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Abstract

In this dissertation, we investigate two major claims, quite frequently associated with microfinance: i.e., that microfinance decreases poverty and that it enhances economic conditions of poor households on a nationwide level. Since those claims are made for an aggregate level, we reject micro level investigations because they do not constitute an adequate approach for this research. However, we reject a nationwide aggregate approach as well, because it is to be expected that the relatively small volume of microfinance to overall GDP of Pakistan, rule out interesting findings on a nationwide scale. Consequently, we analyze the socio-economic effects of microfinance on a subnational, i.e. on a district level in Pakistan. We select two districts: Sialkot (SK), a manufacturing based district and Rahimyar Khan (RYK), an agricultural based district, and apply economic theories in order to explain that certain socio-economic effects are caused by micro finance investment. We combine fallibilist (Popperian) deductive methods and statistical techniques here: Fallibilist deductive methods are applied to test theories empirically by inferring predictions that can clash with 'experience' in terms of basic statements; statistical methods and techniques are applied to form those so-called basic statements. On that basis, a specific version of an accelerator theory of investment is chosen as an adequate explanation of socio-economic effects caused by microfinance investment. Using the data from PMN, HIES and MICS reports and in order to formulate the required basic statements we test different null-hypotheses. Our findings are that after the formal implementation of microfinance in Pakistan the average household incomes of (SK) increased significantly as compared to RYK, and that the absolute poverty ratios declined by 44% and 19% for (SK) and RYK, respectively. Also it was ascertained that microfinance positively affected the income distribution in (SK), where the Gini-coefficient declined from 0.77 in 2001, to 0.44 in 2017. In contrast, income distribution has become more unequal for RYK, since the implementation of microfinance. Also our findings suggest that microfinance is the cause of the noticeable increase in the employment in the manufacturing sector of Sialkot as well as of the increase of other indicators for both districts such as the school enrolment rate of boys and girls, and the number of patients consulting BHUs. However, in general, our findings suggest that the overall performance of microfinance in the manufacturing district (Sialkot) is far better than that in the agricultural district of Rahimyar Khan (RYK).

Abstrakt

In dieser Dissertation untersuchen wir zwei Ansprüche, die häufig mit ‚Mikrofinanzierung' geltend gemacht werden: dass Mikrofinanzierung Armut verringert und dass sie die ökonomische Situation armer Haushalte auf gesamtwirtschaftlicher ‚nationaler' Ebene generell verbessert. Da diese Ansprüche gesamtwirtschaftlich gemeint sind und sich auf die Makroebene beziehen, lehnen wir lokale Mikrostudien als inadäquaten Forschungsansatz ab. Allerdings lehnen wir einen hochaggregierten Forschungsansatz ebenso ab, da zu erwarten ist, dass das relative kleine Volumen der Mikrofinanzierung im Vergleich zum BIP von Pakistan interessante Forschungsresultate auf hochaggregierter ‚nationaler' Ebene ausschließt. Daher untersuchen wir die sozio-ökonomischen Effekte der Mikrofinanzierung in Pakistan auf subnationaler Ebene. Wir wählen zwei Bezirke: Sialkot (SK), ein auf Kleinindustrie und Gewerbe basierender Bezirk und Rahimyar Khan (RYK), ein auf Landwirtschaft basierender Bezirk und erklären unter Anwendung ökonomischer Theorien die durch mikrofinanzierte Investitionen in diesen Bezirken verursachten sozio-ökonomischen Effekte. Wir kombinieren dazu fallibilistische , deduktive Methoden (Popper) und statistische Techniken : die Anwendung fallibilistischer deduktiver Methoden dienen dem empirischen Test ökonomischer Theorien, wobei jene durch die Ableitung singulärer Vorhersagen und deren Konfrontation mit Basissätzen mit der ‚Erfahrung' konfrontiert werden; statistische Techniken dienen der Formulierung und der Auswahl der so genannten Basissätze. Auf dieser Basis wird eine spezifische Version einer Akzelerator-Theorie der Investitionen als adäquate Erklärung von durch mikrofinanzierte Investitionen verursachten sozio-ökonomischen Effekten, ausgewählt. Unter Verwendung der in den Berichten von PMN, HIES und MICS angeführten Daten und um die entsprechenden Basissätze zu formulieren, testen wir unterschiedliche Nullhypothesen. Unsere Ergebnisse zeigen, dass nach der formellen Einführung der Mikrofinanzierung in Pakistan die durchschnittlichen Haushaltseinkommen von SK im Vergleich zu RYK signifikant gestiegen sind und dass die absoluten Armutsquotienten um jeweils 44% in SK und 19% in RYK gesunken sind. Auch konnten positive Effekte der Mikrofinanzierung hinsichtlich einer gleichmäßigeren Einkommensverteilung in SK festgestellt werden, wo der Ginikoeffizient von 0,77 im Jahre 2001 auf 0,44 im Jahre 2017 gesunken ist. Im Gegensatz hiezu ist jedoch die Einkommensverteilung in RYK, seit der Einführung von Mikrofinanzierung, ungleicher geworden. Unsere Resultate legen aber auch nahe, dass Mikrofinanzierung den signifikanten Anstieg der Beschäftigung in Sialkot, sowie die Erhöhung anderer wichtiger Indikatoren, wie etwa den Anstieg der Anzahl von Schülern und Schülerinnen in beiden Bezirken und die Anzahl von Patienten die BHUs aufsuchten. Generell kann aber festgestellt werden, dass die Auswirkungen von Mikrofinanzierung auf den industriell-gewerblichen Bezirk Sialkot wesentlich größer und besser sind als auf den landwirtschaftlichen Bezirk Rahimyar Khan (RYK).

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List of Abbreviations

AACA:	**Association of Chartered Certified Accountants**
ADB:	**Asian Development Bank**
AKRSP:	**Agha Khan Rural Support Program**
MPI:	**Multi-Dimensional Poverty Index**
BRSP:	**Baluchistan Rural Support Program**
BOP:	**Balance of Payment**
BISP:	**Benazir Income Support Program**
BBC:	**British Broadcasting Corporation**
BOS:	**Bureau of Statistics**
BP:	**Breusch-Pagan**
BHU:	**Basic Health Unit**
CGE:	**Computable general equilibrium**
CGT:	**Compulsory Group Training**
CIA:	**Central Intelligence Agency**
CISP:	**Community infrastructure services program**
CPEC:	**China Pakistan Economic Corridor**
CSO:	**Central Statistical Office**
DF:	**Dicky-Fuller**
DFID:	**Department for International Development**
e.g:	**exempli gratia**
DI:	**Disposable Income**
DID:	**Difference in differences**
DW:	**Durbin Watson**
EOBI:	**Employs´s Old-Age Benefits Institution**
FATA:	**Federally Administered Tribal Areas**
FBR:	**Federal Bureau of Revenue**
FYP:	**Five-Year Plans**
GDP:	**Gross Domestic Product**
GLP:	**Gross Loan Portfolio**
GLM:	**Group-Lending Model**
H1:	**Alternate Hypotheses**
H0:	**Null Hypotheses**
HDI:	**Human Development Index**
HH:	**Household**
HI:	**Household Income**
HIES:	**Household Income and Expenditure Surveys**
IGL:	**Income Generating Loans**
IMF:	**International Monetary Fund's**
IRDP:	**Integrated Rural Development Program**
JLG:	**Joint Liability Group**
K:	**Actual Stock**
K*:	**Optimum Capital Stock**
KP:	**Khyber Pakhtunkhwa**
MEC:	**Marginal Efficiency of Capital**
MFBs:	**Microfinance Banks**
MICS:	**Multiple Indicators Cluster Surveys**

MFIs:	**Microfinance Institutions**
MIX:	**Microfinance Exchange**
N.	**Population**
n:	**Sample**
NGOs:	**None-Governmental Organizations**
NNP:	**Net National Product**
NRSP:	**National Rural Support Program**
OGRA:	**Oil and Gas Regulatory Authority**
OLS:	**Ordinary Least Square**
OPHI:	**Oxford Poverty and Human Development Index**
PBS:	**Pakistan Bureau of Statistics**
PIU:	**Producing Index Unit**
PKR:	**Pakistani Rupee**
PMN:	**Pakistan Microfinance Network**
PPAF:	**Pakistan Poverty Alleviation Fund**
PPP:	**Pakistan People's Party**
PSLM:	**Pakistan Social and Living Standard Measurement**
PTCL:	**Pakistan Telecommunication Limited**
PWP:	**People's Work Program**
RSPs:	**Rural Support Programs**
RYK:	**RYK**
SAP:	**Social Action Plan**
SBP:	**State Bank of Pakistan**
SCS:	**Subsidized Credit Schemes**
SD:	**Standard Deviation**
SECP:	**Securities and Exchange Commission of Pakistan**
SK:	**Sialkot**
SME:	**Small and Medium Enterprises**
SPSS:	**Statistical Package for Social Sciences**
SRSP:	**Sarhad Rural Support Program**
TFP:	**Total Factor Productivity**
TWP:	**Tameer-e-Watan Program**
UN:	**United Nations**
UNDP:	**United Nation Development Program**
USD:	**United States' Dollar**
V-AID:	**Village - Agricultural and Industrial Development**
WB:	**World Bank**
WHO:	**World Health Organization**

1. CHAPTER.1

INTRODUCTION

1.1 Background:

A country's economic growth and development are necessary to alleviate poverty. Similarly, the development of a country's industrial and agricultural sectors is of prime importance to achieve the desired economic growth. At the foundation of Pakistan, in 1947, chaotic situations existed in those sectors. Consequently, high unemployment rates, significant poverty, and social disorder resulted. A recent report published by the Ministry of finance evaluating the economic performance of Pakistan shows that 27 to 29.5% of the total population lives under the absolute poverty line (Government of Pakistan, 2014)[1] i.e. this part of the population lives on less than 2 dollars a day. However, as the Multi-Dimensional Poverty Index (MPI) for Pakistan shows this figure is much higher i.e. (38.8%)[2]. According to the same report, the poverty ratio is 5 times higher in rural areas than in urban regions, i.e. 50% and 9.8% respectively. These figures show that the agricultural sector in Pakistan still requires the implementation of suitable rural centric economic policies, although, many programs have already been implemented[3] as history shows,

Some of those programs failed to achieve the desired goals while some programs abandoned due to certain political reasons. However, a number of programs still exist with certain changes for instance, in the early 1960s; the government of Pakistan initiated various agricultural cooperatives schemes. The focus of these cooperatives has been on providing small loans to the farmers. However, during the British era, institutional credits also existed for agricultural farmers in the form of Taccavi loans. Taccavi loans were dispersed among the farmers from the government's treasury through revenue departments of the provincial governments. The aim of these loans was to support the farmers in order to buy agricultural inputs, such as seeds, fertilizers, etc. Farmers were also supported during certain natural calamities like floods, storms, and famines. These loans were backed by interest rates and in

[1] *Economic Survey of Pakistan 2015-2016*
[2] *Multi-dimensional Poverty in Pakistan by Sabina Alkire, 2016*
[3] *Note: Here only those programs and or project are discussed which are comparatively of low profile (No mega projects such as CPEC (China Pakistan Economic Corridor) are discussed here).*

case of any delay in payback; a penal interest was to be imposed. The contribution of these loans to total institutional credit declined over time, because of the advance institutional sources. Interruptions and bureaucratic difficulties in approving and disbursement of the credit made the system of Taccavi loans inefficient and ultimately the program was discontinued, in 1993-94 (Hussein, State of Microfinance in Pakistan, 2009).

