuatu
Costa Rica	Jamaica	Portugal	Venezuela, RB
Cote d'Ivoire	Japan	Rwanda	Yemen, Rep.
Cyprus	Jordan	Samoa	Zambia
Denmark	Kenya	Saudi Arabia	Zimbabwe
Dominica	Korea, Rep.	Senegal	
Dominican Republic	Kuwait	Seychelles	
Ecuador	Lesotho	Sierra Leone	
Egypt, Arab Rep.	Liberia	Singapore	

REFERENCES

Abreu, D. (1988) On the Theory of Infinitely Repeated Games with Discounting. *Econometrica: Journal of the Econometric Society* 383–396.

Aghion, P. and P. Howitt (1990) *A Model of Growth Through Creative Destruction* (No. w3223). National Bureau of Economic Research.

Akçomak, S. and B. Ter Weel (2006) Social Capital, Innovation and Growth: Evidence from Europe.

Alesina, A. and E. La Ferrara (2000) Participation in Heterogeneous Communities. *The Quarterly Journal of Economics* 115:3, 847–904.

Alesina, A., A. Devleeschauwer, W. Easterly, S. Kurlat and R. Wacziarg (2003) Fractionalisation. *Journal of Economic Growth* 8:2, 155–194.

Babb, P. (2005) Measurement of Social Capital in the UK. *Statistics, Knowledge and Policy* 532.

Barro, R. J. and J. W. Lee (2013) A New Data Set of Educational Attainment in the World, 1950–2010. *Journal of Development Economics* 104, 184–198.

Beugelsdijk, S. and T. Van Schaik (2005) Differences in Social Capital between 54 Western European Regions. *Regional Studies* 39:8, 1053–1064.

Bourdieu, P. (1986) The Forms of Capital Handbook of Theory and Research for the Sociology of Education (pp. 241–258). *R.(1974). The Power Broker: Robert Moses and the Fall of New York*.

Bowles, S. and H. Gintis (2004) The Evolution of Strong Reciprocity: Cooperation in Heterogeneous Populations. *Theoretical Population Biology* 65:1, 17–28.

Brehm, J. and W. Rahn (1997) Individual-level Evidence for the Causes and Consequences of Social Capital. *American Journal of Political Science* 999–1023.

Brown, G. W. and T. Harris (1998) *Social Origins of Depression*. London: Tavisock.

Coleman, J. S. (1988) Social Capital in the Creation of Human Capital. *American Journal of Sociology* 94, S95-S120.

Costa, D. L. and M. E. Kahn (2001) *Understanding the Decline in Social Capital, 1952–1998* (No. w8295). National Bureau of Economic Research.

Cowan, R. and N. Jonard (2004) Network Structure and the Diffusion of Knowledge. *Journal of Economic Dynamics and Control* 28:8, 1557–1575.

Dasgupta, P. and I. Serageldin (eds.) (2001) *Social Capital: A Multifaceted Perspective*. World Bank Publications.

DiMaggio, P. and J. Mohr (1985) Cultural Capital, Educational Attainment, and Marital Selection. *American Journal of Sociology* 90:6, 1231–1261.

DiPasquale, D. and E. L. Glaeser (1999) Incentives and Social Capital: Are Homeowners Better Citizens? *Journal of Urban Economics* 45:2, 354–384.

Dreher, A. (2006) Does Globalisation Affect Growth? Evidence from a New Index of Globalisation. *Applied Economics* 38:10, 1091–1110.

Durlauf, S. N. (2002) On the Empirics of Social Capital. *The Economic Journal* 112(483).

Flap, H. D. and N. D. DeGraaf (1986) Social Capital and Attained Occupational-Status. *Netherlands Journal of Social Sciences* 22:2, 145–161.

Foa, R. and J. Tanner (2012) Methodology of the Indices of Social Development (No. 2012–04).

Fratoe, F. A. (1988) Social Capital of Black Business Owners. *The Review of Black Political Economy* 16:4, 33–50.

Fukuyama, F. (1995) *Trust: The Social Virtues and the Creation of Prosperity* (No. D10 301 c. 1/c. 2). Free Press Paperbacks.

Glaeser E. (2001) The Formation of Social Capital. *Isuma* **2**, 34–40.

Glaeser, E. L., D. Laibson, and B. Sacerdote (2002) An Economic Approach to Social Capital. *The Economic Journal* 112(483).

Granato, J., R. Inglehart, and D. Leblang (1996) The Effect of Cultural Values on Economic Development: Theory, Hypotheses, and Some Empirical Tests. *American Journal of Political Science* 607–631.

Granovetter, M. (1985) Economic Action and Social Structure: The Problem of Embeddedness. *American Journal of Sociology* 91:3, 481–510.

Greene, W. H. (2012) *Econometric Analysis*. Pearson Education India.

Grossman, G. M. and E. Helpman (1991) *Innovation and Growth in the Global Economy*. Cambridge, MA: MIT Press.

Guiso, L., P. Sapienza, and L. Zingales (2004) The Role of Social Capital in Financial Development. *The American Economic Review* 94:3, 526–556.

Hall, R. E. and C. I. Jones (1999) Why do Some Countries Produce so Much More Output per Worker than Others? *The Quarterly Journal of Economics* 114:1, 83–116.

Helliwell, J. F. (1996) *Do Borders Matter for Social Capital? Economic Growth and Civic Culture in US States and Canadian Provinces* (No. w5863). National Bureau of Economic Research.

