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DETERMINANTS OF MICROFINANCE PROFITABILITY; EVIDENCE FROM LATIN AMERICA

Abstract

This study attempts to determine the determinants of the profitability of microfinance institutions (MFIs) operating in the Latin American region using data from the period 2005-2018. We used numerous variables as determinants of the profitability of MFIs. We used ordinary least squares (OLS) and the most sophisticated methodology for analysing dynamic panel data, generalized method of moments (GMM), in this study. The factors that were considered very significant in the determination of profitability of MFIs were Average loan balance (ALB), Number of active borrowers (NOAB), Borrowers per staff member (BPSM), AGE, Equity to Assets (ETA), and COUNT, all of which increase the profitability of MFIs. Portfolio quality (P30), number of offices (OFF), SIZE, and regulation status (RG) harm profitability (ROA) and hence decrease the profitability of MFIs. However, cost per borrower (CPB), number of diamonds (DM), and gross domestic product (GDP) had an nonsignificant effect on profitability (ROA). These results suggest that if MFIs want to increase their profitability, they have to increase their borrowers while simultaneously decreasing the number of

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offices. The findings from this study will help us reach a deep understanding for verbalising future policy concerning the development of MFIs.

JEL CLASSIFICATION: G21; G23; D0; N16; N26

KEYWORDS: OUTREACH; PROFITABILITY; LATIN AMERICAN COUNTRIES; GMM

1. Introduction

Development is crucial in any society. Adopting a bottom-up development approach is strategic, which gives birth to a consistent change in society. Nobel laureate Robert E. Lucas in his 1990 article explains why there is no flow of capital from developed to global south countries. He based his arguments on the concept of calculation, which shows that the marginal product of capital was 58 times higher in India than in the United States at the time of his research. Two concepts emerge with relevance when applying basic economic theory. The first concept is the Law of diminishing returns, founded by early economic scholars such as Smith and Ricardo. They implied that the marginal product of capital decreases as capital stock increases. The second concept is that of economic rationality, which suggests that investments and capital flows seek the allocation of capital that produces the highest return. There is evident inconsistency in comparing the two theories and the findings of Lucas in his article 1990.

Following the search for higher returns, capital is expected to have an unprecedented flow rate to developing countries from the Western world to search for high returns. This will lead to the receiving country getting more vital economic development, although this has not been the case in recent development. Loans tend to have short maturity periods in more inferior parts, as administered by local loan sharks, who provide these loans at increased interest rates. According to Grameen, MFIs have seen the most success in their projects aimed at tackling capital intensity in developing countries, as seen in the case of the Grameen Bank in Bangladesh, where its clientele has grown to more than 7 million, thereby creating credit access to a larger population.

MFIs have been proven to be an essential instrument over the last several decades for encouraging growth and sustainable progress (Yunus, 1998), as they provide small-sized, generally uncollateralized loans to the poor using group lending methodology for the generation of their regular source of income. Microfinance has been placed as an essential segment of the financial sector, particularly in developing countries. In international finance, microfinance is recognized because of its bottom-up approach. Microfinance is seen as a practical instrument to achieve the holy trinity of outreach, impact, and sustainability (Harper 2002).

Microfinance has been regarded as an important tool for economic development, particularly in developing countries (Nwakanma, Nnamdi, and Omojefe, 2014; Carter, 2013; McKinnon, 2010; Shaw, 1973). Later, Ledgerwood (1999) also noticed that microfinance could be used as an economic development tool aimed at reducing poverty. Many MFIs primarily depend on donations or subsidies for reducing poverty by bringing fundamental changes in socioeconomic structure that are counted as a primary objective for the existence of MFIs (Morduch, 2000). According to the World Bank report from 2000, the highly significant purpose of MFIs is poverty alleviation and "bottom-up" socioeconomic growth. Providing collateral-free microfinancing to low-income clients is risky, as they earn low payoff from their investments, and costly, as reaching and serving such clients include high costs of completing transactions and conveying information (Pollinger et al., 2007). Nevertheless, to make MFIs capable of providing more comprehensive financial products with sufficient ability to turn down reliance on donations and subsidies, obtaining profitability is needed in the long run (Weiss and Montgomery, 2007).

Conning (1999) states that profitability is a crucial element for providing services to the poorest of the poor. With shrinkage in donations and subsidies in recent years, profitability has become vital for MFIs, and the recent literature, such as Fries et al. (2002), has highlighted the significance of greater profitability in MFIs, noting that, to perform as a reliable tool for diminishing poverty and increasing development, the profitability of MFIs is of vital significance. Therefore, MFIs are endeavoring to obtain self-sustainability to remove their traditional status of donation- and subsidy-reliant institutions by converting to autonomous institutions rather than depending on aid and grants. Famous examples of such institutions include BancoSol and Unit Desa from Bolivia and Indonesia, respectively, which

transformed from a societal orientation to a profit orientation, as reported by Bhatt and Tang (2001).

Rhyne (1998) argues that profitability is not an ultimate goal but a way to obtain the eventual goal of increasing social welfare. The favourable outcomes of MFIs' intrusion cannot be persistent unless MFIs obtain profitability along with outreach on their own. This stipulates that the objective underlying the existence of MFIs cannot be accomplished unless MFIs continuously serve the poorest of the poor (Ahlin and Jiang, 2008). Hollis et al. (1998) underscored the vitality of sustainability for MFIs, indicating that MFIs with greater dependence on subsidies cannot achieve economies of scale. Vinelli (2002) argues that sustainability is essential to make certain the long-term existence of MFI by outfitting investor's needs. A sustainable MFI can allow unserved and unbankable people to compete in a formal lending system, obtain funds from various sources, and adequately deal with the cost of lending to the poorest of the poor. Therefore, research pertaining to the profitability of MFIs is important.

The significance of the profitability of MFIs may be evaluated at the macro and microeconomic levels. At the micro level, profitability is essential for the competitiveness of MFIs and is also deemed to be the economic source of finance. For successful operations in the industry, profitability is necessary for such a competitive financial environment. Therefore, an important purpose of MFI management is to achieve sufficient profitability for running a successful business (Mbugua, 2014; Bobakova, 2003). At the macro level, solid financial institutions are better able to contribute to strengthening the financial system. The significance of the profitability of MFIs has encouraged researchers to identify determinants that are important for MFIs' profitability.

The determinants of profitability of MFIs have been investigated in the literature from both theoretical and empirical perspectives. These studies may be divided into two categories, including country-level studies (Berger, 1995, Barajas, Steiner and Salazar, 2000 and Naceur and Goaied, 2001) and panel studies (Haslem, 1968, Short, 1979, Bourke, 1989, Molyneux and Thormton, 1992 and Demirgüç-Kunt and Huizinga, 1999, Khan, Ijaz and Aslam, 2014). These latter studies extracted firm-level factors that explain the profitability of the firm. For example, Bashir (2003) states that capital and loan ratios positively predict the profitability of Islamic MFIs. Most of these studies were conducted in advanced countries that may differ from Latin American countries, which necessitates studying profitability determinants in the Latin American context.

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The attendant question to this issue is, what marks a successful MFI program, and how do we determine what they are? As with any investment decision, the trader wants to acquire as broad and accurate information about the investment as possible. Nevertheless, research and analysis conducted on MFIs concentrating on microfinance as an investment perspective are difficult to find. Few studies explore the return or profitability aspects, and even fewer investigate the subject from the investor's perspective. The particular aggregate conclusion that we observe is that there is still a vast unexplored market for credit with potential earnings reaching a manifold of what is observed in the developed world.

Along with previous research focused chiefly on outreach and poverty-reducing aspects of microfinance, the concept's marketability as an investment opportunity remains relatively unexplored. The lack of research on this aspect reduces investors' probability of assimilating relevant information for their choices, resulting in skepticism towards investment opportunities by entities that do not have the financial or management capacity to investigate the subject themselves. Our objective is to shine a light on the investment viewpoints of MFIs and thereby create materials for investors and future research. We hope that this will help clarify the point that microfinance can be financially beneficial for the investor and create development opportunities in developing nations.

This study will incorporate predictors of ROA for Latin American MFIs, integrating firm-specific and country-specific factors. Firm-specific predictors include outreach, efficiency, productivity, portfolio quality, number of offices, size, age, regulation status, disclosure quality, and capital structure. In contrast, country-specific predictors include GDP and number of MFIs in a country. Predictors of profitability of MFIs are the locus of interest for policy formulation, donors, and experts, as profitable MFIs are more likely to have long-run contributions towards maintainable financial inclusion. Data from 405 MFIs in Latin America were drawn from 2005 to 2018, and a panel data analysis technique was employed.

2. Literature Review

The theoretical underpinning behind empirical investigations on profitability determinants has been provided by Ho and Saunders (1981), who included capital structure, interest rate, and competition as predictors of profitability. Subsequent researchers extended their model by including credit

risk (Angbazo, 1997) and operating cost (Maudos et al., 2004) as profitability predictors. Nonetheless, the primary purpose of MFIs is to provide services to the poor. MFIs are analogous to banks in some aspects. Mainly, retail banking functions are very similar to MFIs. Therefore, the early studies on MFI profitability relied on retail banking profitability theory, presuming that MFIs provide some services similar to banks. Traditionally, retail banks obtain funds from people who have money in surplus and lend it to people with money deficits. The difference between interest earned on the amount lent and interest paid on the amount borrowed is considered profit for the bank and is called margin spread. Margin spread is deemed to be a major source of income for banks. The rest of the income comes from several other services, including insurance, money exchanges, consultancy services, and investment services. The most important factor that predicts a bank's profitability is the number of customers that it serves. This is similar in the case of MFIs, where customers are considered to be the most important factor for success, albeit for different reasons that vary according to the goals of MFIs, namely, whether they are people-oriented or profit-oriented. Therefore, researchers have include dprofitability predictors similar to those that would be used with banks while including some MFI-specific predictors, such as the extent of outreach and percentage of women served.

Theories further posit that MFIs need to maintain a minimum cost and high repayment rate (Von Pischke, 1996). Dissanayake et al. (2012) provided empirical analysis on these theoretical propositions, finding that ROA is significantly determined by repayment quality and capital structure, using data from Sri Lankan MFIs from 2005 to 2010. Using ROE as a measure of profitability, they found that capital structure and efficiency were important determinants.

A similar study was conducted by Muriu (2011) with different datasets, as they used African MFIs to determine the predictors of profitability. That study found that efficiency significantly determines profitability. Their findings are consistent with the theoretical consideration that high efficiency improves the profitability of MFIs (Woller, 2000). In addition to efficiency, they also found that credit and capital structure quality are significant determinants of profitability.

Dissanayake (2012) investigated the relationship between profitability measured with ROE and several internal and external factors in Sri Lanka using data from 2005 to 2011. They collected data from the MixMarket database and found that leverage, measured as the debt-to-equity ratio, and

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efficiency, measured as the operating expense ratio, were negatively related to profitability. Portfolio quality, represented by the write-off ratio, and efficiency, measured as cost per borrower, were found to be positively related to profitability. Moreover, productivity was not found to have a significant relation with ROE.

Jorgensen (2011) investigated the determinants of profitability of MFIs using data from 879 institutions. Profitability was measured using ROA, ROE, and gross portfolio yield as proxies. The purpose of that study was to highlight the determinants of profitability. Data were collected from the MixMarket database for 2009. The selected factors included outreach, capital structure, efficiency, portfolio quality, age, legal status, and deposit acceptance. That study found that the number of active borrowers, cost per borrower, and legal status significantly, negatively impacted profitability, measured with ROA. On the other hand, gross loan portfolio, capital structure, portfolio quality (gross loan portfolio/assets), age, and operating expense ratio were found to have a significant positive relation with ROA. Additionally, the study found no evidence for cointegration between interest rate and profitability.

Ayayi et al. (2010) investigated the predictors of FSS for more than 200 institutions from 101 countries. They found that important predictors included interest rate, quality of repayment, and quality of management. Their study also found that age and outreach had a positive impact on FSS. Their findings were in agreement with theoretical studies such as Meyer (2002), who found a positive relationship between interest rate and FSS, and Conning (1999), who found a positive relationship between outreach and FSS.

Jordan (2008) determined the impact of macroeconomic factors on sustainability in Latin American countries with a sample of 85 MFIs. That study also obtained data from the MixMarket database from 1999 to 2005. That study used two different measures of sustainability, including ROE and repayment rate. None of the selected macroeconomic determinants were found to have a significant impact on the repayment rate. On the other hand, GDP had a significant impact on ROE. That study split the analysis into two parts based on GDP, including low-income GDP countries and high-income GDP countries. Only high-income GDP countries were found to have a significant relation between GDP and ROE. Other macroeconomic factors, including inflation, interest rate, and unemployment rate, were not significantly related to ROE.

Muriu's (2011) study is considered to be one of the most critical studies on MFI profitability conducted in African countries. They investigated several

factors determining the profitability of MFIs using GMM, with a panel of 210 MFIs over 32 countries for the years 1997–2008. The factors considered for that study included capital, age, credit risk, size, efficiency, GNI, inflation, and institutional development. That study found that capital, institutional development, and size were positive predictors of profitability, whereas credit risk and efficiency were negative predictors of profitability. Additionally, GNI and inflation were found to be nonsignificant.

Financial institutions are influenced by the environment in which they operate. A country's financial structure, economic conditions, and political structure determine the performance of MFIs (Mcdonald, 1999). Regarding country-level factors, the most comprehensive studies include those conducted by Ahlin (2011). Using 373 MFIs located in several countries, economic growth, measured as GDP, was a significant determinant of the profitability of MFIs. GDP is believed to affect several factors, such as the demand and supply of credits and deposits, that influence the profitability of MFIs. Several studies, such as Stailouras and Wood (2004), claim a positive relation between the profitability of institutions and GDP.

A study conducted by Hossain and Khan (2016) used data from Bangladeshi MFIs to determine the predictors of profitability. Capital asset ratio influenced financial sustainability; however, no significant influence of AGE, SIZE, savings and the debt-equity ratio on financial sustainability was detected. A similar study by Hermmes and Huangon showed that there are both positive and negative impacts of MFI determinants on sustainability and profitability (Hermes, 2018). Another study found that MFI determinants and macroeconomics have both positive and negative impacts on profitability (Ibrahim, Kamaruddin, & Daud, 2016). However, in another study, there was a nonsignificant negative influence of liquidity and credit risk on profitability—this study was based on secondary data of microfinance banks in Kenya. (Ngumo, 2017). The objective of tha study was to examine the impact of MFI determinants on profitability. It revealed that size, yield, loan, risk, and efficiency are fundamental factors that considerably impact profitability (Naz, & Ali, 2019).