A number of such programs and cooperative schemes are discussed and the failure of those programs, subsequently, leads to the implementation of formal microfinance programs, through central authorities, in Pakistan. Historically, micro lending existed in every historical period; however, it received formal recognition as microfinance, through the work of Dr. Younas, an economics professor from Bangladesh, in the mid-1970s (Seibel & Wahyu, 2006). At that time, Bangladesh was just separated from present-day Pakistan and after microfinance's successful outcomes in Bangladesh and India; the government of Pakistan initiated the microfinance sector in 2001. In that period, Pakistan suffered from low economic growth and high poverty ratios. After the implementation of microfinance in Pakistan sector, poverty ratios declined abruptly from 55% in 2001 to 29 % in 2017, and the question of what share does microfinance have in the decline of this poverty ratio, arises.

1.2 Problem Situation:

The main problems discussed in this thesis are the economic, as well as social, consequences of microfinance investment on an aggregate level. Investment is one of the major factors determining economic growth in an economy. Accordingly, studies frequently maintain that an increase in investment expenditures is an adequate means of reducing poverty and provide a basis for economic development. Generally, many studies have investigated the economic and social consequences of microfinance, as additional investment expenditures, on a micro-level. However, this dissertation intends to, critically analyze the two major claims quite frequently associated, with microfinance i.e., the reduction of poverty and the enhancement of growth on an aggregate level. After having, reviewed the available literature regarding Pakistani microfinance we found that no aggregate studies are available and hence this study is going to fill that gap by providing an aggregate-level analysis of microfinance.

1.3 Open Research Questions:

Generally, a number of studies are available which provide the aggregate effects of microfinance for countries such as Bangladesh, India, Mexico, and Nigeria etc.; However, no such studies exist for Pakistan. One reason is that in contrast to such countries, as Bangladesh and India, where the volume of microfinance investment compared to their GDPs amounts to 4.5% and 1.5%, respectively[4], the amount of microfinance, invested in Pakistan, is as low as less than 1% of the total domestic credit that makes hardly a 0.50% of Pakistan's GDP[5]. This small volume of MF makes it difficult to analyze the socio-economic effects on a national level. On the other hand, we also reject the micro-level questionnaire-based studies on the understandings that micro-level effects are quite limited and such effects cancel out on an aggregate level. The aforementioned, two problems lead us to use a meso-level, subnational and aggregate analysis. The meso-level is generally considered as; a size, which falls in between, and connects, micro- and macro levels. For that purpose, we select two subnational regions (districts) from the province of Punjab (Pakistan), an agricultural region and an industrial region, to examine the above-mentioned effects of microfinance.

1.4 Theoretical Considerations:

Although, in general authors do not regard microfinance as investment spending for heavy machines rather they regard microfinance as loans used for small machines, such as sewing machines, stitching machines, cooking utensils, handy crafts equipment, etc. We, therefore, explain microfinance as investment expenditures having income and capacity effects. This study intends to investigate the socio-economic consequences of microfinance investment on a regional aggregate level; the dissertation discusses several investment theories. Accordingly, four major classes of theories exist which includes, Classical, Neo-Classical, Keynesian and Accelerator, theories of investment expenditures. In order to analyze the possible effects of microfinance investment expenditures, we need an adequate theory, and an adequate theory of investment on aggregate level is not a micro-founded one and requires both a good theory of the demand for capital (microfinance related equipment) and a theory of the adjustment of actual to the desired stock. There is a prospect of lag structure required in a theory; for instance, in a situation of increased aggregate demand, for particular equipment or product, the capital goods industries may fall short of time to its clients' orders. After

[4] As per MIX, market data, the total microfinance portfolio (GLP) amounts USD 9 billion and USD 35 billion for Bangladesh and India, respectively (https://www.themix.org/mixmarket/countries-regions).
[5] Data collected and estimated from Pakistan Microfinance Network (2018).

having tested the performances of those classes of theories it is decided, based on the "explanatory power" of the theories to use the accelerator theories for our intended aggregate effects of microfinance investment. The aggregate effects of microfinance investment to be analyzed are as follows:

1.5 Effects of Microfinance Investment:

The dissertation investigates three effects of the microfinance investment in Pakistan. The effects are:

i. Distributional effects of microfinance:

Distributional effects normally receive limited attention in economic models that analyze the effects of monetary and financial sector policies. Yet, it is maintained that such effects are, expected, to be even greater particularly in low-income economies, affected be financial friction (Prasad, 2013).

ii. Allocational Effects:

The main allocational effects discussed in the dissertation are asset building through microfinance loans. The capital structure includes capital widening and capital deepening.

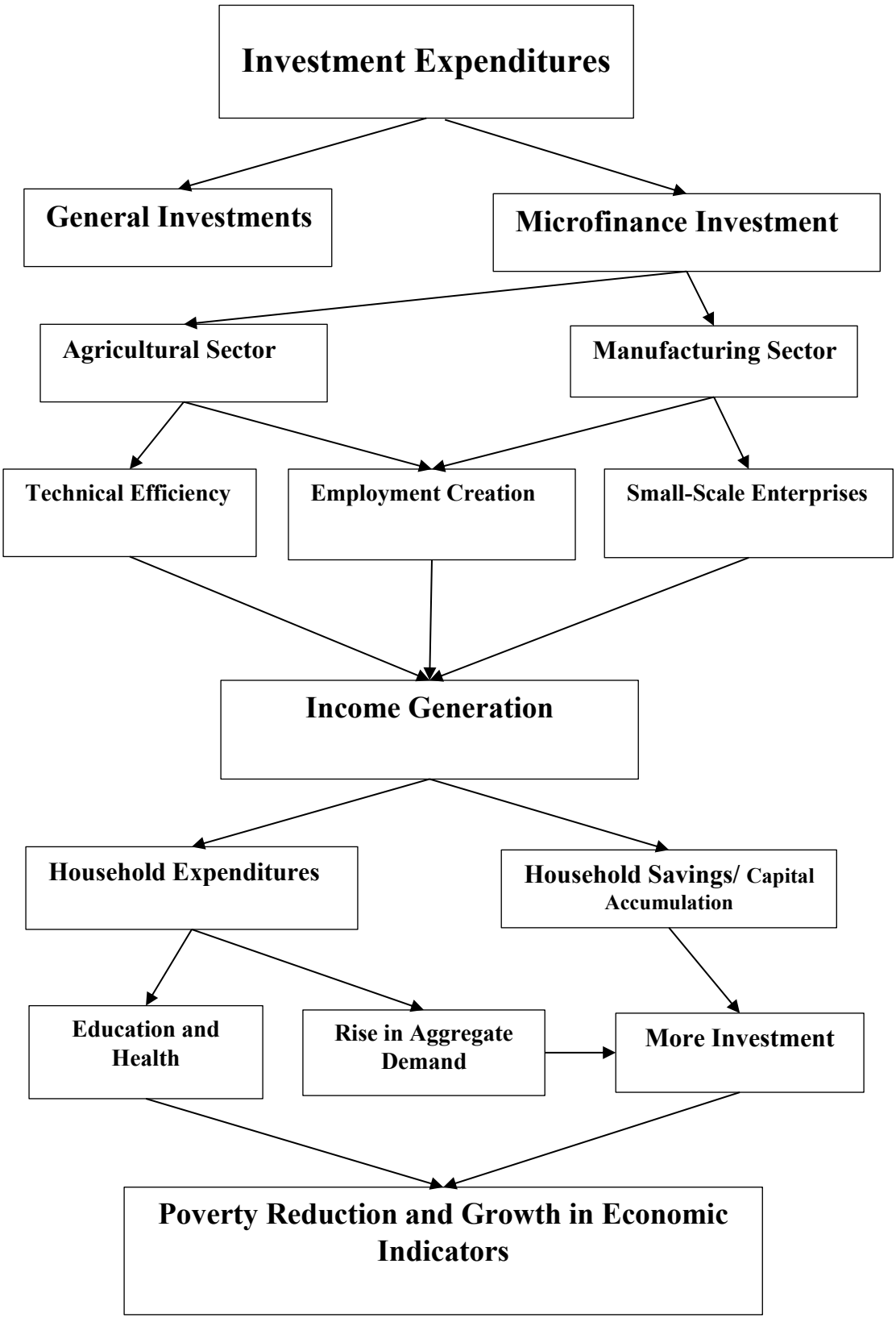
iii. Stabilization Effects:

The stabilization effects of microfinance as additional investment expenditures include the employment and price level changes. However, effects such as pro-cyclical, anti-cyclical and a-cyclical behavior of microfinance are also under considerations. Knoop, (2010), defines these variables as follows:

"A variable is classified as procyclical if the variable has a positive correlation with GDP; this implies that the variable falls when GDP falls and it rises when GDP rises. Likewise, a variable is termed as anti-cyclical or counter-cyclical when it has a negative constant correlation with GDP; this means that the variable falls when GDP rises and vice-versa. Unemployment is an obvious example of a variable that is consistently countercyclical and rises when GDP falls. An 'a-cyclical' variable is one that has no consistent correlation with changes in GDP" (Knoop, 2010).

The estimation of the latter effects of microfinance may be used for future predictions regarding the GDP; as a leading and/or lagging indicator. For simplicity, a *leading indicator* is one which peaks or troughs before GDP peaks or troughs, and *lagging indicator* peaks or troughs after GDP peaks or troughs. The diagram below reveals the conceptual framework of this project.

Figure 1.1: Conceptual Framework



1.6 Socio-Economic Consequences:

Additionally, we formulate basic statements regarding various socio-economic indicators, such as education ratio (both male and female), healthcare and women's participation in businesses. We infer predictions for the socio-economic indicators based on previous studies examining the effects of microfinance on the said indicators. These studies are explained in our chapter on "literature review"; which may explain such effects on a micro-level; however, respecting the aim of the present study, we intend to test the hypotheses regarding these socio-economic indicators on an aggregate level.

