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International Conference on Islamic Business 2016

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Islamabad, Pakistan

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Islamic Economics, Finance, Entrepreneurial Development & Public Policy for the Ummah's Socio-economic Wellbeing

Under the above theme, the speakers / paper presenters will discuss the vision of Islamic economics, business and finance, public policy for entrepreneurial development and to enhance social inclusion and good governance, meaning how to develop Islamic countries' economies giving fair opportunity to all segments of the society and provide them not only suitable jobs / employment but also dignity and respect in the society and falah in this world and the Hereafter. As it is possible only through application of the principles of the Shariah, in letter and spirit, in all socio-economic disciplines and business and finance affairs, Shariah compliance of all institutions, products and activities would also be covered in the Theme of the ICIB-2016 event.

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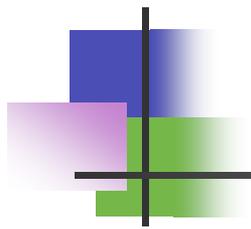
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Application of Divine Capital Model [2012] to Workers' Efficiency and Inclusive Growth

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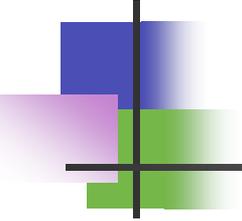
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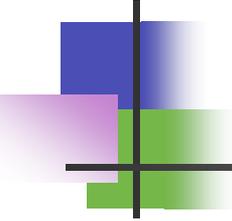
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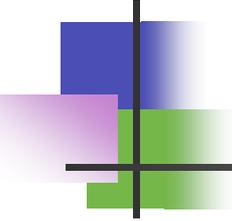
Overview

- Introduction
- Review of Literature
- Methodology
- Empirical Findings
- Conclusion



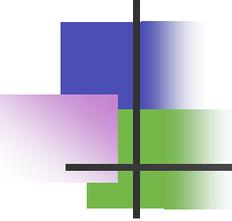
Introduction

- Productivity growth literature, gradually switched from resource base (physical capital) to knowledge base (human capital)
 - Workers' efficiency and its detriments is the one appealing topic in the economic literature.
- Most of the existing studies on productivity analysis blend workers' efficiency with workers human capital attributes (i.e. education, skill, experience etc) *Machin and Stewart, 1990; McNabb and Whitfield, 1998; Oulton, 1998; Griffiths and Simpson (2004) among others.*
 - Not recognized the role of Divine Attributes (i.e. ethics, spirituality, and religiosity) in workers' efficiency and hence productivity analysis
- Recently some studies provided evidences that along with conventional factors workers' divine attributes can also affect workers' efficiency (*Spence 1999, Spence and Lozano 2000, Hamdani 2002, Gibb 2005, Haq et al. 2014*)



Introduction

- In this perspective of contradiction, the present study is an attempt to analyze empirically that how workers' divine attributes (ethics, religiosity, and reinforcement factors) affect firms' productivity through efficiency, honesty, loyalty, and justice
- We test empirically the 2012 Divine Economics model which hypothesized that “*the objective of efficiency of faith-based workers may be achieved with increasing divine attributes among the workers*”
- *Attributes originating from ethics, spirituality, and religiosity along with related physical infrastructure, all called Divine Capital, makes the workers systematically different from their counterparts (Hamdani, 2012)*
- This claim is based on the rational choice of utility maximizing workers who believe in a life that has two phases ---- Worldly Life and Afterlife
 - They maximize total monetary and non-monetary returns from supply of labor under divine rules for workplace



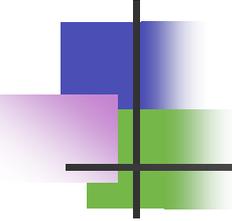
Introduction

- The hypothesis is empirically tested SMIS (handicrafts industries) of AJ&K

Why SMIs?