Helliwell, J. F. (2007) Well-being and Social Capital: Does Suicide Pose a Puzzle? *Social Indicators Research* 81:3, 455–496.

Helliwell, J. F. and R. D. Putnam (1995) Economic Growth and Social Capital in Italy. *Eastern Economic Journal* 21:3, 295–307.

Jacobs, J. (1961) The Life and Death of Great American Cities. Random House, New York.

Jones, C. I. (1995) R and D-based Models of Economic Growth. *Journal of Political Economy* 103:4, 759–784.

Jones, C. I. (2005) The Shape of Production Functions and the Direction of Technical Change. *The Quarterly Journal of Economics* 120:2, 517–549.

Kawachi, I., D. Kim, A. Coutts, and S. V. Subramanian (2004) Commentary: Reconciling the Three Accounts of Social Capital. *International Journal of Epidemiology* 33:4, 682–690.

Knack, S. (2001) Trust, Associational Life, and Economic Performance.

Knack, S. and P. Keefer (1997) Does Social Capital have an Economic Payoff? A Cross-country Investigation. *The Quarterly Journal of Economics* 112:4, 1251–1288.

Krishna, A. and E. Shrader (1999) Social Capital Assessment Tool. In *Conference on Social Capital and Poverty Reduction* (Vol. 2224).

Loury, G. (1977) A Dynamic Theory of Racial Income Differences. *Women, Minorities, and Employment Discrimination* 153, 86–153.

Lundvall, B. A. (1992) National Innovation System: Towards a Theory of Innovation and Interactive Learning. London.

Lundvall, B. Å. (1992) User-producer Relationships, National Systems of Innovation and Internationalisation. In *National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning* (pp. 45–67). Frances Pinter Publishers Ltd.

Nahapiet, J. and S. Ghoshal (1997) Social Capital, Intellectual Capital and the Creation of Value in Firms. Academy of Management. In *Academy of Management Proceedings* 1997:1, 35–39.

Narayan, D. and L. Pritchett (1999) Cents and Sociability: Household Income and Social Capital in Rural Tanzania. *Economic Development and Cultural Change* 47:4, 871–897.

Neira, I., E. Vázquez, and M. Portela (2009) An Empirical Analysis of Social Capital and Economic Growth in Europe (1980–2000). *Social Indicators Research* 92:1, 111–129.

Ogilvie, S. (2005) The Use and Abuse of Trust: Social Capital and its Deployment by Early Modern Guilds. *Jahrbuch für Wirtschaftsgeschichte/Economic History Yearbook* 46:1, 15–52.

Porta, R. L., F. Lopez-De-Silane, A. Shleifer, and R. W. Vishny (1996) *Trust in Large Organisations* (No. w5864). National Bureau of Economic Research.

Prades, A. (2002) Sources of US Economic Growth in a World of Ideas. *The American Economic Review* 92:1, 220–239.

Putnam, R. D. (1995) Tuning in, Tuning Out: The Strange Disappearance of Social Capital in America. *PS-Washington* 28, 664–664.

Putnam, R. D. (2000) Bowling Alone: America's Declining Social Capital. In *Culture and Politics* (pp. 223–234). Palgrave Macmillan US.

Putnam, R. D. (2001) *Bowling Alone: The Collapse and Revival of American Community*. Simon and Schuster.

Robison, L. J. (1996) *In Search of Social Capital in Economics* (No. 11589). Michigan State University, Department of Agricultural, Food, and Resource Economics.

Robison, L. J., A. A. Schmid, and M. E. Siles (2002) Is Social Capital Really Capital? *Review of Social Economy* 60:1, 1–21.

Romer, P. M. (1986) Increasing Returns and Long-Run Growth. *Journal of Political Economy* 94:5, 1002–1037.

Romer, P. M. (1990) Endogenous Technological Change. *Journal of Political Economy* 98:(5, Part 2), S71–S102.

Rosenfeld, R., E. P. Baumer, and S. F. Messner (2001) Social Capital and Homicide. *Social Forces* 80:1, 283–310.

Rothstein, B. and D. Stolle (2001) Social Capital and Street-Level Bureaucracy: An Institutional Theory of Generalised Trust. In *ESF Conference Social Capital: Interdisciplinary Perspectives.* Exeter, UK September15–20.

Solow, R. M. (1956) A Contribution to the Theory of Economic Growth. *The Quarterly Journal of Economics* 70:1, 65–94.

Swan, T. W. (1956) Economic Growth and Capital Accumulation. *Economic Record* 32:2, 334–361.

Temple, J. (1999) The New Growth Evidence. *Journal of Economic Literature* 37:1, 112–156.

Verbeek M. (2012) *A Guide to Modern Econometrics.* (4th edition). John Wiley and Sons.

Whitely, P. (2000) Economic Growth and Social Capital. *Political Studies* 48, 441–466.

Woolcock, M. (1998) Social Capital and Economic Development: Toward a Theoretical Synthesis and Policy Framework. *Theory and Society* 27:2, 151–208.

Wooldridge, J. M. (2001) *Econometric Analysis of Cross Section and Panel Data.* MIT Press.

World Bank (1998) The Initiative on Defining, Monitoring and Measuring Social Capital. Overview and Programme Description. Washington, DC. (Social Capital Initiative Wording Paper No. 1).