1.7 Methodological Approach:

In order to evaluate our outcomes/results, based on the aforementioned theories, this dissertation uses Karl Popper's methodological approach. Which aims at testing an aggregate theory of investment for the selected districts, the theory has the character the character of a specific general and empirical statement from which we infer predictions regarding certain variables. In addition, we formulate working hypotheses in terms of a universal existential statement, i.e. alternate hypothesis (H) and a null hypothesis (H0) - negative universal existential statement. Accordingly, we test the null hypothesis (H0) by formulating basic statements and confront them with the alternate hypothesis. The alternate hypothesis responds to predictions, which are inferred, from the theory and the initial conditions. If the null hypothesis (H0) is confirmed as true, then the alternative hypothesis (H) is falsified and subsequently, the falsity of the alternate hypothesis goes to the falsity of the prediction. According to the "modus tollens",[6] we direct the falsity of the prediction against the theory and not against the singular initial conditions. If the theory (specific general and empirical statement) is false, we have no reason not to classify the theory provisionally as 'false' but we will not reject it offhand. Similarly, if the null hypothesis (H0) is falsified, then the alternative hypothesis (H) is confirmed and, subsequently, 'we direct the confirmation of (H) to the prediction, which is inferred from the theory and the initial conditions. Therefore, we will have no reason not to classify the theory, provisionally, as true'. Nevertheless, in order to reject a hypothesis, we need a methodological rule. In order to

[6] *In Propositional Logic, 'Modus Tollens' is a valid argument form and a rule of inference. It is an application of the general truth that if a statement is true, then so is its contra-positive.*

choose between different hypotheses, we will use the concept of 'verisimilitude'[7]; by putting questions to the theory in question.

1.8 Statistical Techniques:

In addition, we use certain statistical techniques in order to formulate our basic statements. We use regressions and correlation techniques for time-series data of microfinance, household incomes, household expenditures, savings, employment, education, health, and a number of proxies for the variables that do not exist in its raw form. It is worth mentioning here that we do not emphasize the numerical values of significance i.e. the statistical "confidence intervals", for the various reason explained in our chapter on "Methodology". However, econometrical techniques such as "Difference in Difference (DID)" and Ordinary Least Square (OLS) are also used in order to compare, differences due to microfinance, of the two districts. The "Difference in Difference Technique" for simplicity is given as under:

Furthermore, we use statistical software such as Excel, SPSS, and Stata in order to arrange data, estimate and plot charts, and run the required tests. The consumption, income and investment models, mentioned in our dissertation, require certain assumptions; like homoscedasticity, non-autocorrelation, and Stationarity in the series. Upon the detection of the problems, such as Outliers, Heteroscedasticity, Autocorrelation, Multicollinearity, and non-stationarity, we diagnose them by applying tests such as Breusch–Pagan, Durbin Watson, ad Dicky-Fuller.

1.9 Limitations of the Study:

The importance of aggregate analysis of microfinance in Pakistan may constitute strength to the study, yet due to the relatively smaller volume of microfinance, we limit our study to the selected subnational regions. Hence, a more comprehensive study in the future may validate and enlarge the findings of the study. Moreover, the study exploits the published data by various Pakistani data banks such as Pakistan Bureau of Statistics (PBS), Punjab Bureau of Statistics, Pakistan Microfinance Network (PMN, and the MIX market, therefore, the study is bound to the rules and regulations of the said data banks. The

[7] *Verisimilitude (or truth likeness) is a concept in Popperian philosophy that distinguishes between the relative and apparent (or seemingly so) truth and falsity of assertions and hypotheses. The problem of verisimilitude is the problem of articulating what it takes one false theory to be closer to the truth than another false theory (Realism in American Literature, 1860-1890).*

study does not share any experience/views of the microfinance borrowers, as the author did not get in touch through any survey technique.

In addition, during the study period, we realized that a nationwide study is not possible, so we limited our focus to the sub-national regions; therefore, the data related issues emerged on a sub-national level. Pakistan has a good system of national accounts covering almost all the important macro and micro social, demographic, health, political and economic indicators. However, on a provincial and sub-national (district) levels, the data situations are rather poor. It would have been more interesting if the study had conducted on a national level as planned initially- as no data limitations exist. Nevertheless, by having quite frequent interactions with the PBS and PMN it, somehow, became possible to pursue the study on a sub-national level, with certain limitations and assumptions. We required essential variables such as gross regional income, inter-regional trade statistics, regional tax statistics, regional per capita income, etc., which did any statistical department of Pakistan, not compile. Nonetheless, with the help of continuous researching, and by contacting the concerned authorities, we were able to have some statistics from the Multiple Indicators Cluster Survey (MICS) and Household Integrated Income Surveys (HIIS). Although, these statistics do not provide the exact indicators/variable, yet it has been used with proper justifications.

Moreover, we discuss that the study does not emphasize much on econometrical techniques and the econometrical significance values for certain valid reasons, as discussed in our methodology chapter. However, we certainly use statistical techniques such as mean, median, standard deviations (SD), various coefficients (if required). We run simple regression models in order to formulate the basic statements with the help of statistical software such as Excel and SPSS. We also use econometrical techniques such as Dicky-Fuller, Durbin Watson, and Breusch–Pagan to check for the assumptions of non-stationarity, heteroscedasticity, and autocorrelations.

1.10 Conclusion:

This introduction just provided, a bird-eye, view of the dissertation; and hereafter, I conclude it by describing the microfinance situation, objectives and data situation of the dissertation, a little more. As described earlier, that several micro-level studies in Pakistan evaluate the performances of microfinance and much of that literature concludes the outcomes quite optimistically. Those researches mostly focus on the correlation between microfinance and agriculture sector, while many of them

recommend that a fall in interest rates of microfinance may enhance its efficiency. A study has previously been conducted by the author, based on a questionnaire, evaluates the "Effects of Microcredit and Crop Productivity in the district of Charsadda, Pakistan". However, as we maintain that the outcomes of such studies are quite limited and cannot be generalized to a much bigger level. The research concludes an insignificant effect between microcredit and crop productivity; however, a significant relationship exists between microcredit loans and total yield or production. The interest rates are criticized that "since the interest rate is a cost on micro-level (i.e. firm-level or a farm level) and subsequently a high-interest rate may lead to a high cost and therefore low profits". The prevailing interest rates, for microfinance or microcredit, in those days used to be more than 25%, on average. Subsequently, the research indicates, as Jorgenson predicted, that a fall in interest rates would trigger more investment on the aggregate level, since, assuming other things being constant, a fall in interest rate increases the profitability of an investment and vice versa. However; that is not the case actually; if a fall in interest rate is due to a high "propensity to save", then the positive effects on the profitability may cancel out on the aggregate level, due to falling expected prices, resulted from low, aggregate, consumer demand. Likewise, if the fall in interest rate is due to the increased money supply, more firms might enter the market and falling expected prices might result from excess supply, again canceling out the effect of profitability on the aggregate level.

Next, we discuss the effects of microfinance classified into three broad categories, i.e. stabilization, distribution, and allocation effects. This involves all sorts of difficult analytical problems. A lesser one regarding the analyses of stabilizing effects of microfinance is, for instance, to investigate whether micro-finance investment expenditures behave pro- or ant cyclical. In order to analyze that problem, we investigate not only the ratio of microfinance investment expenditures to total investment expenditures in the peak and trough of a cycle but also the rate of change of those expenditures in the up- and downswing. In order to analyze changes in the structure of the capital stock (capital deepening and capital widening), changes in interest rates and changes in the capital intensity of production are considered; and changes in interest rates trigger of course different distributional effects. However, in general, the study of such effects cannot simply be based on comparative static investigations but will require dynamic considerations as well such as accounts regarding the time it takes until effects become observable, as well as considerations regarding the distribution of effects in time.

Lastly and the most challenging part of the dissertation was about the data. The dissertation relies on Pakistan Microfinance Network's (PMN) quarterly issues and annual reports for robust data regarding

microfinance. We have compiled some good data sheets of Pakistan's provincial and district level microfinance distribution. Since the dissertation focuses on the province of Punjab, therefore, by using Punjab's development statistics, we also have compiled decent records regarding, district employment, agricultural inputs and outputs, manufacturing sector statistics, and data regarding small-scale industries. These efforts can also be beneficial for future academic research considerations. However, the dissertation still faces certain limitations regarding the regional income accounts of Pakistan; leaving a space for the Pakistani authorities and future researchers, to be covered.

2. CHAPTER.2

Historical and Institutional Background

2.1 Introduction

Since its foundation, Pakistan has introduced a number of strategies to reduce poverty and boost economic growth, on a micro- as well as on the macro level. Due to political instabilities in the early years, these strategies and policies were not quite successful. However, with the economic improvement and development in Pakistan, the different Pakistani governments focused on increasing the social welfare of the poor by providing core facilities to them. This is reflected in different policies, schemes, and projects implemented in the last 60 years. However, for different political reasons, some of those policies were discarded in Pakistan but continued for instance in East Pakistan, now Bangladesh; some of them were redesigned and improved and some of them are completely new ones. This chapter consists of two main sections i.e. A and B. Section A discusses the historical policies and strategies implemented by the government of Pakistan with the hope that it will enhance the overall economic growth and alleviate poverty. Accordingly, section B intends to explain the background and the present state of microfinance.

A. General Strategies

This section discusses several developmental programs and cooperative policies implemented by the government of Pakistan, since 1947. We structure this section to evaluate the decade wise programs, and policies, and the political and economic environment. Furthermore, the section gives emphasis to the chain of five-year plans that were initiated in the first half of the first decade (the 1950s) of Pakistan. Several developmental programs and cooperative schemes were made parts of the respective FYPs, subsequently; we will provide a brief discussion of each decade based on the subsequent FYPs and their developmental efforts and results. The discussion also provides the simple graphical representations of the funds allocated to each program; however, it lacks the critical views because it is not the core aim of this dissertation. We only provide an overview of the efforts by the government towards poverty alleviation and enhancing the wellbeing of their people, which eventually ends up in the implementation of the microfinance program.

2.2 The Early Years of Pakistan's Economy

In the early years, after its foundation, Pakistan's economy was heavily dependent upon the agricultural sector. Anjum & Sgro,(2017) in their latest paper highlight some important statistics of Pakistan's early period; for instance, the share of agriculture in the national economy was accounted almost 53%. The total population was 30 million, out of which 6 million were living in urban regions. Similarly, Hussain I., (1999) states that the agricultural sector had employed 65% of the total labor force. The agricultural output share in the total export sector was accounted for 99.2%, earning as much as 90% of the total foreign exchange. In contrast, the manufacturing sectors contributed 7% while the services and foreign sectors collectively added 39% to the GDP (Hussain A 2003). Between 1948 and 1950, Hassan, (2004) maintains that the poverty ratio ranged between 55-60%. Other statistics such as per-capita income recorded, USD 360 (1985 exchange rate), national savings and foreign savings rate 2%, each, and investment rate 4%.