Geographical structure (i.e. hilly, and mountainous)–SMIs (handicrafts industries) – Key sector of AJ&K economy

- *Play vital role in the economic growth and development of AJ&K (Hussain et al. 2010)*
- *Second largest source of employment in AJ&K (Hussain et al. 2009)*
- *No comprehensive analysis available about handicrafts industry performance*



Methodology

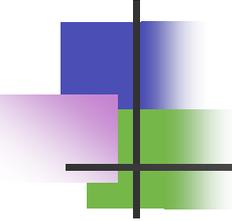
Theoretical Framework

- The present study is an empirical extension of the Divine Capital Model (2012) which is a part of newly emerging sub-discipline called Divine Economics.

The Divine Capital Model (2012) hypothesizes that Total Factor Productivity (TFP) is also affected by the Divine Attributes (i.e. ethics, spirituality, and religiosity) of workforce

- Divine capital consists of four components;
 - Religious Characteristics**
 - Spiritual Characteristics**
 - Ethical Characteristics**
 - Reinforcement Physical Capital**

The key objective is to analyze the impact of Divine Characteristics on workers efficiency and hence firms' output performance



Methodology

Consider an aggregate production function

$$Y = F(AL, K) \quad (1)$$

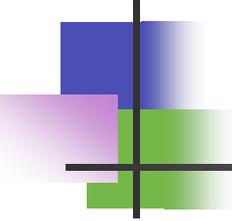
Where Y= Output, L = Labor, K= Capital, A = Effectiveness /efficiency(education, experience, skill) of labor (TFP)

The two major growth models i.e. *exogenous growth model of Solow and Swan (1956), and endogenous growth models, which pioneered by Romer 1986, and Lucas 1988*, defined differently the determinant of TFP.

The neoclassical growth model of *Solow and Swan (1956)* argued that TFP is an exogenous and time driven phenomenon; hence, the aggregate production function is presented as follows:

$$Y = A(t) F(K(t), L(t)) \quad (2)$$

Romer (1986) and Lucas (1988) argued that instead of time 't' the level of TFP depends on the stock of human capital. Therefore, in this framework the TFP and hence, the aggregate production function is presented as:



Methodology

$$Y = A(h).F(K,L) \quad \text{where 'h' is the stock of human capital} \quad (3)$$

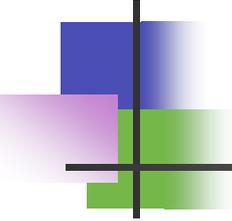
- Similarly, the second generation of endogenous growth models (*Romer 1990; Grossman and Helpman 1991; and Aghion and Howitt 1992*) emphasize that besides the stock of human capital 'h', TFP is the function of *Research and Development (R&D) expenditure*, hence the production function is given as:

$$Y = A(h,r) F (K,L) \quad \text{where 'r' is domestic R&D capital stock} \quad (4)$$

- Further, Grossman and Helpman (1994), and Coe and Helpman (1995) incorporate trade openness into endogenous economic growth framework and claimed that knowledge/technology that diffuse through imports lead to increase TFP

$$Y = A(h,r,m) F (K,L) \quad \text{where 'm' is country's imports} \quad (5)$$

- EA Effectiveness (education, experience, skill, and diverse attributes) of labor



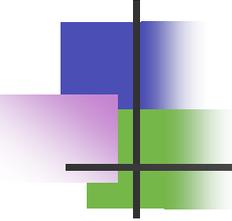
Methodology

- In this study, our hypothesis is that TFP level is also affected by the divine attributes of workers.
- The basic idea is that divine attributes prevail among workers in different forms and levels that make them distinct from others.
- The attributes originating from divine make the workers systematically different from their counterparts, hence it is quite likely to affect systematically worker's efficiency and therefore productivity growth.
- Consequently, in this essence the aggregate production function would form as:

$$Y = A(h, r, m, d) F(K, L) \text{ where } d \text{ is the divine attributes of workers} \quad (6)$$

- Since Divine Attributes are human phenomena, therefore we postulate that they enter in the model as an interactive term with human capital

$$TFP = (D.r.m) \text{ where } D = h*d \quad (7)$$



Methodology

Assuming that TFP at any time takes the following Cobb-Douglas specification

$$TFP_t = D_t^\alpha \cdot r_t^\beta \cdot m_t^\gamma \quad (8)$$

Write equation (8) in the following log linear model

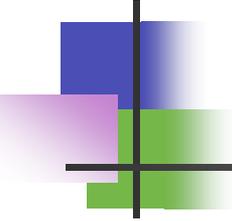
$$\text{Log } TFP_t = \alpha \text{Log} D_t + \beta \text{Log} r_t + \gamma \text{Log} m_t \quad (9)$$