Another important macroeconomic variable that is expected to affect the profitability of MFIs is inflation. As Staikouras et al. (2003) state, inflation may cause an increase in labour costs, interest rates, and asset prices that affect the profitability of MFIs. Tariq et al. (2014) and Perry (1992) state that the effect of inflation on the profitability of MFIs depends on whether inflation is anticipated or not. In the case of anticipated inflation, entrepreneurs can adjust

prices accordingly, which may increase revenue. On the other hand, it may adversely affect profitability in the case of unanticipated inflation, as it may increase costs rather than revenue. Demirguc-Kunt and Huizinga (1999) determined the impact of the financial sector and stock market development on the financial performance of MFIs. Their study found that MFIs are less profitable where the financial sector is developed. Their study also found that stock market development is negatively related to performance, which shows substitutability between stock market development and performance of MFIs.

In the present study, we extend the present literature on MFI profitability in different ways. Specifically, we extend the research associated with Ayayi and Sene (2010), which calculates the determinants associated with financial self-sufficiency (FSS) by estimating the particular determinants of coming back on assets (ROA), return on collateral (ROE) and internet interest margin (NIM). We assessed the cause of the determination and dynamic character of profitability plus endogeneity by means of dynamic generalized method of times (GMM) estimation. Moreover, Muriu (2011) analysed the profitability of Sub-Saharan Africa, but determinants of South Hard anodized cookware MFIs' profitability had never been explored in the literature so much.

This study will provide an exhaustive examination of the determinants of profitability via a deep investigation of the updated literature using empirical analysis of firm-level datasets combined with macroeconomic determinants. The study will add to the existing body of profitability determinant literature in the case of MFIs.

3. Research Methodology

3.1 Data Collection and Measurement of Variables

The data was collected from the MixMarket dataset covering 405 MFIs over 21 countries in Latin America. The data was collected from 2005 to 2018 with some missing values, i.e., we used unbalanced panel data. Additionally, the World Bank database is used to collect country-level factors. The profitability of MFIs is measured with ROA. ROA is a widely used measure of profitability that specifies the ability of MFIs to produce a return on assets utilization.

Outreach is included in two dimensions, including depth and breadth. Depth of outreach is measured with average loan balance (ALB), and breadth of outreach is measured with Number of Active Borrowers (NOAB). These

proxies have been borrowed from previous studies such as Quayas et al. (2012).

Among MFI specific predictors, efficiency refers to the ability of MFI to minimize cost while providing financial products to the clients (Bhatt et al. 2001). Cost per Borrower (CPB) is used to measure efficiency following previous studies such as Quayes (2012). Another similar measure is productivity that measures the output produced with minimum possible resources. Productivity is measured with Borrowers per Staff Member (BPSM).

Portfolio quality is measured including delinquent loans, i.e., loan overdue in the model measured with loan overdue for days more than 30 (P30) used most extensively (D'Espallier et al. 2011). The size of MFIs is measured using the log of assets to include in the model. AGE is measured using a proxy variable including three dimensions: new, young and mature. The regulation status is measured including dichotomous variables suggesting either MFI is regulated or not. The number of diamonds (DM) given by rating agencies to MFIs is also included in the model ranging from 1 to 5 diamonds as a measure of disclosure quality. The ability of management to take risky activities is measured using equity to assets (ETA). The high value of ETA indicates high ability of MFI to take the risk, which is expected to generate high profitability. Moreover, number of offices is also among predictors of MFIs included in the model. Among country-level predictors, we included GDP to measure the economic growth of a given country and the number of MFIs (count) as a measure of the network of MFIs in a country.

3.2 Econometric Analysis

The model was developed based on well–recognized studies in banking and MFI literature, for example, Maudos et al. (2004) and Muriu (2011). The model includes firm-specific and environmental or country-level variables of Latin American MFIs to predict profitability. The model is given as follows:

$$P = \alpha_1 + \alpha_2 F_{it} + \alpha_3 C_{it} + \epsilon_{it}$$

P represents the measurement of profitability as a dependent variable. F_{it} denotes a vector of firm-specific predictors of profitability. C_{it} denotes vectors of country-level predictors. Moreover, ϵ_{it} is the error term.

4. Results

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Overall results are presented in Appendix 2, Table 1 below. To check the robustness of the results, the data is divided into two categories: MFIs as per types and MFIs as per regulation status. MFIs types include banks, NGOs, NBFIs, and credit unions. Results are presented in Appendix 2, Table 2 below, whereas MFIs may be regulated or unregulated; results are presented in Appendix 2, Table 3 below. The study used two indicators for measuring the impact of outreach, including ALB and NOAB. ALB and NOAB are significant determinants of ROA in all models (i.e., OLS, RE, and GMM). The result is in line with several previous studies such as Olivares – Polanco (2005), Hulme et al. (1996), Makame and Murinde (2006), and Navajas et al. (2003). ALB and NOAB are found to be significantly positive in all sub-samples. It strongly evidences mission drift or trade-off that profitability is associated with bigger-size loans rather than small loans to needy borrowers.

BPSM is a significant positive determinant of profitability, suggesting that MFIs are required to utilize their resources to the maximum extent to obtain profitability. It is consistent with the studies of Ayayi et al. (2010), Nyamsogoro (2010), Crombrugghe et al. (2008), and Gregoire and Tuya (2006). Similar coefficients are found in all subsamples consistently in the RE model. However, OLS is not consistent in different subsamples.

P30 strongly evidences a negative coefficient for ROA, suggesting that a high P>30 causes a low level of good debts that may inversely impact profitability. The result is in line with several other studies, such as Nadiya et al. (2012) and Nyamsogoro, (2010). The result is also consistent in all subsamples using all models.

The size of a firm has a significant impact on profitability. Pervan and Visic, in their research done in 2012, found that Managers of large firms pay attention to individual benefits hence decreasing profitability because of the interchange between the function of profit maximization with managerial utility maximization. The result is always consistent in all subsamples.

The AGE is also found to be a positive predictor of ROA, though insignificant in GMM. It indicates that MFI with experienced management can better earn greater profitability, as found by Caudill et al. (2009) that claims that experienced MFIs are more cost-efficient thus earn higher profitability. It is valid for all subsamples except for credit unions that have a negative coefficient though insignificant.

ETA is found to have a significantly positive relationship with profitability. It indicates that MFIs with high capitalization are less exposed to risk and are

more profitable, as argued by Hartarskta et al. (2007). Moreover, the subsamples also show similar results.

COUNT is significantly positive throughout the models. It indicates that a competitive environment encourages the management of MFIs to work more effectively to increase profitability. The result is robust in subsamples. The Number of Offices and Regulation Status significantly negatively affect profitability because both increase the institution's cost, reducing profitability. However, CPB, DM, and GDP are found to have insignificant coefficients.

5. Conclusion

With the developing interest in MFIs as a venture vehicle for the west to access the pervert high marginal returns, the contention of benefit restricting development feeds a continuous worldwide debate. In this study, we have concluded that an ideal distribution of capital in the world will assist with energizing both monetary additions for the financial backers and developmental advancement for the receiving countries. In that view, we have investigated what denotes the best instances of such investments openings.

This paper intends to find out the determinants of benefit among microfinance foundations in Latin American nations. Utilizing a self-compiled dataset of unbalanced board data from 21 nations in Latin America during 2005-2018, we find MFI explicit qualities to be the fundamental determinants of MFI productivity. There is persuading evidence regarding macroeconomic determinants influencing MFI benefit, even though we acknowledge our model might be limited in its capacity to show an exceptionally mind-boggling financial condition in Latin America. Given these study findings from the model, we conclude that a section of enormous worldwide monetary organizations in the microfinance industry in Latin America would no doubt be commonly valuable. They would be provided with an enormous, conceivably diversified market and are of possible immense benefits. While adding to the microfinance institution, utilizing their experts' skills within the main boundary of our work to expand the modest credit provision and lower world poverty

Performing our study of MFIs on an international level addressing Latin American nations presented both opportunities and challenges. 1st, being conducted on a regional degree, the study produces interesting results relevant on a broader level than if we had only observed just one country. However, the cross-country aspect also infers a risk that nationwide distinctions in

dimension and transparency of data are more significant. More specifically, we noticed a bigger fall-out of findings from some countries when processing the dataset; other countries nevertheless remained to a more significant degree, producing better portrayal in the last data. Second, as not limited our research based on a certain level of reporting accuracy/transparency, the reliability of the data within our research may be wondered, a flaw that we are completely aware of and accepted to maintain an acceptable number of findings.

This study adds to the books by serving as the first summary of future investment evaluation of MFIs. It offers some evidence regarding what aspects play a role on the local level. Further research may expand the field by looking into these aspects on the national level, therefore offering more specific results for traders and policymakers enthusiastic about a particular country.

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APPENDIX 1

Table 1. List of Countries in Latin America Region

Countries			
Mexico	Guatemala	Honduras	Colombia,
El Salvador,	Nicaragua,	Costa Rica	Panama
Venezuela,	Ecuador	Peru	Bolivia
Brazil	Paraguay	Chile,	Argentina
Uruguay	Haiti,	Dominican Republic	Jamaica
Suriname			

Source: https://www.themix.org/mix-market

Table 2. Variables Used in Study

Variable Name	Proxy	Variable Name	Proxy
Profitability	Return on Assets (ROA)	Count	COUNT
Depth	Avg. loan per borrower (ALB)	Equity to Assets	ETA
Breadth	Number of Active Borrowers (NOAB)	Efficiency	Cost per Borrower (CPB)
Number of Offices	OFF	Regulation Status	RG
Portfolio Quality	Risk on Loan (P30)	Age of MFI	AGE
Size of MFI	SIZE		

Appendix 2

Table 1. Determinants of ROA

ROA	OLS	RE	GMM	
ROA L1.			0.2668	
			(2.65)	
ALB	0.078*	0.055*	0.234**	
	(5.80)	(2.74)	(2.09)	
NOAB	0.009*	0.017*	0.141*	
	(0.32)	(0.31)	(3.12)	
CPB	0.063	0.120	0.091	
	(0.57)	(0.80)	(1.54)	
BPSM	0.086*	0.114*	0.137**	
	(1.10)	(1.37)	(2.25)	
P30	-0.255*	-0.288*	-0.360*	
	(-3.77)	(-3.81)	(-3.17)	
OFF	-0.014*	-0.008**	-0.199*	
	(-1.74)	(-1.17)	(-3.95)	
SIZE	-0.071***	-0.071***	-0.248**	
	(-2.27)	(-1.39)	(-2.27)	
AGE	0.029***	0.027**	0.009	
	(2.21)	(2.05)	(0.22)	
RG	-0.022***	-0.022*	-0.013*	
	(-1.90)	(-1.49)	(-0.23)	
DM	-0.011	-0.011	-0.006	
	(-0.88)	(-0.93)	(-0.23)	
ETA	0.109*	0.108*	0.127**	
	(5.99)	(4.29)	(0.98)	
GDP	-0.015	-0.027	-0.017	
	(-1.00)	(-1.21)	(-1.37)	
COUNT	0.030***	0.044***	0.046***	
	(1.96)	(1.82)	(1.69)	
C	-0.520***	-0.541**	0.347	
	(-1.97)	(-2.17)	(0.80)	
Observations	2538	2538	2170	
F stat	2916.81*		6.00*	
Wald chi2		85.57*	AR(1)	0.000
Adj. R2	0. 1349	0.1176	AR(2)	0.386
			Hansen J stat	0.622

Note: *, **, and *** indicate significance at 1%, 5%, and 10% level respectively. Values in parentheses are the t-statistics. Two step systems GMM combined with process of finite sample corrected standard error is estimated. RE refers random effects model with robust slandered error clustered. OLS means pooled OLS model. Chi squared-test is the joint test for the significance of all independent variables for RE model. C is the constant term.

Determinants of microfinance profitability; evidence from Latin America

Table 2. Determinants of ROA by Ownership Status

Variable	Bank		NGO		NBFI		Credit Union	
	OLS	R.E	OLS	R.E	OLS	R.E	OLS	R.E
ALB	0.031**	0.074*	0.097*	0.081*	0.083*	0.082*	0.048*	0.032***
	(2.55)	(2.92)	(5.60)	(4.83)	(6.57)	(2.92)	(10.99)	(1.92)
NOAB	0.014**	0.040*	0.013*	0.064*	0.042**	0.074*	0.011***	0.010**
	(2.44)	(1.53)	(0.20)	(0.73)	(2.39)	(3.90)	(2.11)	(1.29)
CPB	-0.048*	-0.038	0.154	0.222	-0.105	-0.096	-0.012	-0.016
	(-3.46)	(-1.29)	(0.95)	(1.15)	(-10.60)	(-5.38)	(-1.74)	(-2.25)
BPSM	-0.005	0.033**	0.148	0.160*	-0.028*	0.016**	-0.005	0.001*
	(-0.60)	(1.97)	(1.49)	(1.59)	(-1.91)	(1.01)	(-0.80)	(0.29)
P30	-0.364*	-0.294*	-0.198**	-0.193*	-0.384*	-0.407*	-0.164*	-0.180*
	(-5.65)	(-2.80)	(-2.83)	(-2.96)	(-4.33)	(-3.87)	(-4.84)	(-3.48)
OFF	-0.000**	-0.000*	-0.015**	-0.006***	-0.001**	-0.001***	-0.004*	-0.001**
	(-0.09)	(-0.04)	(-1.75)	(-0.42)	(-0.17)	(-0.19)	(-1.34)	(-0.37)
SIZE	-0.005*	-0.036*	-0.111**	-0.136*	-0.030*	-0.005*	-0.036**	-0.022*
	(0.39)	(-1.41)	(-1.32)	(-1.48)	(-3.96)	(-0.22)	(-6.63)	(-1.10)
AGE	0.041**	0.038*	0.039*	0.021**	0.024*	0.029*	-0.003	-0.001
	(3.09)	(3.35)	(1.77)	(0.94)	(4.70)	(2.64)	(-1.51)	(-0.59)
RG	-0.006*	-0.016*	0.003**	-0.021**	-0.046*	-0.058**	-0.001*	-0.003**
	(-0.25)	(-0.66)	(0.14)	(-0.48)	(-1.72)	(-1.87)	(-0.24)	(-0.47)
DM	-0.001	-0.000	-0.024	-0.018	0.001	0.001	-0.003***	-0.001
	(-0.36)	(-0.24)	(-1.15)	(-0.99)	(0.79)	(0.44)	(-1.92)	(-0.51)
ETA	0.128*	0.123*	0.143*	0.154*	0.079**	0.106**	0.052***	0.004*
	(5.31)	(1.62)	(5.15)	(3.29)	(2.82)	(2.57)	(2.16)	(0.15)
GDP	0.005***	0.005	-0.030	-0.046	0.001	-0.000	0.000	0.002
	(2.04)	(0.83)	(-1.39)	(-1.46)	(0.32)	(-0.11)	(0.01)	(0.75)
COUNT	0.006***	0.004	0.066**	0.084**	0.004*	0.009*	0.009***	0.013**
	(2.27)	(0.72)	(2.62)	(2.31)	(0.43)	(0.75)	(2.19)	(2.00)

Table 2. Determinants of ROA by Ownership Status

Variable	Bank		NGO		NBFI		Credit Union	
	OLS	R.E	OLS	R.E	OLS	R.E	OLS	R.E
C	-0.235***	-0.375***	-0.885**	-0.728**	0.162	-0.139	0.079	0.039
	(-2.03)	(-2.28)	(-3.16)	(-2.12)	(1.10)	(-0.65)	(1.42)	(0.43)
Obs.	289	289	1047	1047	840	840	360	360
F stat	687.27*		432.71*		183.50**		285.39**	
Wald chi^2		1656.16*		61.47*		101.67*		48.69*
Adj. R^2	0.5478	0.4727	0.2097	0.1931	0.3741	0.3345	0.2923	0.2330

Note: *, **, and *** indicate significance at 1%, 5%, and 10% level respectively. Values in parentheses are the t-statistics. RE refers random effects model with robust slandered error clustered. OLS means pooled OLS model. Chi squared-test is the joint test for the significance of all independent variables for RE model. C is the constant term.