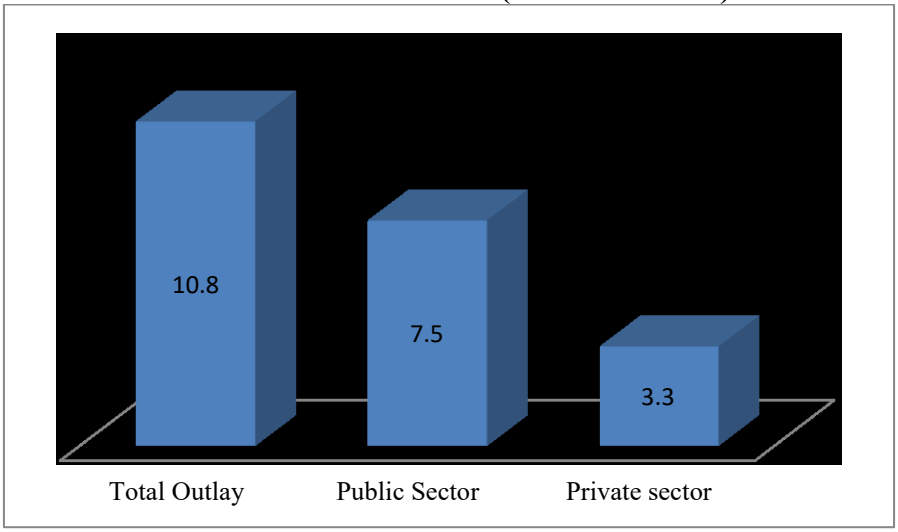
2.3 The 1950s: The Decade of Economic Transitions:

The decade of the 1950s is considered as the first decade of planning, as it were; because in this decade, the government initiated a series of "Five Year Plans (FYP)." The series of "Five Years Plans" comprised eight plans, which ended in 1998. The "Five Year Plans (FYP)" initiative was in line with the "Soviet-style centralized" structure, aiming at strengthening economic development. In the year 1953, the government encouraged the domestic production sector by allowing traders to invest in jute and raw cotton. The government took different protection measures; such as they implemented the policy of import substitution to boost the growth rate of the local manufacturing sector, in the long run. However, on average, the overall growth rate remained slow i.e. 3.4% during the major part of the decade.

- **The First Five Years Plan:**

In the year 1955, the plans were drafted and accordingly the first plan was implemented in the year 1955-56. The total outlay of the first FYP was PKR, 10.8 billion; out of which an amount of PKR, 7.50 billion was allocated to the public, while PKR 3.30 billion to the private sector expenditures. The goals of the first FYP were, to achieve a high national income and GDP growth through the development expenditures.

Figure 2.1: Amount Allocated to First Five Years Plan (PKR in billions)



Source :(National Planning Board, Government of Pakistan, 1955) (Graph by the Author)

The First Five Years Plan (FYP) ended, in the 1960s, with successful outcomes, and consequently, achieved the targeted GNP growth rate of 13%; however, the anticipated growth rate was 15%. The main cooperative projects launched under the first FYP are:

- **Cooperative Projects of the 1950s:**

The "Village AID (Agricultural and Industrial Development) programs (V-AID)" were initiated in the early 50s, with the hope to uplift the rural areas of the country. The main aim of the V-AID program was to encourage the agricultural sector and to develop the social service sector. The government established agricultural extension agencies on village levels, whose major tasks were to promote verities of improved seeds through experiments and demos of different crops, fertilizers, cropping practices, soil control livestock, etc. In addition, rural industries were set up to guide the artisans regarding the rural skills and organizations of cooperatives. The health sector provided a safe water supply and trained the villagers about the drainage system. The education sector worked on the development of children's education and adult literacy for adults. The program also improved the physical infrastructure, and overall it covered almost 20% of the country's rural areas. The project contributed above USD 60,000 in cash and USD 60,000 in labor through self-help projects. However, the program failed to achieve the desired objectives of uplifting the agricultural, as well as the manufacturing sector due to a lack of coordination between the agencies and consequently the government, discarded the program (Malik, 1990; Chaudhry, 2002).

In order to reach the very gross root kevels, the government implemented the policy of "Basic Democracies" at the end of the 1950s. The aim of the system of basic democracies included two main objectives; one, to promote democracy at the grass-root level, and two, to involve the local population in the development process of the rural as well as urban areas. Local governments were formed through elections, on district and union council/village council levels, and the federal government for development purposes allocated funds. This policy was merely a posture of democracy, as a military dictator ruled the country in the center, accordingly the policy of "basic democracies" was abolished, after the democratic government formed in the center, in the 1970s. To conclude, the decade of the 1950s ended with certain major structural changes for instance, it helped the manufacturing sector development as well as improvement in construction, gas, services, and power sectors. (Mehmood, Rehman, & Shahnaz, 2009)[8].

2.4 The 1960s: The Decade of Export Surplus

Overall, the agriculture and manufacturing sectors of Pakistan experienced a high economic growth rate in the 1960s, based on the policies and programs, executed, in the previous decade. The success of those policies is evident from the import substitution policy, in the late 1950s. Import substitution policy protected the domestic industries and consequently, the sector (especially the large-scale manufacturing sector) achieved a growth rate of almost 16%, from the year 1962 to 1965. Similarly, the agriculture sector grew with a growth rate of 5% in the 1960s due to the success of the First Five Year Plan. The First Five Year Plan and "Basic Democracies" helped out, in stimulating significant investment in water resources, introducing mechanized agriculture, providing incentives to farmers, increasing the usage of pesticides and fertilizers, and familiarizing farmers with high yielding verities of seeds. However, as stated earlier, the Village-AID program encountered certain irregularities due to which it could not progress further. Whereas, the programs like "Basic Democracies" and the series of Five-Year Plans were yet to play their respective parts. Additional projects were also initiated in 19060s and the "Comilla Model", was one of them.

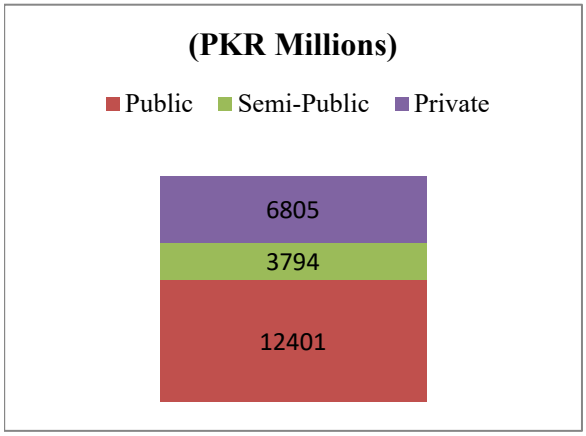
[8] (Mehmood, Rehman, & Shahnaz, 2009)*: Evaluation of Macro Economic Policies of Pakistan (1950-2008), Journal of Political Economy*

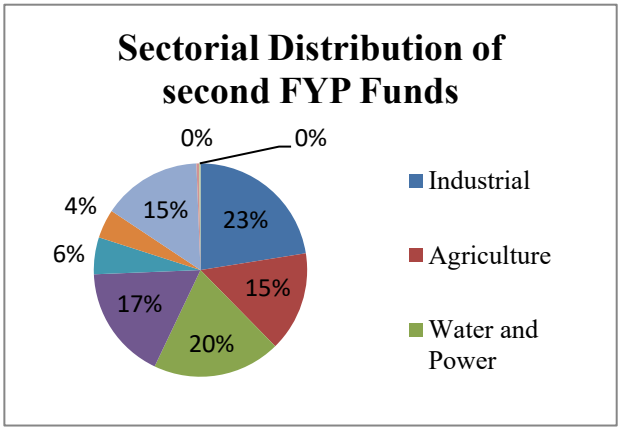
➢ **Second Five Years Plan (the 1960s):**

The second phase of Five Years Plans was implemented by the, then, President. This time the additional aims of the plan were to develop the industrial sector and to improve the quality of the literature, arts, and science. The salient features of the plan were to, increase GNP by 24%, per capita income by 13%, industrial production by 50% (small and large scale), exports by 15%, agricultural productivity by 21%, and to bring about a better, region-wise as well as group-wise, income distribution. Building new houses for homeless and poor people was also a significant part of the plan.

The government allotted PKR 23,000 million to the second FYP out of which PKR 12,401 million was allocated to the public sector, PKR 3,794 million to the semi-public and PKR 6,806 million the private sector. The charts below show the sectorial allocation of funds:

Figure 2.2: Second FYP; Sectorial Allocation of Funds





Data Source Planning Commission of Pakistan (Estimated by the Author)

Out of the total funds allocated to the second FYP, the Industrial sector received 22.3%, Water and Power 19.1%, Transport and Communication 17%, and Agriculture sector 14.9%, from both public and private sectors. However, the Education and Health sectors received 5.5%, collectively (Qureshi, 1965).

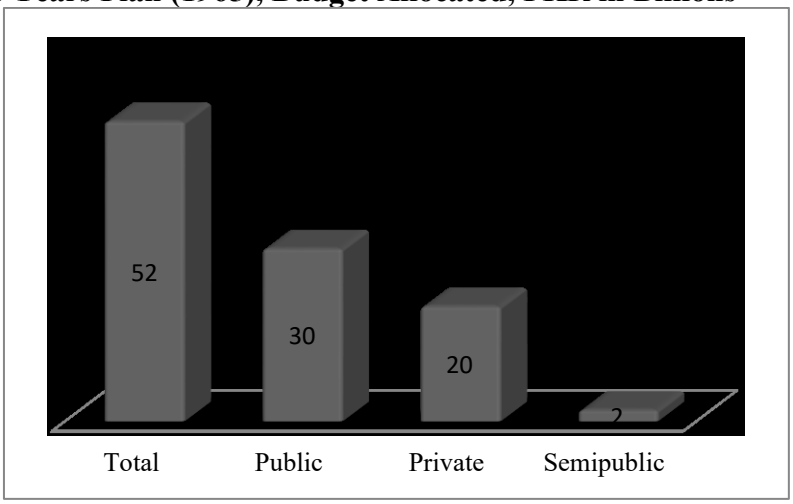
The plan successfully met with the anticipated goals in agriculture, industrial, power, and transport sectors; however, due to the allocation of a minimum budget, the education, science, literature, and health sectors performed off-color.

- **Third Five Years Plan:**

After the successful completion of the first and second FYPs, which apparently had strengthened and enhanced the economic growth, the government successively launched a third FYP in the year 1965. However, this time the plan was revised due to two main reasons, (i) The India Pakistan war in 1965; and, (ii) The bad weather or seasonal conditions affected the agricultural production. This time more priority was given to the education sector, compared to the previous plans. In addition, certain long-term future targets were fixed; for instance, the GNP target was set to be tripled in the next 20 years. To achieve full employment, regional parity in per capita income and the elimination of dependence on foreign assistance were the key points in this plan.

A gigantic budget of PKR 52 billion, was assigned to the third FYP, out of which PKR 30 billion was allocated to the public sector, PKR 20 billion to the private sector and PKR 2 billion to the semi-public sector (Said Hasan, 1965). Upon the completion of the third plan, a noticeable shift was documented in investment expenditures from the consumer goods to capital goods industry. The amount allocated to different sectors is plotted, graphically, as follows:

Figure 2.3: Third Five Years Plan (1965), Budget Allocated, PKR in Billions



Source: Manager of Publications, Government of Pakistan 1965 (Plotted by the Author)

The plan contributed, as per expectations; particularly to the large-scale manufacturing industrial sector, which grew 10%. The agricultural sector, as noted previously, outperformed, particularly, in cotton and yarn production. An overview of a few cooperative projects, launched under the third FYP, is discussed as follows:

- **Cooperative Projects of the 1960s:**

Akhtar Hamed Khan initiated the Comilla Model, in 1961 in response to the failure of the V-AID program. In order to address the issues of the farmers and poor people this program implanted in agricultural areas on the grassroots levels. The aim was to provide a development model of programs and institutions that could spread across the country. The model instantaneously addressed the problems, which caused the failure of previous developmental programs such as the inadequacy of institutions and local infrastructure. Other significant features of the model were:

i. The establishment and training of development centers
ii. A road-drainage embankment works program
iii. A decentralized small-scale irrigation program
iv. The formation of a two-tiered cooperative system (a) on village level (b) on the sub-district level.