Differentiating equation (9) with respect to time, t , and denoting $\frac{d \log TFP_t}{dt}$ by $\frac{\dot{P}}{P}$, we will get the growth of TFP:

$$\frac{\dot{P}}{P} = \alpha \frac{\dot{D}}{D} + \beta \frac{\dot{r}}{r} + \gamma \frac{\dot{m}}{m} \quad (10)$$

In equation (10), α is the elasticity of output with respect to divine attributes, *i.e.*

$$\alpha = \frac{\partial \log Y}{\partial \log D} = \frac{\partial Y}{\partial D} \cdot \frac{D}{Y} \quad (11)$$



Methodology

Hence, equation (9) can be written as;

$$\frac{\dot{P}}{P} = \left(\frac{\partial Y}{\partial D} \cdot \frac{D}{Y} \right) \frac{\dot{D}}{D} + \beta \frac{\dot{r}}{r} + \gamma \frac{\dot{m}}{m} \quad (12)$$

- Equation (12) yields a measure of the elasticity of output with respect to divine attributes of workers
- The equation hypothesized that along with conventional factors, growth of TFP also explained by divine attributes of workers

Empirical Model:

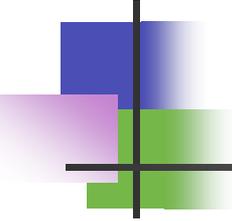
Based on the theoretical model the following empirical model is estimated

$$P_i = \beta_0 + \beta_1 D_i + \beta_2 X_i + \varepsilon_i \quad (13)$$

P_i = **Dependent variable:** Handicrafts firm Output Performance, which is measured, in monetary value of sale of i th firm per annum.

D_i = **Worker divine attributes index:** The workers divine attributes ethics, religiosity, and reinforcement factors.

X_i = is the vector of all control variables: This includes *total number of workers, physical capital input, working hours of workers, worker's education, experience of workers and market related facilities.*



Methodology

STUDY AREA AND SAMPLE SIZE

**Handicrafts Industries: Wood Carving and Kashmiri
Embroidery
(Namda, Gubba, Kashmiri Shawls)**

SMPLE SIZE

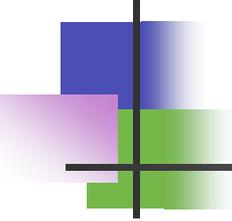
Sample size consists on eighty three firms

SAMPLE TECHNIQUE

Snow ball sampling technique used for data collection

ESTIMATION TECHNIQUE

This study used (OLS) for estimation



Methodology

DATA SOURCE

The questionnaire used in this study is divided in to following five Sections.

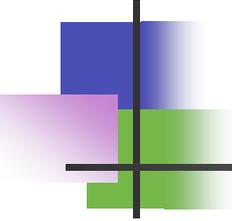
Section A: General Information: *this section includes questions about the biographical details of respondent and firm.*

Section B: Divine Attributes of Workers: *this section consists of the index of ethical values , religiosity index and reinforcement factors. These indices developed manually for this study.*

Section C: Firm Physical Capital: *this section consists of information about capital, machinery, equipment, number of labor and building of firm.*

Section D: Firm Output: *this section consists of three questions related to the annual turnover and output of the firm.*

Section E: Market Related Facilities: *this section consists of statements related to raw material provision and prices, loan, infrastructure facilities, skilled labors, foreign products and marketing skills.*



Methodology

Firms' Productivity:

Firm's productivity, measured by firm's annual sale of products, is our dependent variable

Workers' Divine Attributes:

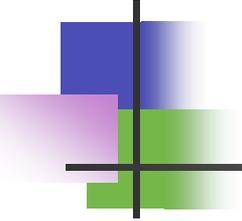
The main variable of our concern is the workers divine attributes that comprises in three individual attributes i.e. **ethical, religious and reinforcement factors**

i. Workers' Ethical Attributes:

Workers' ethical attributes have captured with an index.