Table 3. Determinants of ROA by Regulation Status

Variable	Regulated MFIs		UN-regulated MFIs	
	OLS	R.E	OLS	R.E
ALB	0.050*	0.058*	0.093*	0.079*
	(6.78)	(2.67)	(8.51)	(4.89)
NOAB	0.026*	0.055*	0.004*	0.030*
	(2.33)	(3.91)	(0.11)	(0.44)
CPB	-0.078	-0.065	0.101	0.157
	(-4.41)	(-4.28)	(0.73)	(0.92)
BPSM	-0.017*	0.0192***	0.111	0.128**
	(-2.11)	(1.83)	(1.24)	(1.40)
P30	-0.182**	-0.192*	-0.301**	-0.344*
	(-8.00)	(-4.57)	(-3.03)	(-2.86)
OFF	-0.001**	-0.001**	-0.012*	-0.005*
	(-0.43)	(-0.27)	(-1.57)	(-0.42)
SIZE	-0.014*	-0.000***	-0.082*	-0.099*
	(-1.00)	(-0.03)	(-1.46)	(-1.40)
AGE	0.016***	0.006**	0.040**	0.038***
	(2.25)	(0.95)	(1.99)	(1.90)
DM	0.003*	0.001	-0.026	-0.022
	(5.63)	(1.18)	(-1.24)	(-1.14)
ETA	0.079*	0.117*	0.122*	0.126*
	(3.53)	(2.78)	(5.88)	(3.87)
GDP	0.002	-0.007	-0.020	-0.032
	(0.79)	(-1.18)	(-1.11)	(-1.18)
COUNT	0.005**	0.004	0.047**	0.059**
	(2.69)	(0.61)	(2.92)	(2.17)
c	0.046	-0.025	-0.812**	-0.763*
	(0.37)	(-0.18)	(-2.97)	(-2.60)
Observations	1171	1171	1367	1367
F stat	1697.47**		112.65*	
Wald chi^2		90.62*		78.89*
Adj. R^2	0.3073	0.2207	0.1747	0.1611

Note: *, **, and *** indicate significance at 1%, 5%, and 10% level respectively. Values in parentheses are the t-statistics. RE refers random effects model with robust slandered error clustered. OLS means pooled OLS model. Chi squared-test is the joint test for the significance of all independent variables for RE model. C is the constant term.

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HOW DO UNIVERSITY RULES AND LOCAL GOVERNMENT INSTITUTIONAL QUALITY AFFECT THE PROBABILITY OF ACADEMIC SPINOFF CREATION?

Abstract

By using a rich, partly proprietary database containing granular data on Italian universities' characteristics and knowledge transfer strategies, we investigate the effect of university rules and local institutional quality dimensions on the probability of academic spinoff creation. We also suggest that local institutional quality dimensions sometimes compensate for, and sometimes complement, internal university rules on knowledge transfer activities.

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1. Introduction

One widely shared view in the recent scientific debate is that academic research can be of considerable importance in building the foundations for technological change and economic competitiveness (Laredo, 2007). Universities can play a significant role in the fertilization of the economic context, producing new knowledge and adopting strategies that trigger knowledge transfer (KT) to industry. In a policy context that views entrepreneurship as an ingredient for economic development (Hartog et al., 2010), academic spinoffs have thus received increasing attention, with the scientific literature mainly focusing on the identification of the determinants, at various levels, of academic spinoff creation performance.

Initially, analyses expressed the individual characteristics of researchers and selected structural characteristics of universities (e.g., size, funding sources, presence of technology transfer or industry liaison offices). More recent approaches have emphasized the relevance of universities' strategic and institutional features (Caldera and Debande, 2010; Fischer et al., 2019; Lach and Schankerman, 2008; Muscio et al., 2016, 2015; Olaya-Escobar et al., 2020; Soares et al., 2020; Van Looy et al., 2011); the support mechanisms developed for both academic entrepreneurship and KT, in particular the quality and scope of academic rules and institutional policies related to the third mission of universities; monetary and nonmonetary incentivization schema established for researchers; and well-defined and clear KT strategies.

Concurrently, a broad range of regional and innovation literature has underlined the decisive impact that local institutions may have on the economic growth and development of a territory (Clò et al., 2020; Helpman, 2004; Rodriguez-Pose and di Cataldo, 2015). Building on the works of North (1990) and Baumol (1990), it has been maintained that institutions contribute to shape the incentives scheme underlying individual choices, and that there is a multifaceted link between the quality of institutions and economic results (Nifo and Vecchione, 2014). Systematic theoretical and empirical insights about entrepreneurship across different institutional environments have been provided quite recently (Agostino et al., 2020; Lv et al., 2020). The availability of such data has been encouraged by efforts such as the World Bank's Worldwide Governance Indicators (WGI) research program, which identifies reference indicators for institutional quality (Kaufmann et

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al., 2009) and similar country-specific initiatives (as for Italy, see Nifo and Vecchione, 2014).

Despite the number of studies focusing on academic spinoff creation, and although some attention has been given to the role played by certain elements of the institutional environment, both within (for instance the presence of technology transfer offices - TTOs, see Baldini et al., 2014; Fini et al., 2017; Hayter et al., 2018; Skute, 2019) and outside of universities (i.e., local, social, regulatory and organizational characteristics, see Fini et al., 2011), there has been no systematic analysis of the effect of both university rules and local, institutional quality on academic spinoff creation.

Two relatively recent studies have taken steps to address this gap, by focusing on the effects on academic spinoff creation due to the wide range of internal rules adopted by Italian universities for KT activities (Muscio et al., 2016, 2015). We believe that such a research framework can be complemented by one concerning local institutional quality. Some dimensions of quality have proven to be relevant for nonacademic entrepreneurship (Agostino et al., 2020; Chipalkatti et al., 2011; Goel and Göktepe-Hultén, 2013; Lv et al., 2020). As noted by Agostino et al. (2020, p. 815), "institutional differences may matter even at a subnational level provided that heterogeneity in local institutions is large enough. Italy is a case in point."

Such an attempt is interesting from both theoretical and empirical points of view. On the one hand, some scholars have highlighted that the process of establishing academic spinoffs is different from that of other start-ups or corporate spinoffs (Conceição et al., 2017). Therefore, the evidence that has emerged about the role of institutional quality in entrepreneurship cannot be fully confirmed for academic spinoffs. On the other hand, it has been maintained that universities are often crucial in supplementing certain services in underdeveloped local context conditions (Fini et al., 2011) and that universities located in weak entrepreneurial contexts tend to adopt proactive and supportive models for spinoff development (Muscio et al., 2016). Thus, according to these findings, university rules and local institutional quality might be, to some extent, substitutes.

The aim of this research note is to drop a seed into the field. We show that noteworthy evidence emerges when the effect on the probability of academic spinoff creation is empirically investigated, by assessing dimensions of both local and university institutional quality as measured by the adoption of

specific rules regulating spinoff creation and other possibly related KT activities.

2. Data and econometric strategy

Our econometric exercise is aimed at assessing the relevance of both academic rules and provincial institutional quality on the probability that universities engage in academic spinoff creation over the 2006-2011 period. The analysis relies on four main data sources: 1) the Netval database[1], which includes information on Italian academic spinoffs that are annually generated by Italian universities; 2) an original database of detailed information on the past and current rules and regulations set forth by Italian universities on KT initiatives, including spinoffs, patents, and contract research); 3) a database made available by the Italian Ministry of University and Research (MIUR), covering the 2005–2012 period, which provides detailed, annual data on the amounts and sources of academic funding, departments, research staff and infrastructures supporting KT (such as TTOs and ILOs); and 4) information on elementary indices (corruption, government effectiveness, regulatory quality and rule of law) of provincial institutional quality between 2004 and 2012 collected from a database made available by Nifo and Vecchione (2014). See Table 1 for a brief description of the variables and the related summary statistics.

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[1] Available at: http://www.netval.it

Table 1. Descriptive and summary statistics.

Variable Name	Description	Mean	SD	Min	Max
Dependent variable					
spinoff_y	At least one spinoff during the year (y/n)	0.63	0.48	0	1
General characteristics of the University					
reg_spinoff	Internal specific Regulation on spinoff (y/n)	0.71	0.45	0	1
reg_contract_research	Internal specific Regulation on contract research (y/n)	0.90	0.29	0	1
tto	Technology Transfer Office (y/n)	0.87	0.34	0	1
dimension	Dimension >15,000 students (y/n)	0.67	0.47	0	1
polytechnic	Polytechnic (y/n)	0.06	0.24	0	1
ln_sc-based_firms	Number of scientific-based firm in the province (log)	5.98	1.08	3.66	8.37
ln_cumul_spinoffs_1	Cumulated number of academic spinoffs (log, t-1)	1.96	1.00	0	4.14
ln_res_contract_1	Value of research contracts (log, t-1)	7.52	1.87	0	10.57
ln_pub_funding_1	Value of public funding (log, t-1)	8.23	1.47	0	10.59
ln_number_patents_1	Number of patents (log, t-1)	1.50	2.51	-2.30	5.89

Specific University Rules on knowledge transfer activities

business_plan_format	Predefined format for business plans made available by the university (y/n)	0.11	0.31	0	1
incompatibility	Explicitly identified incompatibility situations (y/n)	0.09	0.28	0	1
evaluation_committee	Evaluation Committee for KT initiatives (y/n)	0.65	0.48	0	1
limit_contracts_parent_univ	Maximum limit on research contracts from parent university (y/n)	0.09	0.28	0	1
contres_withholding	Share of revenues from contract research withheld by the university	0.18	0.17	0	0.86
patent_withholding	Withholding on patent sales (y/n)	0.55	0.50	0	1
Institutional Quality Dimensions*					
corruption	Corruption	0.83	0.16	0	1
government	Government Effectiveness	0.42	0.19	0	1
regulatory	Regulatory Quality	0.51	0.19	0	1
rule_of_law	Rule of Law	0.55	0.18	0.12	1

Notes: * for details on the composition of the indexes, see Nifo and Vecchione (2014).

We estimate a pooled probit in which the dependent variable takes a value of 1 if the university created at least one spinoff in the year and 0 otherwise. For the independent variables, we include sets of the following covariates: general university characteristics (scale, past KT activity, internal regulations on spinoffs and contract research, presence of a TTO whether the university is a Polytechnic); the adoption of specific rules concerning spinoff creation, research contracting and patenting; four indices measuring provincial-level institutional quality dimensions (corruption, government effectiveness, regulatory quality and rule of law). We also include the (log of) the number of scientific-based firms in the province as a proxy for the local absorptive capacity and, simultaneously, serve as a control for possible

spillover effects, as well as year dummies and dummies related to the scientific areas supported by the university.

We opt for the pooled probit rather than for the panel data probit since the value of rho is nearly zero. Therefore, it can be assumed that the intrapanel correlation is small enough to ignore; the results are almost identical.

To address potential endogeneity issues between the dependent variable and the regressors concerning funding from other KT-related activities (patenting, contract research, access to public funding), we include these regressors lagged by one year. Additionally, we tend to exclude any possible endogeneity between the dependent variable and the independent variables related to provincial institutional quality. Since, in virtually every case, the location of the academic spinoff is at the parent university and not the outcome of a provincial-level localization choice based on their socioeconomic characteristics, we assume that the levels of provincial institutional quality can be considered exogenous (i.e., not correlated with the error). The variance inflation factor (VIF) analysis shows that the multicollinearity among the independent variables does not give rise to any concerns: the mean VIF is 2.05, while the highest value is 3.91, well below the suggested threshold of 10 (Hair et al., 2019).

3. Results

Table 2 shows the results of the econometric estimates in terms of average marginal effects. Three different nested models are presented. In addition to both the year and scientific area dummies (common to all the specifications), the first model (Column 1) includes only regressors related to the general characteristics of the university. The second model adds covariates for the specific rules on KT activities adopted by each university (Column 2). In the third, full model, the institutional quality indices covariates related to corruption, government effectiveness, regulatory quality and rule of law are also considered (Column 3). Table 2 also shows log-likelihood and Akaike Information Criteria (AIC) values for each estimated model.

Table 2. Pooled Probit regression results (Average Marginal Effects).