Although this was a successful model; however, it lost its connection with western Pakistan after the separation of Eastern Pakistan. Nevertheless, the Comilla Model was perceived as a blueprint for future developmental programs; and studies maintain that the initiative of microfinance and Grameen Bank is considered an outcome of the Comilla Model[9] (Dowla & Barua, 2006).

Correspondingly, the government initiated another project in the early 1960s with the name of the "Rural Works Program (RWP)". This project was considered as a forerunner of the Comilla pilot project. The aim of this project was to employ the potential surplus workers to develop the agricultural sector and infrastructure of the villages. The project was linked with the Basic Democracies to speed up the tempo of the rural development. The program ended soon, as it could not improve the anticipated agricultural productivity across the country, yet it helped the rural unemployed people in securing jobs and made some positive impact on income distribution.

In nutshell, the decade of the 1960s was the most successful decade in achieving an all-time high economic growth. This description may not provide complete details of the failures or successes of

[9] *Stevens, R.D. (1971): Comilla Development Program; Results from East Pakistan (Bangladesh) for international Testing. The Agricultural Development Council, Inc., 630 fifth Avenue, New York 10020.*

each policy and program, as it is not the main aim of our exposition. However, the outcomes of the developmental policies, implemented were so firm that despite the Pak-India war in 1965 the country sustained an average of 6.7% economic growth, in the decade of the 1960s. Additionally, poverty incidence declined to 8 percentage points, i.e. from 54% in the 1950s to 46% in the 1960s, followed by sharp growth in GDP per capita, from an average of USD 90 in 1950 to an average of USD 155 (World Bank Database).

2.5 The 1970s: The decade of Political Transitions:

The decade of the 1970s is famous for its socialist kind of policies implemented by the first civilian government of Pakistan. The leading policies of the decade include land reforms and the nationalization of private sector banks and other influential institutions. In the first year of the 1970s, a second Pak-India war resulted in the separation of Eastern Pakistan (now Bangladesh); and consequently, much of the developmental policies lost its connections with present-day Pakistan. Accordingly, the priorities of the government shifted from an "economically oriented developing state" to a more "politically oriented development" one. As maintained by *Anjum & Sgro, 2017, Zaidi (2005) and Hasan1997*, the authoritarian regime empowered the ruling party during difficult macroeconomic environment to bring structural changes; however, the efforts of nationalization of certain important sectors and the concentration of power in one political party lead the country to a high poverty ratio of more than 55%. Furthermore, due to these policies and particularly due to the war in 1971 the country saw an all-time high inflation rate of 37.83%, in the year 1973 (Zaidi, 1999). The agriculture sector experienced some historical shocks, too in the year 1974-75, when a pest attack caused the failure of cotton crops. The disastrous floods of the years 1973, 74 and 76 worsened the situation further and a bad harvest affected the overall agricultural production, the agricultural sector growth rate declined to an average of 2% for the whole decade. The manufacturing sector also declined by 10% points and a decade's average growth rate of 5.5% for the manufacturing sector was recorded. These shocking disasters in major sectors, of the country, resulted in an average GDP growth rate of 5.5%.

- **Fourth Five Year Plan:**

The government launched the fourth FYP in the year 1970; however, after the fall of Dhaka in the year 1971, the government abandoned the plan. As noted previously that the nationalization policy was of major priorities, which circumvented the fourth FYP. Nevertheless, the government adopted the

scientific features of the fourth FYP in order to turn Pakistan into a "scientific superpower"[10]. In addition, certain cooperative schemes and developmental projects were applied.

- **Developmental Programs 1970s:**

Despite the bad political and economic circumstances in the country, the government implanted certain developmental projects, while some of the projects were continued, from the previous decade. In the year 1972, the government introduced land reforms as part of the ruling party's manifesto. As per 1972's land reforms, "no individual could own more than 150 acres of irrigated land or 300 acres of unirrigated land or an area equivalent to 15000 Producing Index Unit (PIU)[11] of the land". However, in the year 1977, the new authoritarian regime revised the policy and further reduced the land holdings to 100 acres of irrigated and 200 acres of unirrigated land. The government resumed a total of 2.5 and 8% of land during the years 1972 and 1977, respectively, having positive distributional effects[12].

In the same decade, a program with the name Integrated Rural Development Program (IRDP) was initiated. This program aimed at improving the socio-economic status of small and medium farmers. The aim of this program was based on the concept of "communitarianism". The program established a coordination system among the line departments and local organizations to provide proper assistance in various sectors. The main tasks of the program included the provision of, water sanitation, health, education, housing, agricultural services and inputs to the farmers. The community (Markaz) organized small and medium farmers with multipurpose cooperatives at the village level and their federation at the community (Markaz) level. This program provided an institution for local actions and a link between the people and the government.

Similarly, a "People's Work Program (PWP)" was launched in the year 1972, parallel to IRDP. This program replaced the Rural Works Program (RWP) in order to improve the socio-economic conditions of the rural population. The aim was to build, new schools, dispensaries, drainage systems, low-cost housing, industrial home facilities, to provide water supply, and plant trees. This program was launched as part of its national development strategy by a first-ever elected government[13]. However,

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[10] *It is a general perception that Pakistan initiated its nuclear program in early 1970s.*

[11] A Produce Index Unit (PIU) is a measure of the productive capacity of an agricultural unit of land (acre). It is estimated as a measure of the gross value of output per unit (Khan M. H., 1991)

[12] *Source: GOP, Agricultural Statistics of Pakistan, 1994.*

[13] *A government led by a "socialist party" known as Pakistan people's Party (PPP) led by Zulfiqar Ali Bhutto*

in the wake of weakening the socialist spirit within the party, this program lost its government patronage and abandoned it in the early 1980s.

To conclude; in the decade of the 1970s, the governments prioritized the public sector expenditures over the policy of import substitution policy of the 1960s. The government anticipated that this shift would bring self-sufficiency in intermediate and capital goods industries. Hussain, (2012) maintains that the so-called liberal economic policies implanted in the 1960s helped the economic elites (22 families)[14] to accumulate a huge chunk of wealth (income and properties). However, in order to redistribute the wealth, the respective governments of the 1970s brought about several drastic changes. The well-known land reforms and labor reforms of the 1970s are the consequences of those changes.

2.6 The 1980s: The Resurgence of Economic Growth:

The decade of the 1980s is famous for Pakistan's economic resurgence. The government succeeded in various aspects on the back of the privatization and foreign assistance. For instance, poverty incidences declined sharply by 29%, the unemployment rate dropped from 3.7% in the year 1980 to 2.9% in 1990. The decade of the 1980s is also famous for the Islamisation of several institutions; for instance, the financial sector was made a so-called interest free. The interest-free concept of Islamic sharia law claims that the business partnership contract between owner and entrepreneur shall be based on the principle of sharing losses and profits (Nafziger, 2012).

Anjum (2017) states that in the year 1986, a national savings to GDP ratio of 16% was achieved on the back of huge remittances inflow from Gulf countries. Also, the huge foreign assistance received from USA-for being an ally in the Afghan war- strengthened certain economic indicators of Pakistan, in the 1980s. Hence, the so-called revival of economic growth achieved was not a consequence of the productive sectors and therefore was not long-lasting; thus, soon the economy experienced shocks. The government financed its fiscal budget deficit partly with those additional national savings and partly with non-banking domestic borrowings. Because of the drastic increase in domestic debt, which grew from PKR 58 billion in 1981 to PKR 571 billion in 1988; the public debt/GDP increased from

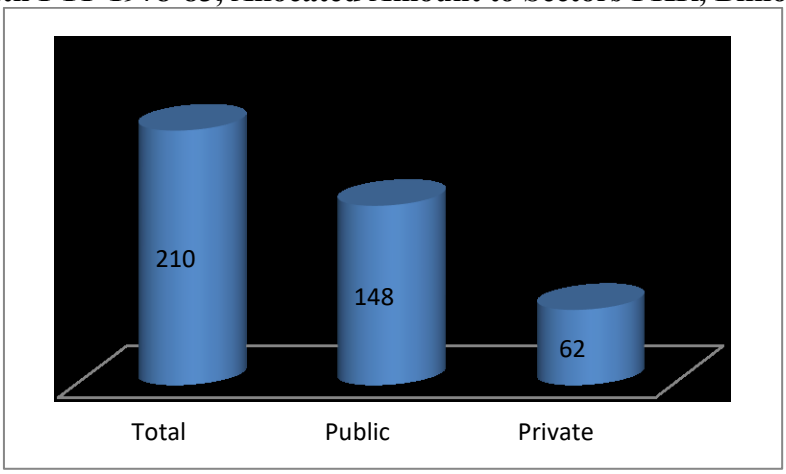
[14] *22 were the richest families of the 1960s and 70s who acoording to Dr.Haq- the then chief economist of the Planning Commission of Pakistan- were controlling 87% of the banking and insurance sectors, and 66% of the industrial sector* (Hussain D. , 2007).

77% in 1988 to 82% in 1990. During this time, Pakistan experienced the problems of negative public savings and declining public investment/GDP ratio. However; due to the boom of manufacturing exports, with an average growth rate of 8.8%, and an agricultural growth rate of 5.4%, a GDP growth of 6.3% was retained, in the decade of 1980s (Hasan, 1997).

- **The Fifth Five Year Plan:**

The figures discussed above are the outcomes of the two consecutive FYPs, applied in the 1980s. This time the fifth FYP was an attempt to stabilize the economy and to improve the living standards of the poorest portions of the country. The estimated size of the Fifth FYP was PKR. 210.17 billion, out of which PKR. 148.17 billion, was allocated to the public while PKR. 62 billion to the private sector.

Figure 2.4: The Fifth FYP 1978-83, Allocated Amount to Sectors PKR, Billion



Source: Ibid (Plotted by the Author)

The plan ended up with remarkably successful results in consolidating the over-stretched development program in the public sector. According to the summary published in the proposal of sixth FYP (1983), the fifth FYP achieved almost 90% of the targets. According to the sixth FYP report, the outcomes of the fifth FYP are the following:

1. Achieved a consistent GDP growth of above 6%
2. Transformed the food deficit into a modest food surplus
3. Lowered the inflation rate from 16% to 5% in 1982/83
4. Accelerated the regional development in Pakistan
5. Revived the industrial growth
6. Redistributed energy to additional areas of the country

7. Spread social safety nets for the poorest 20% of the population
8. And initiated new cooperative/developmental schemes

However, in some spheres the plan did not perform as expected; for instance, investment to GDP ratio declined from 16.6% in 1977 to 15% in 1983. Long-term investment and investment in human development were negligible; which resulted in a very low level of literacy and health facilities.