The developed index captures **six ethical characteristics** of workers that are **responsibility, justice, sacrifice, generosity, honesty, and patience.**

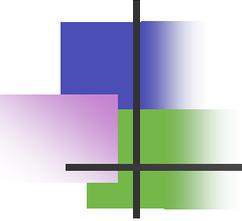
These values are measured on a scale from one to five (one stand for the lowest and five stands for the highest values of the workers ethical attributes)



Methodology

ii. Workers Religious Attributes

- The religiosity of firm's workers have been captured with manually constructed an index.
- The index of workers' religiosity comprises of **three** characteristics of workers that are **daily prayers, daily recitation of holy Quran, and prayers during work**
- These values are measured on a scale from one to five (one stand for the lowest and five stands for the highest)
- The firm's religious practices constructed by summing the index values of individual's worker



Methodology

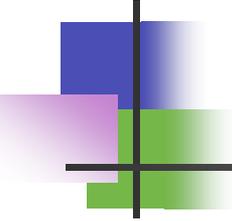
iii. Workers Reinforcement Factors

- The reinforcement factors captured with manually constructed index
- The index of reinforcement factors comprises of **four characteristics** i.e. changes in ethical values (build trust, honesty, and promise keeping by ethical stories /sayings), religious freedom, usage of inducements and give orders in civilized and straightforward language
- These values are measured on a scale from one to four (one stand for the lowest and four stands for the highest)
- The firm's reinforcement factors constructed by summing the index values of individual's worker

Empirical Findings

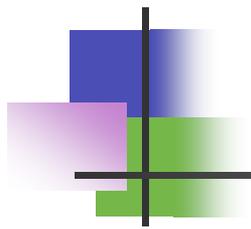
Dependent Variable: Sale of Firm Per Annum

Variables	Model_1	Model_2	Model_3	Model_4	Model_5
Index of worker ethics	0.024** (0.03)	-----	----	-----	0.022** (0.03)
Index of worker religiously	0.002 (0.54)	-----	0.014** (0.00)	-----	-----
Index of reinforcement factor	0.009 (0.15)	-----	-----	0.007 (0.238)	-----
Interactive term of religiously* ethics* reinforcement factors	-----	0.192 (0.06)	-----	-----	-----
Number of workers in firm	0.257*** (0.04)	0.215** * (0.00)	0.179** (0.02)	0.204** (0.01)	0.220*** (0.00)
Workers working hours	0.097** (0.01)	0.091** (0.02)	0.099** (0.01)	0.092** (0.02)	0.096** (0.01)
Physical capital of firm	-0.438*** (0.00)	0.451*** (0.00)	0.446** * (0.00)	0.440*** (0.02)	0.438*** (0.00)
Index of market related facilities	0.019** (0.03)	0.020** (0.02)	0.016** (0.06)	0.019** (0.03)	0.017** (0.05)
Education	0.019 (0.40)	0.015 (0.52)	0.010 (0.65)	0.011 (0.59)	0.021 (0.33)
Experience	0.039** (0.03)	0.031* (0.07)	0.034** (0.03)	0.029* (0.07)	0.030* (0.06)
Constant	1.757 (0.17)	3.013*** (0.00)	4.561*** (0.00)	3.031*** (0.00)	1.920*** (0.00)
Number of observations	83	83	83	83	83
F-Statistics	21.88* (0.00)	19.50*** (0.00)	21.96*** (0.00)	19.98*** (0.00)	21.29*** (0.00)
R-Squared	0.64	0.64	0.67	0.65	0.66
Adj R-Squared	0.61	0.61	0.64	0.61	0.63



Conclusion

- ✦ Divine Attributes of workers have positive and significant influence on firm's output performance
- ✦ Our findings support the claim that attributes originating ethics, religiosity, and reinforcement factors along with other physical infrastructure make the workers systematically different from their counterparts
- ✦ The one noteworthy result is the core determinants of firm output i.e. physical capital, number of workers, worker's experience enter in all models significantly with expected positive signs.
- ✦ Overall impression draw from these findings along with other factors divine attributes of workers increase firm's output through enhancing worker's efficiency



THANK YOU

for your Patience