	(1)	(2)	(3)
General characteristics of the University			
reg_spinoff	0.140**	0.237***	0.307***
	(0.0572)	(0.0765)	(0.0644)
reg_contract_research	0.216***	0.406***	0.472***
	(0.0497)	(0.0435)	(0.0416)
tto	0.118	0.0502	0.0521
	(0.0900)	(0.0951)	(0.0960)
dimension	-0.0281	0.106	0.218***
	(0.0784)	(0.0829)	(0.0794)
polytechnic	0.198**	0.186**	0.252***
	(0.0990)	(0.0748)	(0.0547)
ln_sc-based_firms	-0.00870	-0.00709	0.0188
	(0.0222)	(0.0200)	(0.0234)
ln_cumul_spinoffs_1	0.177***	0.196***	0.239***
	(0.0254)	(0.0277)	(0.0325)
ln_res_contract_1	0.0425**	0.0385**	0.0442***
	(0.0184)	(0.0162)	(0.0168)
ln_pub_funding_1	-0.0320	-0.0212	-0.0284
	(0.0252)	(0.0216)	(0.0228)
ln_number_patents_1	0.0174	0.00558	-0.000974
	(0.0116)	(0.0109)	(0.0104)
Specific University Rules on knowledge transfer activities			
business_plan_format		0.129***	0.164***
		(0.0454)	(0.0403)
incompatibility		0.142***	0.129**
		(0.0539)	(0.0500)
evaluation_committee		-0.121**	-0.160***
		(0.0490)	(0.0387)
limit_contracts_parent_univ		-0.201*	-0.254***
		(0.106)	(0.0755)
contres_withholding		-0.620***	-0.899***
		(0.165)	(0.195)
patent_withholding		-0.127***	-0.125***
		(0.0393)	(0.0350)

Institutional Quality Dimensions

corruption			-0.144
			(0.197)
government			0.355**
			(0.163)
regulatory			-0.535***
			(0.155)
rule_of_law			0.475***
			(0.115)
log-likelihood	-152.01	-138.42	-131.40
Akaike Information Criteria (AIC)	364.03	348.83	342.80
Observations	*344*	*344*	*344*
N. of idu	*54*	*54*	*54*
Area dummies	*YES*	*YES*	*YES*
Year dummies	*YES*	*YES*	*YES*

In parentheses: standard errors clustered at the University level. Statistical significance levels: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

The full Model 3 results for the control variables are aligned with the findings of previous literature: a positive effect on the probability of academic spinoff creation is associated with a larger scale of the university (+21.8%), being a Polytechnic (+25.2%), and past experience of spinoff creation and engagement in contract research (+23.9% and +4.4%, respectively). Neither the presence of a TTO, the amount of government research funding received, nor the number of patents appears to play any role. For the variables related to internal KT-specific rules, their roles and signs are as follows (and consistent with previous findings in the literature): among the general rules and procedures, positive determinants include the existence of specific regulations for spinoffs (+30.7%) and research contracts (+47.2%), as well as rules that reduce researchers' uncertainty (incompatibility: +12.9%); in contrast, the existence of an evaluation committee has a filtering effect (-16%). The importance of monetary incentives is confirmed, as well. A negative effect on the probability of spinoff creation is associated with both the share of revenues withheld by the university for contract research (a 10% increase in the share of revenues

withheld by the university is associated with a 9% decrease in spinoff creation likelihood) and the existence of withholdings on patent commercialization (-12.5%). Last, except for corruption[2], the elementary indices of institutional quality show statistically significant average marginal effects: positive for government effectiveness and rule of law (an increase of 0.1 in the value of these indices implies an increase in the probability of 3.6% and 4.6%, respectively); negative for regulatory quality (-5.3%).

Additional cues come from Table 3, which shows the average marginal effects of the institutional quality variables, calculated as representative values (0 and 1) for selected university rules on KT activities. This preliminary econometric exercise is aimed at providing an initial idea of how university rules and local institutional frameworks may interact. For example, the marginal effect of *government effectiveness* is positive, regardless of the adoption of a specific spinoff regulation by the university. However, the value of the marginal effect decreases when the university adopts such a regulation (diff: -6.8%).

Table 3. Caption of the table.

	Spinoff Regulation			Rule on Incompatibility		
	No	Yes	diff: Yes-No	No	Yes	diff: Yes-No
Government Effectiveness	0.40**	0.34**	-6.8%	0.36**	0.29*	-7.0%
Rule of Law	0.54***	0.45***	-9.0%	0.48***	0.38***	-9.3%

	Evaluation Committee			Limit on Revenues from Parent University		
	No	Yes	diff: Yes-No	No	Yes	diff: Yes-No
Government Effectiveness	0.27**	0.34**	7.1%	0.35**	0.37**	2.1%
Rule of Law	0.36***	0.46***	9.6%	0.47***	0.49***	2.8%

Notes: since the variables of interest are dichotomic, the selected values are 0 and 1.

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[2] This result is not necessarily in contrast with the previous literature on institutional quality and entrepreneurship. The papers according to which *corruption* is relevant focus on the *control* of corruption (Lv et al., 2020), which can actually be associated with *rule of law* in our paper, or to *perceived* corruption (Aparicio et al., 2016), which is not mapped in the database by Nifo and Vecchione.

4. Discussion and conclusions

Our note describes some intriguing and original results. Higher provincial government effectiveness (i.e., efficient local government in the provision of public services, a rich endowment of economic and social infrastructures) reduces transaction costs and the burden of bureaucracy, thus stimulating (academic) entrepreneurship. A higher value of the rule of law index implies a more intense accumulation of physical, social and human capital that reduces uncertainty, thus positively contributing to the probability of academic spinoff creation. Interestingly – and this is a notable finding, different from the evidence provided in the nonacademic entrepreneurship literature – the regulatory quality index shows a negative relationship with academic spinoff creation. This index measures the capability at the local level to favour a higher degree of openness of the economy, a "healthier" business environment. In provinces with a stronger and livelier private sector and with a more competitive environment, there is a lower probability of universities creating spinoffs. Pending further research on this point, we can envision at least two possible explanations for such an outcome. First, as previously described, universities located in weak entrepreneurial contexts tend to adopt proactive and supportive models for spinoff development and play a supplementary function. Second, more dynamic economic environments might have better opportunities for researchers to commercially exploit a piece of new knowledge, because of a higher chance of contact with private firms interested in patent acquisition/licensing. In such a context, it might be more convenient for the researcher to monetize her intellectual property through KT channels instead of the more complex and more long-term creation of an academic spinoff.

Another insight is that government effectiveness and rule of law are less relevant for academic spinoff creation if the university adopts rules and procedures that clarify its KT strategy (Note: the marginal effects are positive but the difference is negative when comparing the absence and the presence of both specific spinoff regulations and incompatibility rules, see Table 3). In these cases, it seems that university and local institutional quality are somehow fungible. However, the positive effects of both an efficient local government and a well-designed legal framework are even stronger when universities adopt more invasive spinoff strategies that impact the incentives scheme for researchers (such as the presence of an evaluation committee or the limitation on spinoff revenues from the parent university).

In such situations, we may suppose that higher institutional quality serves as an "external" guarantee for researchers.

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DOES FOREIGN ASSISTANCE COMPLEMENT SAVINGS IN THE GROWTH PROCESS: EMPIRICAL EVIDENCE FROM SELECTED ASIAN COUNTRIES

Abstract

The effectiveness of foreign aid in the macroeconomic performance of developing countries has been an issue of considerable disagreement. Although this issue has attracted enormous attention from researchers and development practitioners, less is known about the effects of foreign aid on internal potential for capital formation. Hence, the key objective of this study is to test the hypothesis that foreign assistance is a complement to or a substitute for domestic savings in the long-run growth process. For this purpose, we estimated an empirical model using data from 17 lower income and highly indebted Asian countries from 1990 to 2018. Overall, the results substantiate that foreign aid and savings complement the long-run growth process.

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1. Introduction

The macroeconomic effectiveness of foreign assistance provided by the developed north to the less developed south has long been a hotly debated issue. In the early years of its provision, foreign aid attracted much optimism mainly due to the success of the Marshall Plan, which was designed for the restructuring and reconstruction of the war-torn economies of Europe after the Second World War. The perceived success of the Marshall Plan and its emphasis on physical capital accumulation in the theoretical underpinnings of Harrod's (1939) and Domar's (1946) growth models resulted in the notion that foreign aid could be a panacea for capital-deficient developing countries. The main idea was that, in developing countries, investment is constrained by a low level of domestic savings and the availability of foreign exchange for imports of machinery and other intermediate inputs. Earlier studies argued that foreign aid can be a suitable means to fix this problem by complementing domestic resources for long-term growth and development (Chenery and Bruno, 1962; Chenery and Strout, 1966). In agreement with the dual gap model, some studies later argued that the fiscal gap in developing countries limits the capacity of the public sector to invest in infrastructure requirements for long-run growth and development. Foreign aid again potentially relaxes this constraint as long as it is used for productive public sector development projects (Bacha, 1990; Taylor, 1990). Despite the existence of these three gaps, the earliest empirical studies emphasized the first gap and investigated the effects of foreign aid on domestic savings. These studies implicitly assumed that there is a one-to-one correspondence between foreign aid and domestic savings, implying that aid would complement domestic savings in the long-term process of economic growth (Rosenstein-Rodan, 1961). However, earlier empirical studies found a negative association between foreign assistance and domestic savings. For instance, Griffin (1970), Chenery and Eckstein (1970), Rahman (1968), and Weisskopf (1972) provided evidence of a negative association between foreign assistance and domestic savings. Griffin and Enos (1970) and Levy (1988) assumed anticipated aid inflow to be an exogenous shift in income and tested the alternative hypothesis that a one-to-one relationship could hold only when marginal propensity is one; otherwise, foreign aid would potentially be utilized for consumption purposes. These studies also found evidence for this hypothesis and empirically verified a negative relationship between domestic savings and

foreign aid[1]. However, these studies were criticized on the grounds of methodology, estimation techniques, and spurious relationships (Nowak-Lehmann et al., 2012). In contrast, Tendulkar (1971), Grinols and Bhagwati (1976), and Morriset (1989) refuted the hypothesis that foreign capital inflows displace domestic savings.

Second-generation studies of the macroeconomic effectiveness of foreign aid argued that foreign aid expands the public sector, provides support to inefficient and corrupt governments, discourages domestic resource mobilization, and distorts income distribution in favour of rent seekers (Easterly, 2001; Mosely and Hudson, 1995, Jensen and Paldam, 2006)[2]. Mosley et al. (1987) attempted to answer the question of why foreign aid provides an effective stimulus to growth and development in some countries, while in other countries, it retards economic growth. They argued that foreign aid inflows are associated with two issues, namely fungibility and the Dutch disease, which retard economic growth in developing countries. To mitigate the negative effects associated with the fungibility of aid, Burnside and Dollar (2000) and Burnside and Dollar (2004) incorporated the role of the policy environment and the institutional quality of recipient countries into the macroeconomic effectiveness of foreign aid. These studies argued that foreign aid facilitates growth and development subject to the conducive policy environment and sound institutions of aid-receiving developing countries. Similarly, many other studies have substantiated that a good policy environment and sound political institutions play complementary roles in the macroeconomic effectiveness of foreign aid (Collier and Dehn, 2001; Collier and Dollar, 2002; Collier and Hoeffler, 2002; Fielding and Mavrotas, 2006; Young and Sheehan, 2014)[3].

Along with domestic savings, many studies have investigated the role of foreign aid in other aggregate economic outcomes, such as investment and

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[1] Griffin (1973) argued that the negative relationship is associated with less effort on the part of government for tax collection, an inelastic tax base and allocation of aid to unproductive expenditures by government. Colman and Nixon (1978) criticized Griffin (1970) on the grounds of simple mathematical flaws since he used consumption as functional income and foreign aid while using savings as a function of income alone. However, Gupta (1970) and Bowles (1987) attempted to question the association between domestic savings and foreign aid and found an ambiguous relationship between these variables.

[2] Easterly (2006) and Riddell (2007) argued that foreign aid does not provide a sustainable solution; it perpetuates the process in the way that it compels the aid-receiving countries to accept further aid.

[3] Many studies have argued that foreign aid inflows deteriorate the quality of political institutions, hampering the long run growth process (Moss et al., 2008; Booth, 2011; Deaton, 2013). However, on the empirical front, other studies have negated this argument (Jones and Trap, 2016; Tavares, 2003).

economic growth. Nevertheless, earlier empirical studies of aid-growth nexuses also provided inconclusive results. Rosenstein-Rodan (1961) emphasized the marginal rate of savings for self-sustaining growth; otherwise, foreign aid cannot help to improve the living standards of developing countries. This finding implies that foreign aid can only contribute to long-run self-sustaining economic growth when it complements domestic savings. All of the existing literature has explored the complementary role of different factors by incorporating an interactive term into the growth equation. However, few studies have incorporated the role of domestic saving into the growth equation. Hence, the key objective of this study is to test the hypothesis that foreign assistance is a complement to or a substitute for domestic savings in the long-run growth process. To meet the desired objective, we have incorporated an interactive term of foreign aid and domestic savings into our growth equation. For empirical analysis, we used the data of seventeen highly indebted lower and lower middle-income countries in Asia.

The rest of the paper is organized as follows. In Section 2, we briefly review the existing literature. Section 3 is dedicated to a brief description of the empirical model, data and methodology. Empirical findings and their interpretation are presented in Section 4. The paper concludes with Section 5, which offers some final remarks.

2. Review of Relevant Literature

As mentioned in the introductory part of this study, the growth effectiveness of foreign aid has been a topic of discussion since the Marshall Plan of the 1960s. In this association, one comprehensive work was performed by Rosenstein-Rodan (1961), which emphasized the complementary role of foreign aid in the long-run growth process. The author argued that the marginal rate of savings must be greater than the average savings rate for the self-sustained growth process and that it should be a principal condition for aid disbursement. Due to this strong theoretical prior, many earlier empirical studies, instead of investigating the impact of foreign aid on outcomes, such as economic growth and investment, tested its complementary relationship with savings. However, instead of incorporating the interaction term of domestic savings and foreign aid into the growth equation, these studies estimated the equation with domestic savings as the dependent variable. For instance, Griffin and Enos (1970) investigated the savings displacement role of foreign aid using the data of thirty-two developing countries and found that foreign aid was negatively related to domestic savings. For robustness of results, they repeated the empirical exercise using the data of thirteen Asian

and Middle Eastern countries and time series data from Colombia and found similar results. Ahmed (1971) found similar results and authenticated the savings displacement hypothesis for the fifty developing countries. Chenery and Eckstein (1970), in their country-specific study of sixteen Latin American countries, found a negative relationship in the case of twelve countries. In an earlier attempt, Rahman (1968) found similar results for the time series data of Pakistan, while Weisskopf (1972) verified these results using cross-country data. However, the theoretical rationale for negative results was already established by Haavelmo (1963), who argued that foreign capital inflows displace domestic savings. However, these studies were criticized on the grounds of a short time span of data and omission of variable bias since savings are also influenced by many other behavioural and demographic factors and estimation methodologies. For instance, Newlyn (1973) argued that the interpretation of a negative coefficient is irrelevant in the aid-savings context. Gupta (1970) tested Haavelmo's hypothesis using cross-country data and found evidence of a complementary role of foreign aid. Moreover, he further observed that foreign aid enhances the efforts of recipient countries for domestic resource mobilization, especially savings. Similarly, Grinols and Bhagwati (1976) provided empirical support for the complementary role of foreign aid. However, Bowels (1987) used the Granger causality test to assess the causal relationship for twenty developing countries and found that foreign aid does not result in domestic savings in more than half of the cases.