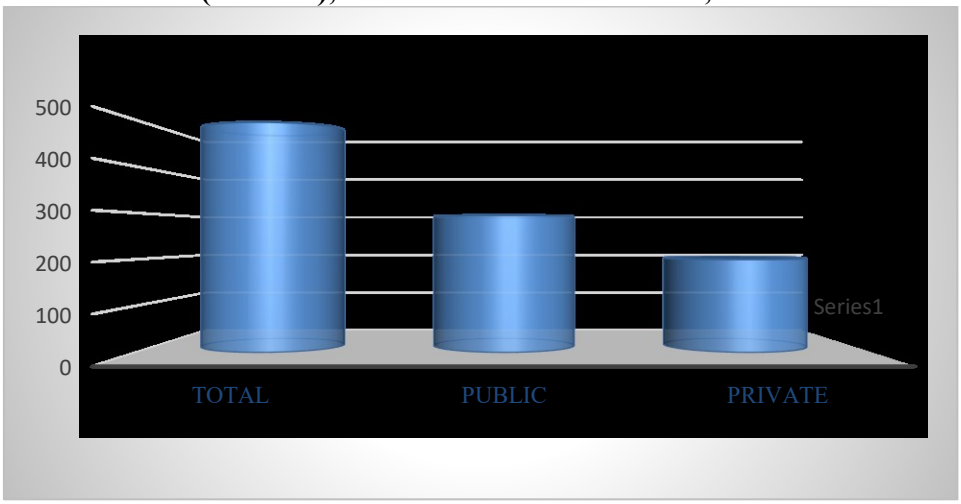
- **The Sixth Five-Year Plan:**

After the accomplishment of the fifth FYP, the government immediately launched the sixth FYP with some deficiencies to overcome. The additional key points highlighted in the sixth FYP report are as under:

a. To combine a strong production base with an equally strong social conscience
b. To enhance the share of private investment, in the industrial sector from 54.4% to 91%, and in total investment from32% to 44%
c. To maintain the high GDP growth rate
d. To befit the marginalized poor population of the country from economic growth
e. To provide assistance to small-scale agricultural farmers as well as small-scale manufacturing industries

Compared to the previous FYP, more than a double amount of PKR.495 billion was allocated to the 6^{th} FYP, out of which the public sector received PKR. 295 billion, while the private sector received PKR 200 billion.

Figure 2.5: The Sixth FYP (1983-88), Amount Allocated in PKR, Billions



Source: Planning Commission, Government of Pakistan, 1983 (Plotted by the Author)

The plane ended up leaving the manufacturing sector with a growth rate of 7.7% against the anticipated growth rate of 9.3%, per year. Accordingly, the plan gave shape to some small developmental projects discussed in the upcoming paragraph:

- **Developmental Programs 1980s:**

Special Development Program (Five-Points Program, 1985-1988) was executed under the sixth FYP. The key points were (i) The establishment of an Islamic democratic political system; (ii) The promotion of an equitable Islamic democratic economic order; (iii) The elimination of illiteracy; (iv) The eradication of bribery, injustice, and corruption; and (v) The consolidation of national integrity and sovereignty. This program supported rural development, the rebuilding of shantytowns (Kachi Abadi) and mass literacy programs, etc. The program ended with the change of government, and the new government launched another program called Peoples Program (1989-90), as a substitute to the old one. This program provided funding assistance to different developmental projects mainly in rural areas, i.e. for the construction of additional classrooms, new school buildings, upgrading health facilities, water supply, and roads.

2.7 The 1990s: The Decade of Debt Crisis

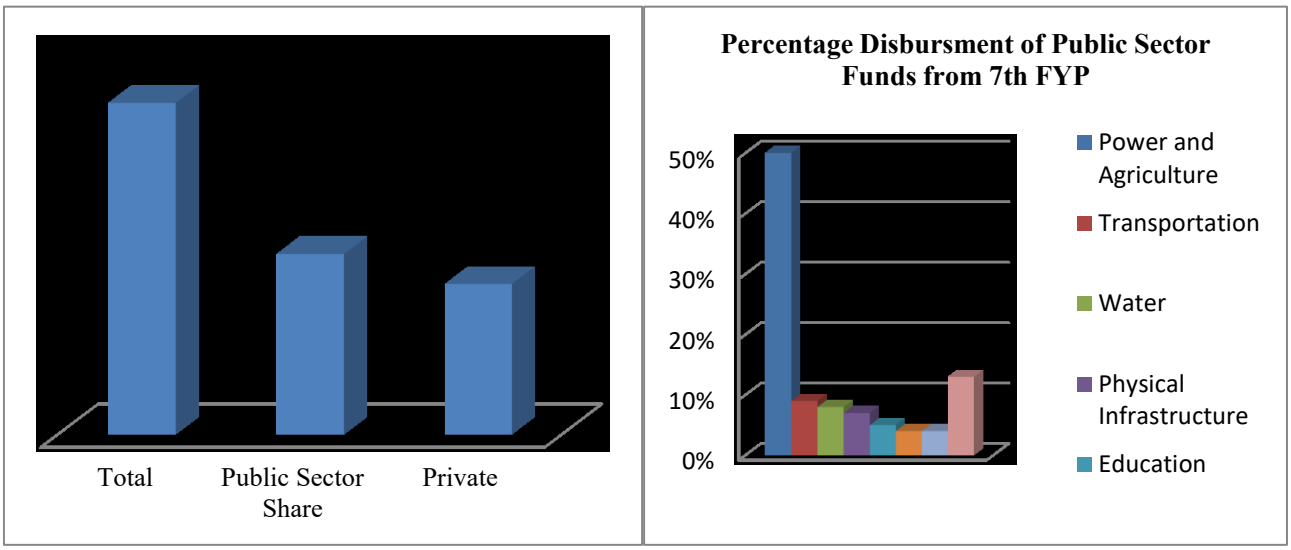
In the 1990s, Pakistan was mostly suffered from the problems of falling workers remittances and rising external deficits. Because of the declining growth rates of GDP, there occurred the second worst inflation in the 1990s. The unemployment ratio reached 5.9% in the year 1991 and then 7.2% in 2000,

(World Bank). The current account deficit of Pakistan was largely financed through the constant increases in its residents' Foreign Currency Deposits. In the year 1995, external debt rose to US$ 30 billion. During the last 10 years, the external debt tripled *(Hasan, 1997)* whereas, the external debt/GDP ratio rose to 50% in 1995, from 42% in 1980. Likewise, the external debt/export ratios augmented from 209% to 258% *(Ibid)*. Because of declining economic indicators, Pakistan's domestic debt rose to US $, 909 billion and domestic debt/GDP ratio increased to 42% *(Hasan, 1999)*. Subsequently, the severity of the aforementioned problems reached its heights when the public debt to GDP ratio rose to 102%, in the late 1990s. However, despite this entire crisis agricultural and manufacturing sector grew by 4.4% and 4.8% respectively, while poverty incidence rose to 30.6% at the end of the 1990s (*Ibid*).

- **The Seventh Five-Year Plan:**

The seventh FYP is also famous as the seventh plan; it was designed as a set of several developmental programs and cooperative schemes. The newly elected government of Pakistan People's Party (PPP) launched the seventh plan in the year 1988 and was integrated into the nationalization program. Under this plan, the agriculture and power sectors were emphasized in order to keep up the prevailing face of economic growth of 6.6% (Planning Commission of Pakistan Report (1994). The total outlay of the Seventh Plan was estimated around PKR 642 billion of which PKR 350 billion was designated to the public sector expenditures, and PKR 292 billion to the private sector. As mentioned that the government was determined to enhance the power and agricultural sectors, therefore more than 50%, of the total public sector funds, were allotted to these sectors. However, ample resources were given to other sectors such as transportation and water, as well.

Figure 2.6: Total Outlay and Sectorial Shares in Seventh Plan (1988-93) PKR Billion

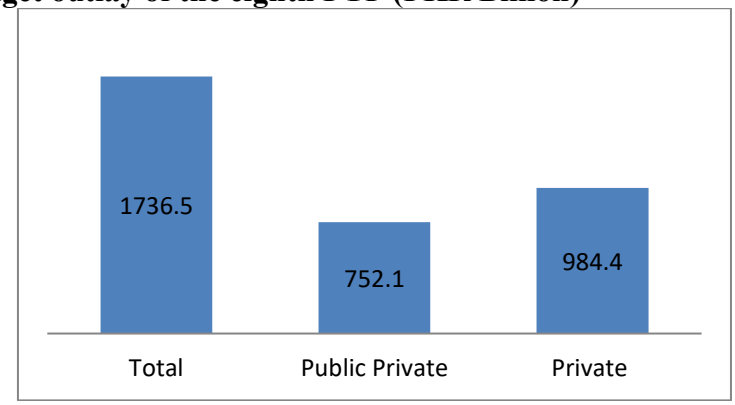


Source: Planning Commission, Government of Pakistan, 1988. (Plotted by the Author)

- **The Eighth Five-Year Plan:**

The Planning Commission of Pakistan launched the eighth and final FYP in the year 1993. The major aims of the eighth FYP included the utilization of the available investment resources in order to achieve a GNP growth rate of 8.1% by the end of 2000. This time, the population control and tax base expansion were given the prime importance, in order to reduce the budget deficit. In addition, an increase in industrial share to GDP, as compared to agriculture, was also of major concern. The budget outlay of the eighth FYP was PKR 1736.50 billion of which PKR 752.1 billion was designated for the public sector investment while PKR 984.4 billion was placed in the private sector.

Figure 2.7: The Budget outlay of the eighth FYP (PKR Billion)



Data Source: Planning Commission of Pakistan, 1998 (Plotted by the Author)

- **Developmental/Cooperative Programs (the 1990s):**

Several developmental programs were applied both on the sub-national and national levels. Like the previous decades, the main aims of most of the projects were to develop urban as well as rural areas. A newly elected civilian government initiated a cooperative project named Tameer-e-Watan Program (TWP). The idea was that the elected representatives from their respective constituencies would identify the developmental schemes. Therefore, the elected representatives were given scheduled funds, which were to be used for the solution of the identified problems. However, this program came under severe criticism because of the fund's manipulations. In the latter half of the 1990s, the People's Program was revised and replaced the TWP during the second PPP rule. However, the changes in cooperative and developmental programs with changes in governments exposed political partiality yet there was a hope that it will serve the people's welfare, particularly in rural areas.

At the same time, another program with the name "Social Action Plan (SAP)" was launched with similar hopes, i.e. that it will uplift the poor class. This was a multi-sectorial plan, which was initiated in the year 1992-93 with more emphasis on rural development. The program consisted of two phases, Social Action Plan (SAP) phase I (1992-93 to 1995-96) and SAP phase II (1997 to 2002). The main purpose was to enable the poor to give easy access to basic services, particularly to education and health services. The participation of governmental, none governmental (NGOs), private sector, and local community organizations built a political consensus and ensured bureaucratic support. The total amount invested in the first phase of the program was PKR 106 billion out of which 12.3 % (PKR 13.1 billion) was donated by the international donor agencies.