Another strand of the literature has emphasized public sector fiscal behaviour in response to foreign aid inflows in developing countries (for instance, Heller, 1975; McGuire, 1987; Khilji and Zampelli, 1991; Iqbal, 1997; McGillivray and Ahmed, 1999; McGillvray and Morrissey, 2001; Gomanee et al., 2005; Feeny and McGillivray, 2010; Morrissey, 2015). Most of these studies found evidence of a negative relationship of foreign aid inflows with tax revenue and other recurrent revenue (McGillvray and Morrissey, 2001; Mavrotas and Ouattara, 2006; Feeny and McGillivray, 2010). Mosely (2015) emphasized the tax structure and expansion of the tax base for the macrocosmic effectiveness of foreign aid, while Morrissey (2015) concluded that there is no systematic relationship between foreign aid inflows and tax revenue. McGillvray and Morrissey (2001), using a microeconomics framework, argued that, due to aid illusions, foreign aid inflows increase public spending and discourage domestic savings.

More recently, some studies have investigated the savings displacement hypothesis. For example, Okafor and Tyrowicz (2010) found evidence that

foreign debts displace domestic savings in the long run. Similarly, Ouattara (2009) found empirical support for the savings displacement hypothesis only in the case of project aid, while all other foreign aid inflows work as productive supplements to domestic savings. Moreover, Nowak-Lehmann et al. (2012) provided empirical support for the argument that foreign aid crowds out domestic savings. Paradoxically, Irandoust and Ericsson (2005) used the panel cointegration technique for econometric analysis and provided empirical support for the complementary role of foreign aid in the case of African developing countries. Similarly, Balde (2011) also found evidence of a positive association between foreign aid inflows and domestic savings. Afawubo and Mathey (2017) explored the roles of aid volatility and domestic institutions in the macroeconomic effectiveness of foreign aid, especially their impacts on investment and domestic savings. The study supported the hypothesis that aid volatility discourages domestic saving, while the quality of domestic institutions mitigates the negative effect of foreign aid on savings. In a similar vein, Quibria (2017) argued that controlling for corruption in aid-receiving countries further increases aid effectiveness. However, Nieto-Matiz and Schenoni (2020) found evidence that political motives on the part of donors' countries reduce the effectiveness of foreign aid. Similarly, Whang et al. (2019) provided empirical support for the argument that United States foreign aid programs are strategic in nature and largely aim for the policy compliance of aid-receiving countries. Hossain (2014) investigated the impact of different foreign capital inflows on domestic savings in sixty-three aid-receiving developing countries. An empirical analysis study allowed for cross-sectional dependence and parameter heterogeneity and found evidence of the complementary role of foreign aid inflows. Moreover, another strand of the literature has argued that there is a nonlinear relationship between the foreign capital inflow in the form of assistance and aggregate economic outcomes due to diminishing returns on foreign assistance (Dalgaard and Hansen, 2001; Hansen and Trap, 2001; Hudson and Mosley, 2001; Lu and Ram, 2001; Lensink and White, 2001; Luqman et al., 2013).

More recently, some studies have explored the role of structural features of recipient countries, such as political instability and local financial structures, in the macroeconomic effectiveness of foreign aid (Guillamumont and Chauve, 2001; Nkusu and Sayek, 2004; Ang, 2009; Elbadawi et al., 2008; Luqman et al., 2013). Similarly, Giuliano and Ruiz-Arranz (2009), Bettin and Zazzaro (2012), and Luqman and Haq (2016) tested the hypothesis that foreign remittances and local financial development complement the long-run growth process and found evidence of a complementary role of workers' remittances in the long-run growth process. In line with Burnside and Dollar

(2000), these studies incorporated the interactive term into the growth equation to test the complementary roles of different factors, such as political instability, local financial sector development, and political institutions, in the macroeconomic effectiveness of foreign aid. However, few studies have incorporated the role of domestic savings into the macroeconomic effects of foreign aid. Hence, this consequent study incorporates the interaction term of foreign aid and domestic saving into the growth equation to test the complementary role of domestic saving in the macroeconomic effectiveness of foreign aid.

3. Econometric Methodology and Data

To investigate the impact of foreign aid on economic growth, our baseline specification is represented in the following equation.

$$g_{it} = \alpha_O + \alpha_1(ODA_{it}) + \sum_{j}^{n} \gamma_j X_{it} + \varepsilon_{it} \qquad (1)$$

where g_{it} is growth in real GDP, ODA_{it} denotes the ratio of official development assistance to GDP, X_{it} is a set of control variables that includes the population growth rate, physical capital is measured as the ratio of gross fixed capital formation to GDP, human capital is measured as the proportion of secondary school enrolment, trade openness is measured as the ratio of exports plus imports to GDP, and εit is a random error term.

To test our hypothesis that foreign assistance is a complement of or a substitute for domestic savings in the long-run growth process, we incorporate an interactive term of domestic savings and foreign aid into our baseline specification in line with Burnside and Dollar (2000), Nkusu and Sayek (2004), Giuliano and Ruiz-Arranz (2009), Ang (2009), and Bettin and Zazzaro (2012).

$$g_{it} = \alpha_O + \alpha_1(ODA_{it}) + \alpha_2(S_{it}) + \alpha_8(ODA * S_{it}) + \sum_{j}^{n} \gamma_j X_{it} + \varepsilon_{it} \qquad (2)$$

where S_{it} is the ratio of national savings to GDP, and $(ODA * S)_{it}$ it is the

interaction term of national savings and foreign aid inflows. In line with Bandyopadhyay et al. (2015), we also incorporate the external debt (ED) into our baseline equation.

$$g_{it} = \alpha_O + \alpha_1(ED_{it}) + \alpha_2(S_{it}) + \alpha_8(ED * S_{it}) + \sum_{j}^{n} \gamma_j X_{it} + \varepsilon_{it} \qquad (3)$$

In line with Feeny and Fry (2014), Haq and Luqman (2014), and Kathavate and Mallik (2012), we estimate Equation (3) with the generalized method of moments (GMM). Arellano and Bond (1991) first introduced the difference-GMM, while Blundell and Bond (1998) pioneered the system-GMM technique. Identification in both techniques is based on the first-difference estimates, and lagged values of endogenous variables are used as instruments. The GMM estimates provide more reliable and efficient results if there is the possibility of heteroskedasticity. Moreover, it also avoids the potential endogeneity in the model under consideration.

We used the data of seventeen economies over the period of 1990-2018 for the empirical analyses[4]. The selection of these seventeen economies is justified on two grounds. First, most of these countries depend on foreign assistance, which might explain foreign aid's role in the growth process of these countries and is also more suitable for our study. Second, these economies are on the same level of development and have the same growth fundamentals. Hence, this fact helps us to avoid potential heterogeneity, which is one of the main disadvantages of panel data analysis. The variables and data sources are available in Table A1 in Appendix A.

4. Empirical Findings and Interpretation

As mentioned above, the key objective of this study is to test the hypothesis that foreign assistance is a complement of or a substitute for domestic savings in the long-run growth process. Hence, in our empirical indication, Table 1 presents the empirical findings of our growth equation (Equation 1), in which we regress $GGDPit$ (growth of real GDP) on ODA_{it} (ratio of official development assistance (ODA) to GDP) and (ratio of external debt (ED) to GDP), along with the set of control variables. From the table onwards for specification 1 (Column 2), we perform a sensitivity analysis. In line with the

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[4] The selected lower income and lower-middle income countries are Armenia, Bangladesh, Bhutan, Cambodia, Georgia, India, Indonesia, Kyrgyz Republic, Laos, Mongolia, Nepal, Pakistan, the Philippines, Sri Lanka, Tajikistan, Ukraine, and Vietnam.

existing literature on dynamic panel models, we introduce the lag dependent variable (GGAPit−1) as an explanatory variable.

Table 1. Estimated Results (Dependent Variable Is Growth of GDP).

Variables	S_1	S_2	S_3	S_4	S_5
GGDPit −1	0.529*** (0.000)	0.552*** (0.000)	0.509*** (0.000)	0.541*** (0.000)	0.611*** (0.000)
GPOPit	-0.824** (0.033)	-1.30* (0.110)	-1.02* (0.223)	-1.623** (0.050)	-1.389*** (0.010)
HCit	-0.081* (0.261)	0.100* (0.100)	-0.105* (0.105)	-0.127* (0.060)	-0.126* (0.081)
TOPit	8.666*** (0.000)	8.357*** (0.001)	7.764*** (0.001)	7.328*** (0.003)	9.008** (0.023)
ODAit	40.12*** (0.013)	---------	52.30*** (0.001)	---------	---------
EDit	---------	4.31** (0.020)	---------	5.44*** (0.006)	---------
Sit	0.065*** (0.008)	0.644*** (0.009)	---------	---------	0.045* (0.053)
INVit	---------	---------	27.24*** (0.000)	25.92*** (0.000)	…….
ODASit	---------	---------	---------	---------	0.005** (0.020)
EDSit	---------	---------	---------	---------	---------
Number of observations	476	476	476	476	476
Number of countries	17	17	17	17	17
Number of instruments	28	28	28	28	28
Sargan's P value	0.91	0.98	0.93	0.97	0.87

i) The P values appear in parentheses.
ii) Equations are corrected for heteroskedasticity where needed.
iii) ***, **, and * show the levels of significance at 1%, 5%, and 10%, respectively.

Variables	S_6	S_7	S_8	S_9	**S_10**
GGDPit −1	0.612*** (0.000)	0.590*** (0.000)	0.544*** (0.000)	0.586*** (0.000)	0.580*** (0.000)
GPOPit	-1.74** (0.033)	-1.165*** (0.016)	-1.76** (0.033)	-1.051** (0.021)	-0.853* (0.321)
HCit	-0.156** (0.030)	-0.158** (0.028)	-0.159** (0.022)	-0.121* (0.09)	-0.077** (0.023)
TOPit	8.781*** (0.000)	8.842*** (0.000)	8.477*** (0.001)	8.051*** (0.002)	8.600*** (0.001)
ODAit	---------	---------	--------	---------	36.76** (0.022)
EDit	---------	---------	---------	4.34** (0.026)	---------
Sit	---------	0.127*** (0.003)	---------	0.130*** (0.002)	0.045* (0.053)
INVit	21.91*** (0.001)	---------	22.34*** (0.001)	---------	---------
ODASit	0.007*** (0.001)	---------	---------	---------	0.004** (0.040)
EDSit	---------	0.0001** (0.059)	-0.0003** (0.031)	0.0001** (0.050)	---------
Number of observations	476	476	476	476	476
Number of countries	17	17	17	17	17
Number of instruments	28	28	28	29	29
Sargan's P value	0.89	0.92	0.93	0.92	0.90

P values appear in parentheses.

Equations are corrected for heteroskedasticity when needed.

***, **, and * show levels of significance at 1%, 5%, and 10%, respectively.

The coefficient of the lag of the dependent variable is statistically significant with a positive sign, indicating that the current growth of GDP depends on its lag GDP growth. In specification 1, the interest variable of our study, that is, (ODA_{it}), is also statistically significant with the expected positive sign, implying that foreign assistance in the form of ODA positively contributes to economic growth[5]. These results are consistent with existing theoretical and empirical literature (for instance, Chenery and Bruno, 1962;

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[5] The coefficient of (ODA_{it}) is too high in all of the specifications because it is basically a ratio of official development assistance to GDP, and when we apply estimation of ratios, the resultant coefficient is always high. The same patterns are observed in the case of external debt (ED_{it}).

Chenery and Strout, 1966; Papanek,1973; Gulati,1975; Dowling and Hiemenz,1982; and Gupta and Islam,1983; Fielding and Mavrotas, 2006; Young and Sheehan, 2014).

The coefficient of our control variable human capital (HC_{it}) that enters into specification one is statistically significant and has an unexpected negative sign at the five- and ten-percent levels of significance. One possible justification is that we have used primary enrolment as a proxy for human capital, and to some extent it is an investment. It could have a lag effect, but right now, it negatively affects economic growth. The coefficient of the growth rate of the population (GPOPit) that enters the model is also statistically significant with the expected negative sign. These findings are also in line with the existing empirical literature (for instance, Moreira, 2005; Asteriou, 2009; Feeny and Fry, 2014). They endorse the negative role of the population growth rate in boosting macroeconomic performance. Another control variable (TOP_{it}) (imports plus exports as a percentage of GDP) enters the specification and is statistically significant, with the expected positive sign indicating that economies that are highly open to international trade have a rapid pace of economic growth. The findings are in line with the existing studies conducted by Feeny (2005), Asteriou (2009), and Feeny and Fry (2014), supporting the trade liberalization regime. This outcome also supports the claim that countries that are more liberalized and have good trade policies can accelerate long-term economic growth. Trade openness also creates more opportunities to diffuse knowledge, as well as new technologies. Control variable S_it(ratio of total savings to GDP) also enters into the model with a statistically significant and expected positive sign.

From columns three to eleven, sensitivity analysis is performed to test the reliability and robustness of our results. It is important in this stage to emphasize that the lag of the dependent variable ($GGDP_{t-1}$), population growth ($GPOP_{it}$), human capital (HC_{it}), and trade openness (TOP_{it}) are common to all specifications. However, in specification two (column three), we replace our variable of interest ODA_{it} with external debt (ED_{it}), which enters the model significantly and with a positive sign. The results reveal that, in the case of the selected countries, an increase in external debt has a positive effect on economic growth. These results are also consistent with the existing empirical literature. For instance, Sulaiman and Azeez (2012) and Siddiqui and Malik (2001) reported the same findings for South Asian countries. In specification three, column four, we replace our variable of interest ED_{it} with ODA_{it} again, which enters into the model significantly and with a positive

sign. We also replace savings (S_{it}) with investment as a percentage of GDP(INV_{it}), which is also statistically significant with the expected positive sign. These findings are also in line with the existing empirical literature (Hansen and Tarp, 2001; Siddique et al., 2015).

From Column 6 (specification 5) to Column 11 (specification 10), we have included different interactive terms with our set of control variables. Our first interactive term of official development assistance and saving ($ODAS_{it}$) in specifications 5, 6, and 10 appears highly significant and with the expected positive signs, indicating that foreign assistance enhances the growth capacity of domestic savings. The positive and significant entrance of the interaction term into these growth specifications indicates that foreign assistance complements domestic savings in the long-term growth process of the selected Asian countries. Similarly, our second interaction term of the external debt and saving (EDS_{it}) in specifications 7 and 9 carries a positive sign that is significant, revealing that this component of foreign assistance also complements domestic savings in the long-run growth process. These results are consistent with the earlier theoretical and empirical literature on the subject (Chenery and Strout, 1966; Rosenstein-Rodan, 1961; Gupta, 1970; Grinols and Bhagwati, 1976).

5. Conclusion

The key objective of this study is to test the hypothesis that foreign assistance is a complement to or a substitute for domestic savings in the long-run growth process. The empirical investigation was performed in 17 selected aid-receiving countries in Asia over the period of 1990-2018. Overall, the results substantiate that both official development assistance and external debt are positively associated with the long-term economic growth of the sample countries. The main finding of the study is that the interaction term of official development assistance with savings shows a relatively stronger effect on economic growth compared with the individual terms of official development assistance. This result indicates a complementary relationship between foreign assistance and savings. Similarly, the interaction term of external debt and savings also shows a stronger effect on economic growth compared with individual terms of external debt. This finding also supports the claim that foreign debt plays a complementary role to domestic savings in the long-run growth process. Hence, it can be safely concluded that foreign assistance in the form of official development assistance and external debt acts as a

complement to domestic resource mobilization and helps to increase economic growth in these selected developing countries.

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Appendix A: Variables and Data Sources

Variable	Description	Source	Measurement
$GGDP_{it}$	Growth of GDP	WDI	Annual Percent
ODA_{it}	Official development assistance	WDI	Percent of GDP
ED_{it}	External debt	WDI	Percent of GDP
$GPOP_{it}$	Growth of population	WDI	Annual Percent
S_{it}	National savings	WDI	Percent of GDP
INV_{it}	Investment	WDI	Percent of GDP
HC_{it}	Primary enrollment in gross percentage	Penn World Table 7.1	Gross Percent
TOP_{it}	Trade openness	WDI	Total trade percent of GDP

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KNOWLEDGE RISK MANAGEMENT AND ORGANIZATIONAL CHANGE. EVIDENCE FROM COOPERATIVE CREDIT SYSTEM

Abstract

This paper aims to establish a relationship between Knowledge Risk Management (KRM) and Organizational Change Management (OCM) in local banks. Since this linkage has not yet been investigated in the literature so far, the present study proposes a conceptual framework to demonstrate possible impact of knowledge risks on Italian cooperative credit banks (CCBs) following the cooperative credit system reform. Hence, research questions addressed are: Has cooperative credit system reform exposed Italian CCBs to knowledge risks? What types of knowledge risks affect Italian CCBs before and after the reform?

Findings showed that different types of knowledge risks can affect Italian CCBs before and after the cooperative credit system reform.

1. Introduction

The International Cooperative Alliance (ICA) defines a cooperative as "an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise" (ICA, 2015, p. 105). As cooperatives, cooperative credit banks (CCBs) put their values into practice

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following the principles of self-help, identity, democracy and co-operation among co-operatives (McKillop, French, Quinn, Sobiech & Wilson, 2020).

The current organization of the Italian cooperative credit system is the result of an important reform sanctioned by Law no. 49 of 8 April 2016. Fundamental point of this reform is the establishment of Cooperative Banking Groups (CBGs), which CCBs are obliged to join, while maintaining their distinctive characteristics of cooperativism and mutualism. CBGs carry out management and coordination actions on CCBs, while these latter obtain in return a sort of cross-guarantee deriving from the same membership in the group. Banking groups that have been operating in Italy since 2019 are: Iccrea Cooperative Banking Group and Cassa Centrale Banca Cooperative Banking Group; an Institutional Protection Scheme (IPS) was instead constituted by the 39 Casse Raiffeisen of Alto Adige (Official Website of Credit Italian cooperative https://www.creditocooperativo.it).

Aiming at reducing the fragmentation of Italian cooperative credit sector, the 2016 reform established guidelines providing for i) preservation of privileged relationship between CCBs, communities and territories, ii) improvement of CCBs quality of governance, and iii) the possibility for CCBs of raising capital also outside the cooperative credit system (MEF, 2016). Italian CCBs, therefore, had to face a complex organizational transformation: from a voluntary membership network to three centralized banking groups, and this, without the necessary criticalities essentially linked to: i) the heterogeneous composition in terms of size and geographical distribution of the Italian CCBs, ii) the fast implementation times of the reform, and iii) the challenge in maintaining cooperative and mutualistic characteristics typical of these banks (Migliorelli, 2018).

The Italian cooperative credit system reform brought to light also CCBs weaknesses, that global crisis already highlighted, and proposed interventions aimed at overcoming them. As regards the CCBs capital endowment, the reform was aimed at overthrow constraints linked to the cooperative form, through the group's assets, and thanks to the fact that the parent company is a joint-stock one; with reference to compliance with prudential rules, the reform allowed to overcome cyclical and structural problems of CCBs deriving from the tightening of International rules; from the point of the profound reorganization and the huge investments both in technical and professional resources required of the CCBs by the technological revolution of recent years, the reform aimed to remedy the typical shortcomings of the cooperative credit system (Barbagallo, 2018).

The reform of the Italian cooperative credit sector is also aimed at correcting some critical issues in the CCBs governance model, proposing

changes aimed: i) at outlining a group governance through the stipulation of a cohesion pact, to pursuing balance between unity of direction and preservation of CCBs/shareholders relationship, ii) at structuring an organizational model that allows CCBs to take advantage of the opportunities offered by a big group membership. (Bruno & Iacoviello, 2020; Abbadessa & Cesarini, 2019).

Changes required by the reform to Italian CCBs also entailed a significant increase in complexity of their knowledge management (KM). An efficient KM could support CCBs in identifying, applying and sharing the crucial knowledge that serve to overcome challenges brought by the reform (Yolles, 2000; Garetti, Terzi, Bertacci & Brianza, 2005; Keszei, 2018; Dost, Pahi, Magsi & Umrani, 2019).

Nonetheless, a lack of knowledge could occur, or it can happen that it is improperly managed, especially when organizations are stressed by radical changes such as those required by the Italian CCBs reform. In these cases, knowledge, from strategic asset, could become the origin of what some researchers defined as knowledge risks, i.e. those risks originated from an inefficient knowledge management (Durst, 2019). Due to their potential harmfulness, knowledge risks could represent a real threat to all organizations. An3ffectivee and efficient Knowledge Risk Management (KRM), therefore, becomes essential for prevention and mitigation of knowledge risks. Studies on KRM are still fragmented, and a structured and fully developed line of research does not yet exist (Durst, 2019), highlighting the largest gap with reference to companies from banking and financial sectors (La Torre, 2020). To the best of authors' knowledge, only one study is specific on CCBs (La Torre, 2020), but identification of knowledge risks which could afflict CCBs due to organizational changes was not the aim of that research. Against this lack, the present paper could represent an opportunity to fill it, providing a theoretical framework for identifying knowledge risks which are more likely to affect the Italian CCBs in the post-reform period.

Taking into account the above-mentioned, the following research questions arise: 1) Has the reform of Italian cooperative credit system exposed the CCBs to knowledge risks? 2) What types of knowledge risks affect the Italian CCBs before and after the cooperative credit reform?

On the basis of these premises, the remainder of this paper is structured as follows. In Section 2, the methodological approach used to answer the research questions formulated is illustrated; Section 3 provides a review of the existing literature with reference to KRM and Organizational Change

Management (OCM); Section 4 deals with knowledge risks management in organizational changes, while conclusions are provided at the end of the paper.

2. Methodology

In this paper, the conceptual research method was applied. MacInnis (2011, p. 140) defined conceptualization as "a process of abstract representation of an idea. Conceptual thinking, then, is the process of understanding a situation or problem abstractly by identifying patterns or connections and key underlying properties". Deciding to follow the research approach by Durst and Zieba (2020), we conducted a review for the areas of interest, from which emerged that, so far, there has not been any study published relating Organizational Change Management (OCM) with Knowledge Risk Management (KRM) in banks, in particular, in cooperative credit banks.

Always according to Durst and Zieba (2020), we applied one of the elements of the conceptual framework proposed by MacInnis (2011), but unlike the authors, we did not choose the envisioning, but the relating one. Therefore, following MacInnis (2011), to "relate" OCM with KRM, we "differentiated" the situation of the Italian CCBs before and after the reform to see how much the two situations differ from each other, and "integrated" knowledge risks to see the previously distinct parts as a whole, but with a different meaning from its constituent parts. As a result, we provided a theoretical framework that could be useful for analyzing and interrelating the concepts of OCM and KRM in CCBs.

3. Literature review

3.1 Knowledge Risk Management

Research strand on Knowledge Risk Management (KRM) originated from those studies that consider knowledge no longer exclusively as an organizational asset, but also as a possible source of risks (Maqsood, Finegan & Walker, 2004; Chua, 2009). The current maturity stage of KRM strand allows to refer to a precise taxonomy of knowledge risks to which organizations of all types and sizes could be exposed (Durst & Zieba, 2017). Knowledge risks were defined by Durst and Zieba (2019, p.2) as "a measure of the probability and severity of adverse effects of any activities engaging or related somehow to knowledge that can affect the functioning of an organization on any level"; the authors also divided knowledge risks into three

macro-categories: human knowledge risks, technological knowledge risks and operational knowledge risks.

Knowledge risks belonging to the first category are the following: knowledge hiding, knowledge hoarding, unlearning, forgetting, and missing/inadequate competencies of organizational members. Knowledge hiding derives from the intentional willingness to withhold knowledge that is requested by another organizational member; when there is a tendency to accumulate and keep secret knowledge that may or may not be shared at a later time, the risk of knowledge hoarding becomes evident; instead, unlearning and forgetting knowledge could become risky for organizations when imply intentionality in causing damage, otherwise, they fall within the physiological management of knowledge in particular moments of organizational life; the last type of human knowledge risks refers to the lack of training, experience and skills of one or more members of the organization (Durst & Zieba, 2019). Risks related to cybercrime, old technologies, digitalization, and social media are included in technological knowledge risks category, and they can occur when organization fails to properly manage the opportunities offered by technology, rather making technological equipment a vehicle for situations harmful to it (Durst & Zieba, 2019). Knowledge waste, relational risks, knowledge outsourcing risks, risk of using obsolete/unreliable knowledge, knowledge transfer risk, and Merger & Acquisition risks belong to the last category, i.e. operational knowledge risks. Knowledge waste could occur when potentially useful and available knowledge is not used; relational risks depend on incorrect collaboration, or on opportunistic behaviors of partners; in the event of outsourcing of organizational activities or functions, it may happen that knowledge and some skills of involved organizational members are lost; when exchanging knowledge that is outdated or from unreliable sources between organizations, there could be a risk of outdated/unreliable knowledge; knowledge transfer risks depend, instead, on the "transmissibility" of these risks within the organization or between organizations; there are also several situations that could expose organizations to knowledge risks associated with mergers and acquisitions, such as, for example, incorrect communication between the parties involved, or knowledge retention following a reduction or change in staff, or a lack of availability of knowledge in the new organizational context (Durst & Zieba, 2019).

Despite all this information regarding nature and potential for harmfulness of knowledge risks, from a recent and authoritative systematic review of the extant literature (Durst, 2019), we learn that KRM is still a developing strand, and that much still needs to be done to improve it. Studies included in this

review allowed the author to identify some themes of interest: awareness rising about knowledge risks, conditions and frameworks for improved KM and KRM, and trade-off between KRM investment and benefits. Considering banking and financial sectors, few studies were carried out on the subject of KRM. A recent systematic review (La Torre, 2020) confirmed this, also highlighting the lack of contributions that link KRM with organizational change management (OCM) in banks. With respect to this situation, this paper aims to contribute to fill this gap by proposing a study connecting KRM and OCM, with specific reference to Italian cooperative credit context.

3.2 Organizational Change Management

Lewin (1947, p. 35) expressed his approach to change in these terms:

"A successful change includes therefore three aspects: unfreezing (if necessary) the present level L1, moving to the new level L2, and freezing group life on the new level. Since any level is determined by a force field, permanency implies that the new force field is made relatively secure against change".

From this definition, emerged what would become the best known and perhaps the most followed approach to organizational change management (OCM), namely Lewin's Three-Step model. Regarded as a key contribution to organizational change, the Tree-Step model was part of Lewin's planned integrated approach to change together with: Field Theory, Group Dynamics and Action Research. Under Lewin's model, successful organizational change required three steps: unfreezing, moving and refreezing. The first step implies that the equilibrium had to be unfrozen, that is, destabilized, before the old behaviors could be disapproved and the new ones adopted; moving is the step that allows to pass from less acceptable to more acceptable behaviors; the third step of the model aims to stabilize the new behaviors acquired in a new equilibrium, in order to avoid a regression to the previous step (Burnes, 2012).

Over the years, many scholars have been inspired by Lewin's model, considering it a solid approach for understanding organizational change, and anything but simplistic and undeveloped (Burnes, 2020). Despite this, there has been no lack of criticism of this model. Cummings, Bridgman and Brown, (2016) summarized some of the main criticisms leveled against Lewis' model, such as his too static conception of organization "like an ice cube"; or the refreezing step, seen as an element of rigidity conflicting with the need for flexibility and adaptation of changing organizations; other critics argued that

Lewin's model is just a repackaging of a mechanistic philosophy underlying Taylor's concept of scientific management.

A recent literature review (Rosenbaum, More & Steane, 2018) pointed out that, despite the criticisms leveled at the Three-Step model, researches carried out in this field, in more than fifty years, did not produce substantial innovations on OCM topic, rather developing approaches for a better understanding of Lewin's theory, and for optimizing its application in future research. The authors of this review identified and analyzed thirteen planned organizational change models (POCMs), finding clear links of these with the original Lewin model, and "suggesting that development of POCMs is more than an exercise in developing ongoing procedural steps to support change within the existing framework of the three-step model" (Rosenbaum et al., 2018, p. 286).

Other studies considered, instead, the link between knowledge, knowledge Management (KM) and OCM. In some of these studies, it is noted how KM strategies can indirectly affect the success of organizational change through organizational learning and the willingness to change in organizations (Imran, Rehman, Aslam & Bilal, 2016). Gamble (2020) explored the role of tacit and explicit knowledge within organizational change contexts; while in another contribution, the role of knowledge leader in large companies operating in a changing environment is investigated (Bertoldi, Giachino, Rossotto & Bitbol-Saba, 2018). Against this background, knowledge and KM can be considered as crucial for OCM success. However, organizations also need to be aware of the risks associated with knowledge management and, therefore, considering their effects on managing successful organizational change. To the best of authors' knowledge, to date, there are no studies addressing the issue of knowledge risks affecting organizational change. Therefore, this paper could help to fill this gap in the literature, as it aims to investigate the linkage between knowledge risk management and organizational change management, in particular considering the impacts of knowledge risks on organizational change in local banks.