The outcomes, of SAP phase I, were quite impressive, primary education level rose from 69% to 73%, the adult literacy rate rose from 35% to 45%, infant mortality rate plunge from 101 to 90 life expectancy improved from 57.7 to 63 years, etc. With the successful completion of the SAP phase I the government launched SAP phase II in 1997, which ended up with even better results.

The discussion presented numerous programs and cooperative schemes applied since 1947 under the policy of Five Years Plans. However, not all of the programs and schemes are discussed only the prominent and result-oriented ones are discussed, shortly. Apparently, none of the programs, which we discuss, was given an enduring shape due to certain political and economic reasons. However, the analysis of those particular reasons is not the aim of our investigations; therefore, we refrain from that.

By the end of the 1990s, the already scheduled FYPs and all of the programs under FYPs came to the end. The decade of the 1990s generally and post-1996 period, particularly, was the time when the trend of informal small loans was at its peak. A number of socio-economic studies- on a micro-level - identified that people in the rural areas of Pakistan, specifically Punjab, were always inclined towards micro-businesses. That included handicrafts, small-scale manufacturing, micro-enterprises, livestock, small-scale poultry development, and Dairy development, etc. The studies identified that during the year 1996 a number of unofficial programs and organizations originated in order to exploit the developing market of microfinance (Raza, Minai, Zain, & Tariq, 2018). Nevertheless, the government identified the need for formal recognition for microfinance and soon the government launched a network of rural support programs. Although the initiative was not new, as there had been some programs operating since 1982, yet, the need for a regulating mechanism for the microfinance sector was appreciated nationwide.

- **Network of Rural Support Programs (RSPs, 1997):**

A Network of rural support programs has been working over the last couple of decades in order to operate developmental projects in rural and backward areas of the country. According to Parker & Glinskaya, (2007), the legalization and regulation of the rural support programs was the need of the day. Most of the projects under rural support programs uncovered the hidden potential of the rural areas in generating self -employment. The prominent programs under the network of RSPs are:

- National Rural Support Program (NRSP) operating across the country.
- Ghazi Brotha Taraqiati Idara
- Sarhad Rural Support Program (SRSP), operating across Khyber Pakhtunkhwa province
- Lachi Poverty Reduction Program
- Punjab Rural Support Program, providing services across Punjab province
- Baluchistan Rural Support Program (BRSP), operating across Baluchistan province
- Sindh Graduates Association and Sindh Rural Support Organization: operating across Sindh province
- Agha Khan Rural Support Program AKRSP). Operating in the region of Kashmir

In order to monitor and facilitate those projects, the government initiated the Pakistan Poverty Alleviation Fund (PPAF) in the year 1997. The PPAF is still operational countrywide and it facilitates

low-income households to access the financial market conveniently and therefore to the socio-economic services. In addition, the aim of PPAF is to reach poor people through NGOs and Community Based Organizations (CBOs). This initiative encourages the private sector to provide small loans to poor people in order to establish their own small businesses. Thus, the PPAF is the first governmental body, which formally initiated micro-financing in Pakistan. Subsequently, the government in the year 2001 passed an ordinance with the name of "Microfinance Institution Ordinance" and later on, the State Bank of Pakistan (SBP) designed a proper structure for the microfinance sector (Government of Pakistan, 2001) (Haq, Hoque, & Pathan, 2008).

B. Microfinance

2.8 The 2000s: Decade of Recovery:

After a period of 10 years of "democratic" rule in Pakistan, again in October 1999, the military took over the government. The then chief of army Pervaiz Musharraf declared an emergency in all provincial and federal regions. Accordingly, the country entered into the decade of the 2000s with major political and economic challenges. Later on, after the incident of September 11 in the US, Pakistan provided its full support to the coalition partners, the so-called "war against terrorism" in Afghanistan. Pakistan´s role in the war against terror made the United States lift sanctions- imposed on Pakistan due to nuclear tests in 1998[15]. The removal of sanctions positively affected Pakistan's economy i.e. it immediately, provided "coalition funds" as foreign grants, ranging from $1 billion to US$ 1.5 billion per year, under the "Kerry Lugar Bill" (Rafique, 2011). Additionally, the US also wrote off many foreign debts in wake of the anticipated strong support from the Pakistani military.

This led Pakistan to start the new decade of the 2000s with a rising trend in the GDP growth rate. Pakistan achieved for the very first time a high growth rate of 8.6%, per year, in 2004-05. The spontaneous effects of the foreign grants include a decline in poverty incidences, which drove down to 22% in 2006 from 36.5% in early 2000, and the unemployment rate plunged to 5% in 2008 from 8% in 2001. (Uddin & Swati, 2009) (Anjum & Sgro, 2017).

[15] *Morrow & Carriere, 1999: THE ECONOMIC IMPACTS OF 1998 SANCTIONS ON INDIA AND PAKISTAN.*

Accordingly, to make the Pakistani economy competent and to integrate it into the new world economy, the government made several economic but structural changes. The major structural changes include the liberalization policies, financial sector restructuring, and privatization, which directed the economy to a more market economy. The liberalization of foreign exchange and the privatization of big companies such as oil and gas regulatory authority (OGRA), Pakistan Telecommunication (PTCL) and banking sector, brought about greater macroeconomic stability. Accordingly, these liberal policies and stability in the economy encouraged foreign and local investors to establish new businesses. Besides these structural changes, the government signed new agreements with several gulf countries regarding the labor supply from Pakistan. These agreements helped to enhance the remittances due to the massive outflux of the labor force. Between the years 2002 to 2006, the remittances accounted for US$18.5 billion which helped foreign exchange reserves and easing the balance of payments (BOP). This resulted in achieving a high GDP growth rate of 7.7% in the year 2005[16]. However, due to a number of reasons, such as natural disasters (2005 earthquake), the rise of militant organizations in different parts of the country in 2006, Benazir Bhutto's assassination, and the financial crisis of 2007-08", the high growth rate did not last long and declined sharply to 1.6% in 2010[17]. The inflation-adjusted growth rate was recorded 4.4%, agricultural growth declined to 2%, industrial growth performed fairly well with 4.9% growth, while the services sector grew with 4.8%, by 2010. The total public debt amounted to PKR 8,160 billion, public debt to GDP ratio was 56%).

By looking into the figures above before 2008, it seems quite clear that why various studies claim the decade of the 2000s as the decade of recovery. It is a fact that for the said political reason numerous international grants arrived in Pakistan; however, it acted as a strong exogenous variable that stimulated the aggregate demand and therefore generated various investment opportunities. At the start of the decade of the 2000s, various developmental projects initiated and microfinance investment was an important initiative aimed at alleviating poverty on the aggregate level. The forthcoming section introduces, briefly, some developmental programs that executed after 2000; however, the initiative of the microfinance sector will be emphasized and evaluated with ample consideration.

[16] *Ibid. 1, 67.*
[17] *Pakistan Bureau of Statistics, Macro Economic Indicators (1952-2017)*

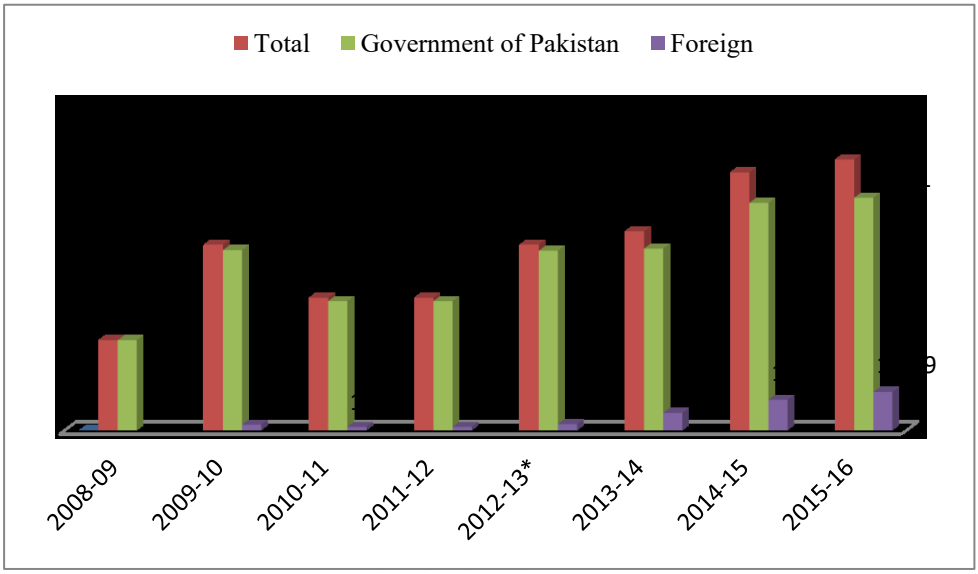
- **Developmental Programs Launched after 2000:**

In the year 1998, the scheduled series of FYPs ended; however, different regimes continued to achieve development in the most neglected sectors. A number of programs such as the network of RSPs, Social Action Programs, and PPAF were delivering their services even in the later 2000s. The survival of these programs, in present, is the evidence of their success. The government implemented additional programs which are still operational. The Pakistan Poverty Alleviation Fund (PPAF) has taken a proper shape of an institution; under which a number of rural support programs are working. The main aim of these programs is to provide assistance to the poor people and to get them out of the poverty trap.

Several other programs such as "Zakat and Usher" are working in order to provide financial support through Islamic means. "Zakat" is an Islamic institution/system which can be described as a "*taxation system through which a specific proportion of savings and wealth i.e. 2.5% or 1/40th is obligatory to be paid to the needy people of the society".* This system has a proper departmental structure in Pakistan, which collects and redistributes Zakat among the deprived people. As per the 2014-15 report of the Federal Bureau of Revenue (FBR), a total amount of USD 45 million has been distributed among the Zakat beneficiaries. Likewise, "Pakistan Baitul Maal" provides services to the widows, orphans, and special people through their schemes.

In 2008-09, after the new civilian government attained power, "Benazir Income Support Program (BISP)" was launched. The program was named after Benazir Bhutto- a political leader of Pakistan People's Party, who was assassinated in 2007. The aim of the BISP is to financially empower those women who support a household; however, widows and divorced women are more emphasized. The program is financially more dependent on the government of Pakistan, however, international institutions such as World Bank (WB), Department for International Development (DFID), Asian Development Bank (ADB), and USAID also provide financial assistance.

Figure 2.8: BISP Funding Sources since its Foundation (PKR Billions)



Data Source: BISP report 2017 (Plotted by the Author)

The plot shows the budgetary allocations of national and international sources since 2008-09 when it was initiated. In 2017 the then government- political rivals of the founding party of the program- appreciated the program and incremented an amount of PKR.45 billion; which has increased the total annual budget to PKR.115 billion, of the program. Accordingly, the program has increased its quarterly stipend to beneficiaries that are from PKR.3000 to PKR 4500, per person, *(BISP Annual Report, 2017)*.