4. Managing knowledge risks in organizational changes

The above highlighted through literature review allowed the authors of this paper to identify knowledge risks that may occur in CCBs before the organizational change following the reform of the Italian cooperative credit system, and to envisage which of these risks may occur after the reform. Table 1 lists knowledge risks classified according to their origin, and the situation of the CCBs before and after the reform. As Durst and Zieba (2020) stated, this

represents the first step for the implementation of KRM activities, namely the identification of the knowledge risks to which CCBs may be exposed before and after an organizational change, and their possible consequences.

Table 1 shows that, before the reform, Italian CCBs were mainly exposed to Human knowledge risks, since the behaviors related to this category of knowledge risks are more compatible with the operation of small and medium-sized organizations. For example, in the case of knowledge hiding, an employee voluntarily decides not to reveal the possession of certain knowledge and to hide it, effectively hindering work behavior based on innovation (Durst & Zieba, 2017).

After the reform, Italian CCBs are expected to be more exposed to Technological and Operational knowledge risks. This is presumably attributable to the effects of organizational change following the reform. Technological knowledge risks may reasonably occur in correspondence with an organizational change aimed at expanding the business structure, with a consequent implementation of technological equipment aimed at moving to "digital business". In these cases, excessive application of algorithms could lead to an overreliance on technology, ignoring the human factor, and thus exposing organizations to the risk of digitalization (Durst & Zieba, 2017). As Table 1 highlights, other Technological knowledge risks could threaten CCBs after the reform. Risk of cyberattacks, for example, or the obsolescence of domestic technological equipment, could hinder remote working imposed by the post-reform work reorganization.

After the reform, Italian CCBs joined Cooperative Banking Groups. Merger & acquisition (M&A) risks could affect this organizational change process, for example, with a lack of correct communication between the involved parties; or due to knowledge retention, following a reduction in the number of employees not unusual in M&A; or due to problems in the availability of knowledge differently stored in the newly created organization (Durst & Zieba, 2017). Therefore, according to Durst and Zieba (2020), CCBs can review their approach to organizational change by considering KRM as a success factor. The framework proposed by Durst and Zieba (2020), and in this paper adapted to the context of cooperative credit system, allows organizations to accurately identify knowledge risks that could affect change, and to set up a KRM strategy based on the most accurate possible estimation of occurrence probability and potential harmfulness of knowledge risks, in order to determine effective actions to be taken to addressing them.

Table 1. CCBs exposure to knowledge risks

	Before the CCBs reform	After the CCBs reform
Human knowledge risks		
knowledge hiding	x	
knowledge hoarding	x	
knowledge unlearning	x	
knowledge forgetting	x	
risk of missing/inadequate competencies of organizational members	x	x
Technological knowledge risks		
risks related to cybercrime		x
risks related to old technologies	x	
risks related to digitalization		x
risk related to the use of social media	x	x
Operational knowledge risks		
knowledge waste	x	x
relational risks		x
knowledge outsourcing risks		x
risk of using obsolete/unreliable knowledge		x
knowledge transfer risk		x
Merger & Acquisition risks		x

Source: own elaboration from Durst and Zieba (2020).

5. Conclusions

This conceptual paper sought to analyze the aspect of organizational change management from the perspective of Knowledge Risk Management. Against the substantial lack of contributions linking these two topical issues, this study tries to participate in the development of the current body on knowledge, proposing a specific framework for identifying those knowledge risks that could influence success of organizational change in local banks. Organizational change is in itself a complex process capable of stressing organizations of any type and size. Small and medium-sized enterprises may encounter greater difficulties in managing organizational change, both with reference to the economic and financial aspects, and from the point of view of the readiness of knowledge management and risk management in facing challenges of change. (Durst & Ferenhof, 2016). Italian cooperative credit

banks dealt with important organizational changes following the recent reform. In a short time, CCBs had to adapt to a new organizational structure, which obliged them to join national cooperative banking groups. Although the main purpose of the reform was to maintain the typical characteristics of these local banks, such an organizational change required the CCBs great efforts, and inevitably highlighted some gaps in the ability to manage the effects of this change. In this context, knowledge risks could represent a serious threat to the CCBs organizational change success. For these banks, having a framework available for the precise identification of the knowledge risks associated with organizational change could represent a valid tool for the success of the change itself, as it indirectly contributes to simultaneously strengthening their knowledge management and risk management.

Nonetheless, this paper presents two main limitations. First, being a conceptual paper, it lacks empirical evidence of knowledge risks effects on the organizational change of local banks; second, it provided just an initial step for a KRM to ensure a successful OCM, namely the ability to accurately identify knowledge risks that are most likely to threaten organizational change effectiveness. The study of these topics - and not only these - can be left to future researches, which could in depth analyzing knowledge risks inherent to organizational change, perhaps by finding new types of them, or by proposing a comparison of experiences of KRM in CMO between banks operating in different countries.

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NEXUS BETWEEN RULES OF LAW, FOREIGN DIRECT INVESTMENT AND GROWTH OF PAKISTAN ECONOMY

Abstract

Foreign Direct Investment has been treated as a key source of capital accumulation, which in turn leads to the growth and development of a country. However, to attract a sound foreign direct investment, there is a need for a peaceful and secure environment, especially for foreign investors. In this regard, Rules of law is one of the important elements of foreign direct investment and have remained the key problem of Pakistan for one and half decades. The previous literature that mostly links foreign direct investment with growth ignored the important variable that is rules of law. Therefore, this study is conducted to investigate the nexus of rules of law, foreign direct investment, and the growth of Pakistan from 1980-2016. The study found a crucial role of rules of law on foreign direct investment that leads to economic growth as there exists bi-directional causality between rules of law with foreign direct investment and uni-directional with economic growth of Pakistan. Moreover, the outcome shows that foreign direct investment and rules of law have a significant effect on growth, however, the correlation between growth and rules of law has an inverse effect. The government of Pakistan needs to provide a good environment that shall be accompanied by a satisfactory condition of rules of law as well as economic and political stability in the country.

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1. Introduction

Economic growth means an increase in real GDP; well this means an increase in national income, national output, and total expenditure. Economic growth permits an increase in the consumption of goods and services that improves the living standards of the citizens. Economic growth depends upon numerous factors in which one of the prominent factor is Foreign Direct Investment (FDI) that shakes the economic expansion of a nation. FDI is the utmost well-known type of investment in the world and has a positive influence on growth and development. Economists claimed that FDI shows a vigorous part to improve technology and make native firms more advanced (Thomas, Li & Liu, 2008).

Foreign direct investment in developing countries is a significant factor and is commonly grasped as a promoter for economic growths. For many periods, FDI has been treated as a key source of capital accumulation, which in turn leads to economic growth in a beneficiary economy. Therefore, emerging and developing countries make all possible efforts and policies to attract more inward FDI via eliminating limitations of foreign investment, policies, and procedures, stimulating the financial and economic expansion, and generating hopeful and secure environments for foreign investment (Zhang, 2017).

The link between institutional organizations and FDI streams has established substantial attraction in previous years. It is well known that overseas investors pay a great deal of devotion to the official framework of the countries in which they take an investment (OECD, 2009). Therefore, it is stressed in the literature that emerging countries should try to start solid and high-quality institutions to fascinate more FDI streams. The control of government efficiency, corruption, voice and liability measures of institutions positively affect FDI flows (Daude & Stein, 2007).

A positive governance structure is a powerful tool to bring the FDI. The foreign direct investment would advance the output of the host country (Blomstrom & Kokko, 2001). It is habitually extraordinary inference that FDI is either skill-seeking, or efficiency-seeking, often leads to bring the extraordinary expertise and eventually conveys the elevation of economic development (Dunning, 1993). Open market, remarkable governance, political constancy, arduous laws, and good administration lastly bring the FDI (Narula & Dunning, 2000).

Investment plays significant role in the development of a country either it is domestic or foreign investment. FDI is positively related to economic

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growth but rule of law like political condition, corruption control, terrorism etc. are also affecting it. The rule of law has remained the key problem of developing countries. Like that, especially after 2000 it also becomes a core problem of Pakistan that disturbs the FDI and economic growth of the country. Further, the earlier literature investigated the effect of FDI on growth with supporting variables like inflation, domestic investment, unemployment, productivity, etc., while none of the included a variable rule of law in the case of Pakistan.

Foreign direct investment assists the country in such a way that increases employment, production, exports, self-sufficiency level, and reserve ratio. Keeping the importance of FDI, this study is conducted to investigate the nexus of rules of law, FDI, and the growth of Pakistan. Since previous decade's rule of law is remained the major problem in Pakistan that not only disturbs the smooth economic growth but also hits the country socially, culturally, and financially. These severe effects of rule of law also create fear in domestic as well as foreign investor, which leads to a decline in FDI inflow. Therefore present study aims to empirically examine the effect of rules of law on FDI that leads to the economic growth of Pakistan.

1.1 Objectives of the Study

The main objectives of the study are as follows.

I.   To empirically investigate the effect of rules of law and FDI inflow on the economic growth of Pakistan.
II.   To investigate the causal relationship between rule of law, FDI, and growth of Pakistan.

2. Literature Review

Various developing countries face investment problem due to the gap of saving and this gap is filled through FDI (Kobrin, 2005; Lee & Ataullah, 2006). Besides this, involvement in worldwide trade is also careful as an important tool for attaining economic growth.

Sarkar (2008) explored the impact of FDI on economic growth for twelve African countries, using secondary data for the period of 1975-1999. The results of the study showed that FDI has a positive impact on the economic growth of most of the studied African nations. Adegoke (2014) investigated

the governance effects of the attraction of FDI and its effect on the growth rate in African countries. The results of the study concluded that in some regions due to weak governance, FDI negatively affects the growth rate while in many regions where the governance is good positively affects the growth rate.

Majeed & Ahmad (2007) studies the relationship of FDI with fiscal growth for 49 developing countries, using panel data over a period of 1970-2004. The results showed that there is a considerable link between profitable productivity and foreign direct venture. Khaliq & Noy (2007) explored the impact of FDI on the growth of Indonesia taking sectorial data for the period of 1997-2006. The findings of the study showed that at the aggregate level, economic growth has been significantly affected FDI. Further, resulted that the composition of FDI has a positive impact on a few sectors i.e. livestock product, farm food crops, mining, fishery, forestry, and quarrying non-oil and gas industry, gas water and electricity, retail construction and wholesale trade, restaurant and hotels transport and communications, and other private and public sectors.

Khan and Khan (2011) investigated the effect of FDI inflow in Pakistan using time series data over the period of 1972-2009. For the analysis of data, the study used the specific baseline model to find out the empirical relationship. The study found that there is an insignificant influence on long-term capital inflows. The study also concluded that natural resource endowments, domestic investments, monetary growth, and transportation exert a significant positive impact on FDI in short term as well as in long term. In addition, the trade openness also stimulus inflows of FDI negatively in the long term while there wasn't any significant evidence found regarding the short term. The results of the study further showed that domestic investment is linked with FDI positively in short term. Therefore, the study recommended that domestic investors should be encouraged.

Bhavan, Changsheng & Zhong (2011) empirically highlight the determinants and production effect of FDI in Asian countries using panel data for the period of 1995-2008. The study is based on two analytical frameworks, firstly using the gravity model to explore the potential of FDI in Asian countries. Secondly, the equation of growth model to examine the effects of FDI in Asian counties. On the basis of empirical results, the study concluded that the important determinant of FDI is pulling, pushing, and cycle factor in south Asian countries. Secondly, the economic growth rate and FDI positively correlated with each other in south Asian countries in the long run.

Amna, Imran & Salman (2012) analyzed the effect of FDI on the growth of Pakistan over a period of 1981-2010. The main aim of the study was to

evaluate the economic growth performance in terms of GDP growth, the trend of FDI, and the consumer price index. From the analysis of data, the empirical results showed that there is strong constructive relation between GDP growth and FDI, whereas, isn't found any significant connection between GDP and inflation rate. Hafiz et al., (2014) examined the effect of FDI on the production side in Pakistan during 2000-2010. The finding of the study showed a positive collision of FDI and productivity in long run. Furthermore, they found that the variables domestic investment, exports size, and political stability are the best indicator of FDI in Pakistan. In the last, they proposed that the government of Pakistan should encourage more domestic investment and ensure political stability.

Sangjoon (2015) examined the effect of FDI on output growth for SAARC countries using panel data for the period of 1960-2013. The empirical results of the study showed that with the passage of time the economic growth of SAARC countries is mostly based on FDI. In addition, the results also showed that financial development, human capital, and government consumption are also statistically significant and have positive impacts on the growth of SAARC countries. The study suggested that for steady and sustained economic growth a strong and efficient financial institution is required to provide financial capital to attract foreign direct investment. Erum, Shahzad & Abida (2016) analyzed the impact of FDI on the economic growth of SAARC countries for the period of 1990-2014 applied Taylor series approximation and Fixed Effects Model. The study resulted that both the household assets and FDI have an optimistic effect on monetary growth, however, domestic private investment is more trustworthy than FDI.

Hussain and Haque (2016) investigated the association between FDI, trade, and growth of Bangladesh using time sequence data for the period of 1973-2014. The study resulted that both foreign trade and FDI have a momentous impact on GDP per capita. Furthermore, they suggested that the government of Bangladesh needs to reduce the barriers to capital flows to achieve high economic growth.

Trojette (2016) explored the effect of FDI on economic growth reliant upon the institutional altitude for five regions (Asia, Europe, America, SSA & MENA) for the period of 1984-2013. The outcome of the study showed that the development of institutions has the moderating impact of FDI on GDP growth. The study found that strong institutions play a key role in enhancing the growth of these regions through FDI.

Mihaela (2016) explored the relationship between economic growth and FDI in European Union Nations using panel data for the period of 2008-2014. The empirical results of the study identified the negative and positive relationships of FDI and economic growth EU-28, such as the results showed that there were some countries in EU-28 that confirmed that higher FDI did not generate economic growth and some countries where higher GDP did not attract higher FDI. Thus, the study concluded that a reciprocal relationship was found between FDI and growth since the begging of the economic crisis in the European Union.

Syed and Anwar (2016) highlighted the nexus of FDI, growth, and environment in Pakistan using time series data from 1972-2011. The result showed that the inflows of FDI in some sectors i.e. transport and communication, manufacturing, energy sectors influence positively the growth of Pakistan. On the other side, the study also concludes that these factors are the main cause of CO_2 emission in Pakistan. The study suggested that the government should take steps for the mitigation of Carbon dioxide emissions to control the negative environmental effects of FDI. Adeel et al., (2016) investigated the economic policies that help to promote monetary growth and foreign direct investment in Pakistan. The study includes some other observational variables like domestic investment, infrastructure, human capital, institutions, and from empirical results the study concluded that FDI significantly affects the GDP of Pakistan. However, the short-run effect is stronger than the long-run.

Haque, Patnaik & Zubaida (2017) explored the link of FDI and growth for Kuwait for the period of 2000-2014. The findings of different statistical techniques showed that there is a positive relation between FDI and the GDP productivity rate in Kuwait. The study suggests that the government of Kuwait needs to implement those policies which attract FDI and are closely correlated with GDP growth and economic wellbeing.

Gupta and Ishu (2015) investigated the effect of FDI on the economic growth of India for the period of 2000-2013. The empirical results of the study showed that FDI inflows have significant effects on economic growth in India. Choi and Baek (2017) examined the effect of FDI on productivity for India using time series data for the period of 1980-2014. The Solow residual approach such as the total factor efficiency (TFP) was used to investigate the prevailing phenomenon. The empirical results of the study showed that the inflow of FDI improves the total factor productivity in India. The study also suggested that the trade appears detrimental effect on TFP growth in India.

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3. Research Methodology

3.1. The Empirical Model of the Study

Most of the past literature links FDI and growth of various countries (Khaliq & Noy, 2007; Khan & Khan, 2011; Hafiz et al., 2014; Sangjoon, 2015; Gupta & Ishu, 2015; Mihaela, 2016; Erum, Shahzad & Abida, 2016; Adeel et al., 2016; Haque, Patnaik & Zubaida, 2017). This study aims to investigate the relationship between FDI and the growth of Pakistan via including an important variable with respect to Pakistan that is rules of law. The theoretical model is

$$GDP = f(FDI, ROL, INF) \tag{1}$$

While the above relation can be written in econometric equation in the form of:

$$GDP = \alpha + \beta_1 FDI_t + \beta_2 ROL_t + \beta_3 INF_t + \mu \tag{2}$$

Whereas in the above equation "GDP" represents the Gross domestic product, "FDI" Foreign Direct Investment, "ROL" Rule of Law, "INF" Inflation, and "μ" shows normally distributed error term.

In order to look at the causality analysis along with the study variables, the Granger causality equations are:

$$\Delta GDPG = \sum_{k=1}^{n} \beta_1 FDI + \sum_{j=1}^{n} \beta_2 ROL + \sum_{z=1}^{n} \beta_3 Inf + \mu_i \tag{3}$$

$$\Delta FDI = \sum_{k=1}^{n} \beta_1 GDPG + \sum_{j=1}^{n} \beta_2 ROL + \sum_{z=1}^{n} \beta_3 Inf + \mu_i \tag{4}$$

$$\Delta ROL = \sum_{k=1}^{n} \beta_1 FDI + \sum_{j=1}^{n} \beta_2 GDPG + \sum_{z=1}^{n} \beta_3 Inf + \mu_i \tag{5}$$

$$\Delta Inf = \sum_{k=1}^{n} \beta_1 FDI + \sum_{j=1}^{n} \beta_2 ROL + \sum_{z=1}^{n} \beta_3 GDPG + \mu_i \tag{6}$$

3.2   Data Collection and Sources

In order to examine the nexus between rules of law, FDI inflow, and economic growth in Pakistan, the study used yearly time series data taking time periods from 1980-2016. The data is collected from different sources that include the State Bank of Pakistan, Bureau of Statistics, WDI, Global economy, Trading Economics, and Economic Survey of Pakistan.

4.   Analysis, Results and Discussion

4.1 Testing of Stationarity

It is strongly recommended by data analysts and economists to check the data for stationarity especially in the case of time-series data. Sometimes the data used in the research study suffers from a unit root problem that results in ambiguous and spurious relationships between/among the variables. Therefore, this study firstly applied Dicky-Fuller unit root test to find the level of integration of variables data, and the results of the test is listed in table (1).

Table 1. Results of Augmented Dicky-Fuller Unit Root Test

Variables	Acronyms	ADF Values		Critical
		I(0)	I(1)	Values
Economic Growth Rate	Log (GDP)	-3.426311	-5.546128	-2.951125
Foreign Direct Investment	Log (FDI)	-4.084589	-6.275308	-2.951125
Rule of Law	Log (ROL)	-3.927865	-6.116792	-2.951125
Inflation Rate	Log (Inf)	-3.979162	-4.630671	-2.951125

Source: Authors own calculation through E-Views software.

The results of the Augmented Dicky-Fuller (ADF) test given in table (1) shows that all the variables (GDP, FDI, ROL, Inf) are stationary at level {I(0)}, as the value ADF is less than the critical values given at 5%, thus rejecting the null hypothesis of a unit root. It can also be concluded from the ADF results that for regression analysis of variables data, the appropriate method is Ordinary Least Square (NLS & ARMA) for regression analysis of the variables data to examine the empirical relationship of variables.

4.2. Empirical Analysis of the Study

Most of the researchers are of the view that FDI have has a momentous effect on the production, technology, capitals inflow, exports, domestic firms, development and growth of the country (Chung, Mitchell &Yeung, 2003).There are several factors that lead to an affirmative role of FDI to the growth of developing countries i.e. size and structure of the market, factors productivity, modern technologies, cost minimization, infrastructure and risk in the exchange rate, etc. (Busse & Hefeker 2007; Buthe & Milner 2008; Elfakhani & Mackie, 2015). Most of the developing and emerging economies stab their best to attract and bring foreign investment. However, there are also some factors that negatively affect the FDI inflow i.e. political instability, the inefficiency of the institution, poor and weak condition of rules of law in the country. Pakistan is a developing country and faces all these problems for several decades. Therefore, this study empirically investigates the nexus between rules of law, FDI, and economic growth of Pakistan during 1980-2016 and applied NLS & ARMA model as regression technique. The result obtained from empirical analysis is given in table (2).

Table 2. Regression Analysis of Variables Data.

Variables	Coefficient	Std. Error	t-Statistic	Prob.
C	12.89382	0.707690	18.21958	0.0000
Log (FDI)	0.665562	0.094520	7.041503	0.0000
Log (ROL)	-0.343928	0.162616	-2.114973	0.0426
Log (Inf)	-0.468938	0.403876	-3.637101	0.0010
Log(GDP$_{-1}$)	-0.293107	0.070885	-4.134912	0.0000
R-squared	Adjusted R-squared	DW Stat Value	Prob(F-statistic)	
0.928525	0.919302	1.935577	0.000000	

Source: Authors own calculation through E-Views software.

Foreign direct investment has been considered a necessary and desirable factor for the development, growth, and capital inflow to the country as seen from the obtained result. FDI also plays an important role in the development and growth of low and classical technological countries as it is one of the main factors of modern technological diffusion elements from developed and modern technologies to developing economies. This study also empirically examines the role of FDI in the economic growth of Pakistan. The results are given in table (2) indicate that the co-efficient value of FDI is positive and significant confirms their affirmative role in the economic growth of Pakistan. (Haque, Patnaik & Zubaida, 2017; Hussain and Haque, 2016; Khan and Khan, 2011; and Bhavan, Changsheng & Zhong, 2011) have also found a positive and significant role of FDI in the growth of various countries, thus supporting the findings of this study.

Most of the researchers believed that FDI has optimistic effects on economic growth beyond the specific verge of institutional quality. The better institutional quality leads to attracting FDI that significantly adds to the growth and development of the country. However, poor and weak institutional performance in the country restricts the FDI inflow (Anderson and Marcouiller, 2002). The political and government instability, external and internal conflicts, weak bureaucracy and policies adversely affects rules of law in the country leads to adverse effect on FDI (Busse and Hefeker, 2007).

Pakistan too especially from the last two decade faces a severe problem of rules of law in the country that is why this study includes it as an independent variable to empirically investigate its effect on the economic growth of Pakistan. The regression result is given in table (2) shows that rules of law have a dominant effect on the economic growth of Pakistan via FDI and it is clarified from the finding of this study that satisfactory condition of rules of law in the country will successfully attract more FDI that will have an affirmative effect on the economic growth of Pakistan. The finding of the current study for rules of law is consistent with the studies of (Nathan, 2008; Gani & Saif Al-Abri; 2013; and Chungshik, 2015)

4.3. WALD Test

The Wald test, also known as the Wald Chi-Squared test, is a technique that determines the relevancy and importance of explanatory variable in a model. "Important" means that they add something to the model; you can ignore variables that don't add anything without interfering with the model in any

meaningful way. Wald tests are usually discussed in terms of chi-squares because the sampling distribution (n is close to infinity) is usually known. This change in testing is sometimes referred to as the Wald Chi-Squared test to discriminate it from the Wald Log-Linear chi-square technique, which is a non-parametric change based on the log odds ratio.

However, the F-statistic tells us about the joint hypothesis of independent variables. We can say that whether all independent variables can in cooperation influence the dependents variable or not. In the table above the F-statistics value is 6359.511and corresponding Probability is 0.0000 meaning that the p-value is highly significant and less than 5% alpha, so the (H_0) null hypothesis can be disallowed and conclude that all intendant variables are necessary for the model given in table 3. It means that the entire independent variable is common can influence the dependents variables which economic growth.

Table 3. Wald Test for Long-Run Relation

Test Statistic	Value	Probability
F-statistic	6359.511	0.0000
Chi-square	25438.04	0.0000

Source: Authors own calculation through E-Views software.

4.4 Stability Analysis

For stability analysis of the regression results, the Breusch-Godfrey sequence-related LM test and the Breusch-Pagan-Godfrey Heteroscedasticity test were applied and the results of these tests are given in table (4) and (5).

The result of table (4) shows the results didn't suffer from auto, serial correlation nor spurious relation. Further, the result of the table (5) indicates that the results are free from the problem of Heteroscedasticity.

In this study, Breusch-Godfrey LM-Serial correlation is applied to the extent to check the autocorrelation in the data. The value of Breusch-Godfrey of the data 1.24, that lies between 1 and 2, it was lies between the range it means that does not autocorrelation in explanatory variables shown the table 4.

Table 4. Serial Correlation Test Results

Test Statistic	Value	Probability
F-statistic	1.244155	0.1419
Chi-square	1.525324	0.1252

Source: Authors own calculation through E-Views software.

It is also important to check the heteroscedasticity in the data before the analysis of the econometrics model. When the p-value is below than alpha (e.g. $p<0.05$) so in data the will exist heteroscedasticity. But in the data statistic value is greater than alpha $0.81>0.005$, that means that exist homoscedasticity in the data and does not heteroscedasticity shown in table 5.

Table 5. Result of Heteroscedasticity Test

Test Statistic	Value	Probability
F-statistic	0.817376	0.5239
Obs*R-squared	3.434604	0.4879

Source: Authors own calculation through E-Views software

4.5 Causality Analysis

The Pairwise Granger causality approach is applied to find out the causal association between foreign direct investment, rules of law, and the growth of Pakistan. The results of the Granger Causality test is given in table 6.

Table 6. Pairwise Causality Analysis Results

Variables	GDP	FDI	ROL	Inf	Direction of Causality
GDP	---	0.000	0.001	0.064	GDP→FDI,GDP→ROL
FDI	0.842	---	0.035	0.761	FDI → ROL
ROL	0.4791	0.004	---	0.363	ROL → FDI
Inf	0.375	0.292	0.723	---	No Relation

Source: Authors own calculation through E-Views software

The results given in table (6) indicate that a uni-directional relationship exists between FDI and the growth of Pakistan. The FDI significantly affects the growth, however, the GDP doesn't have any effect on FDI. Further, the desired relationship of this study is between the rule of law and FDI. The result clearly shows that there is bi-directional relation between the rule of law and FDI exits. It means that in order to attract more FDI for enhancing steady GDP growth, the government must need to provide a good environment that should be accompanied by a satisfactory condition of rule of law, political and economic condition.

5. Conclusion & Recommendations

5.1 Conclusion

The current study focused on foreign direct investment in Pakistan, the association amongst the rules of law, and economic growth. The study used time series data from 1980-2016 collected from different authentic databases. Different theorists and researchers empirically investigated the impact of FDI and economic growth with supporting variables like inflation rate, unemployment rate, labor productivity, exchange rate domestic investment, per capita income, etc (Amna, Imran & Salman, 2012, Hafiz et al., 2014; Gupta and Ishu, 2015).

Many researchers have shown that political instability and institutional quality in receiving countries are critical for countries and transnational organizations to decide where to invest in developing countries (Busse & Hefeker, 2007; Buthe & Helen, 2008; Gani & Saif Al-Abri, 2013; Chungshik, 2015; Trojette, 2016). Those countries experiencing democracy and rule of law stability are more attractive for multinationals on the other hand countries with political uncertainty risk attract small FDI (Dunning, 1993, Narula & Dunning, 2000). Unfortunately, in Pakistan, there is less implementation of rule of law. In this regard, Pakistan received less FDI in comparison to other developing nations. The present study is new in terms of FDI and GDP growth and Rule of Law in the sense that such analyses were very rare especially in the case of Pakistan.

The current study empirically investigated the nexus of FDI, rules of law, and economic growth and found that both rules of law and FDI plays an important role in the economic growth of Pakistan. Further from causality analysis, it has been found that bi-directional causality exists between rules of law and FDI in Pakistan that means that rules of law have playing a crucial role in attracting foreign investors and FDI to Pakistan. The government of Pakistan needs to ensure a better environment and stable condition of rules of law in the country for sustainable growth of FDI inflow to the country for steady enhance of GDP growth.

5.2 Recommendations

On the basis of findings, the study recommends a few policy suggestions, in order to increase FDI in Pakistan.

I.   The outcomes of the study disclosed that FDI positively affects Pakistan's Economic Growing. Hence, the study shows that government policymakers and government authorities would bring improvements in the national market in order to encourage more FDI in Pakistan.

II. The government of Pakistan needs to boost the Minimize production costs in the country by improving infrastructure, building new roads, improving transportation facilities and installing modern machinery for final product exports that will bring betterment in the domestic market and will lead to attracting FDI.

III. The government authorities should strictly implement corruption control   policies and brings political stability. This will bring better utilization in FDI and other determinants of economic growth and development.

IV. Government should also focus on human capital such as education and health through stable policy so that FDI can be utilized properly keeping in view the trained and skilled labor force.

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