Moreover, recently in the year 2016, the government of Pakistan launched another strategy to coup with poverty indices. The government and the United Nation Development Program (UNDP) are interested to alleviate poverty on the basis of "Multidimensional Poverty Indices (MPI)[18]". This initiative is launched under a mega project of the "Vision 2025" which aims at providing basic facilities to the poor people of Pakistan, including microfinance/small loans.

2.9 Background of Microfinance in Pakistan

It is considered that for the growth of the microfinance sector, the performance of the macroeconomy and financial sector of a country is necessary. To understand the size and structure of the Pakistani microfinance sector, here is a brief overview of the Pakistani macroeconomy and financial sector.

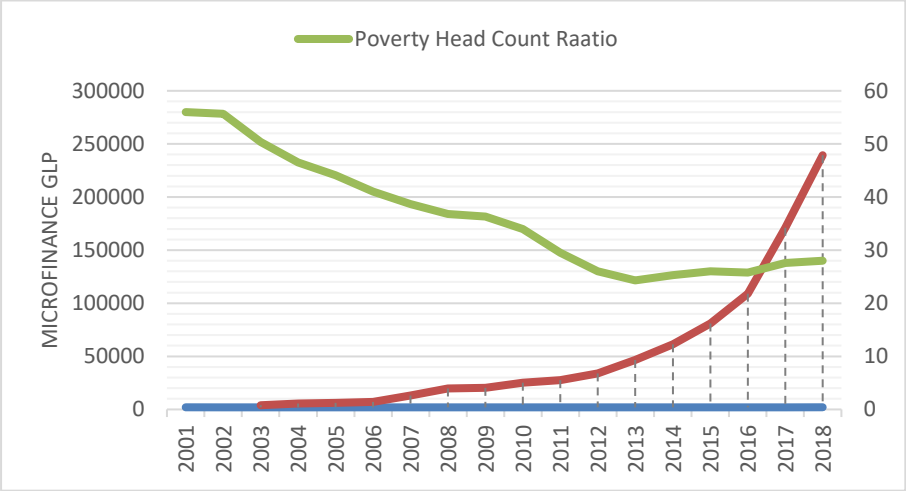
[18] *The 'Multidimensional Poverty Indices' (MPI) is developed by the Oxford Poverty and Human Development Index (OPHI) and UNDP. According to this definition, the concept of poverty becomes broader and includes health, education and other necessities alongside income and consumption.*

Historically the key sectors (Agriculture and Manufacturing) of Pakistan have had high growth rates from the 1960s until the end of the 1980s. The decade of the 1990s was Pakistan's worst in many regards, however; as we discuss that the economy went through the recovery phase in the years after 2002, a year after the formal introduction of microfinance. The recovery time after 2002 is characterized by substantial improvements in different years. The economic growth from the year 2003 to 2007 remained almost 6%, was the highest since the year 1991. Foreign exchange reserves rose to its highest in those years. During the recovery period, we saw that investment, which performed very poor in the decade of the 1990s, surpassed its previous records[19]. These achievements, as discussed earlier, were the consequences of a number of factors, including the liberalization and openness, the privatization of different sectors, diligent management of different resources, substantial debt rescheduling, and development in the financial sector.

Accordingly, we discussed that the government of Pakistan, from the very beginning, has implemented a number of programs to combat poverty. Our previous section (A) regarding the "Developmental Programs" in Pakistan intends to confer a handful of those programs. We saw that the FYPs and the developmental programs concluded into an informal market of microfinance (MF) in the late 1990s. Subsequently, the government introduced a formal MF sector as a poverty reduction policy in the late 1990s in Pakistan. However, in many countries, MF remained a successful poverty reduction tool and was implemented in very early stages. In Pakistan, the microfinance sector received its formal organizational structure at the very beginning of the 2000s. According to the Pakistan Economic Survey(s)[20] *(2013, 2014, 2015),* the poverty ratio in Pakistan was above 55%, in the early 2000s. However, a significant decline is observed afterward, particularly in the years 2005-2011, when the poverty ratio has declined by 29 percentage points. The chart below offers a sketch of the poverty ratios for the years after 2001 when microfinance was implemented officially, however, it does not claim any statistical correlation between the "Poverty Head Count Ratio"[21] and microfinance. The chart gives a clue to the readers regarding the motivation of this study by showing the upward trend in microfinance and the opposite in poverty ratios that happened after the year 2001.

[19] *Poverty and Social Impact Assessment, Pakistan Microfinance Policy Report (2006)*
[20] *Pakistan Economic Survey is the official survey conducted by the Finance Ministry of Pakistan on Annual basis.*
[21] *Poverty Head Count Ratio is defined as per National lines of Pakistan; People living below PKR 350 (USD3.3) per day are declared as poor.*

Figure 2.9: Poverty Head Count Ratio vs. Microfinance in Pakistan



Source: Pakistan Bureau of Statistics

This section (B) aims at a brief history of how microfinance evolved, the current state of MF, its regional distribution, both on provincial and district levels, and different sources of microfinance in Pakistan.

2.10 History and Background of Microfinance in Pakistan:

As a general perception worldwide, the literature on microfinance apparently claims the roots of microfinance has its place in Bangladesh. A professor of economics at Chittagong University, Dr. Younas, pioneered microfinance in the year 1976. However, in Pakistan, different cooperatives and developmental programs were delivering small credits and financial services, way before the 1970s. This is already noted in the previous section (A) of this chapter that Dr. Akhtar Hameed Khan, a development practitioner-initiated Comilla Cooperatives in the early 1960s. These cooperatives aimed at providing financial services to very poor people, particularly in rural areas. Similarly, the program of "Employment Creation Schemes based on Directed Credit" continued to deliver services in the 1970s, when Comilla Cooperative schemes disintegrated from present-day Pakistan. This program encouraged the poor people and provided small loans for the purpose to establish their own small-scale businesses. The idea sounds more like that of microfinance; however, the term microfinance officially relates to the pioneer Dr. Younas. Historically, small loaning practices did exist worldwide. The "give and take" culture has always shaped the primitive societies and helping relatives and neighbors was an essential part of their lives. It is just to remind the fact that, microfinance is a mere continuity of that traditional and cultural cooperation.

This "give and take" culture existed until the late 1990s in Pakistan, which eventually received the formal microfinance status from the government by the year 2001. The experienced informal rural support programs of the late 1980s and 1990s, also received official status from the government to start lending under the central bank. At the same time, a public sector bank "The Bank of Khyber" was established on a provincial level to ensure secure lending and smoothen the microfinance sector[22]. The Pakistan Poverty Alleviation Fund (PPAF) was established, in the year 1997, to regulate the market for microfinance. Later on, the government of Pakistan initiated formal micro-financing in the year 2000 under the project Microfinance Sector Development Program (MSDP). However, the microfinance ordinance was passed by the government of Pakistan in the year 2001 with the name "Microfinance Institution Ordinance" *(ORDINANCE NO.LV of 2001)*[23]. The main objectives of the MSDP were to further expand the microfinance services and facilitate the potential borrowers on a sustainable basis. Khushali Bank was the first microfinance bank established in a maximum number of districts, operational until date.

The government launched MSDP under the State Bank of Pakistan (SBP); the SBP is also responsible for the monitoring of the microfinance sector. The SBP classifies the Pakistani microfinance sector into banking sector microfinance and the non-banking microfinance. The microfinance sector, which works under the SBP, is recognized as the banking sector microfinance whereas the MF sector that works under PPAF is regarded as the non-banking microfinance sector. However, the Pakistan Microfinance Network (PMN) serves as a platform for the coordination between SBP (formal) and the PPAF (informal). The section below forwards the details of the two classifications of the microfinance sector in Pakistan.

- **Microfinance under the State Bank of Pakistan:**

The government assigned the dual responsibility of supervision and development of MF to the central bank (SBP) based on the quality that MF is an effective tool for poverty reduction and financial deepening. In order to perform these duties effectively, the SBP has undertaken several steps for its own capacity building. The important steps included the establishment of an internal separate division for MF, the provision of MF specific training to a pool of officers, and the hiring of international

[22] *The Development of Microfinance in Pakistan by Amir Saleem and Stefan Platteau*
[23] *Microfinance Institution Ordinance 2001 (LV of 2001)*

consultant groups to provide assistance in the development of on-site and off-site surveillance manuals for Microfinance Banks (MFBs).

Furthermore, as a supervising body, the SBP monitors and regulates all the MFBs. For that purpose, the bank has taken numerous policy measures to provide the operational infrastructure. The issuance of a license to a potential microfinance bank is the sole jurisdiction of the SBP. The SBP is the final authority to set rules and regulations for any MFI. Therefore, a separate board of directors is established within the SBP. Hence, it is the sole responsibility of the SBP to create a favorable environment for the growth and development of the MF sector. To address all the aforementioned issues the SBP had arranged a mega international conference on "Microfinance in Pakistan-innovating and Mainstreaming" in 2004. The aim of this conference was to get all the national and international stakeholders on board, other main players of the conference included PPAF, PMN, and KB *(State of Microfinance, 2009. the State Bank of Pakistan)*.

- **Microfinance under the PPAF:**

The establishment of PPAF was a consequence of the informal landings and borrowings of the 1990s (and earlier). The government authorized the PPAF to finance any legally established microfinance non-banking entity, both in the public and private sectors. The microfinance providers under the umbrella of PPAF are; Rural Support Programs RSPs- providing microfinance and other microfinance-NGOs.

The PPAF and its authority to finance other microfinance institutions further stimulate the growth of the microfinance sector. Initially, it was thought that PPAF would be a temporary authority and upon getting a proper microfinance structure, the government would most certainly abolish it. However, during the initial eight years i.e. 2000 to 2008, the PPAF recognized itself as a main player in the upbringing and the development of the MF sector in Pakistan. From the very beginning until the end of the year 2007, the PPAF disbursed USD 457 million to 71 MF institutions. Of the total disbursed amount, USD 348 was provided for credit purposes, USD 75 million for community infrastructure schemes, and USD 34 million was for capacity building. During this time, the PPAF developed itself as a highly professional and credible institution with a strong efficient cooperative and corporate culture. All the aforementioned qualities paid it off when PPAF was named one of the largest funds in the world. A variety of its partner organizations agree that the PPAF initially was the only catalyst

organization that has led the Pakistan microfinance sector to the exponential growth. Additionally, the PPAF has enabled a more integrated approach towards rural development, log-term social mobilization, and community empowerment. All the partner organizations agree that the PPAF has transformed them from charity-driven organizations dependent upon the donor organizations (Ahmad, 2009).

- **Pakistan Microfinance Network (PMN):**

The Pakistan Microfinance Network is a coordinating organization that plays a vital role between the banking microfinance and non-banking microfinance sectors. The PMN was established in the late 1990s, to coup with the ongoing informal market of microfinance practitioners. The PMN, later on, achieved national and global recognition upon its active participation in microfinance activities. In the year 2001, the Securities and Exchange Commission of Pakistan (SECP) gave it a formal structure under "section 42" of the Companies Ordinance. Currently, PMN has the most significant and officially certified statistical records of all the microfinance providers in Pakistan.

2.11 The Current State of Microfinance in Pakistan:

The microfinance industry in Pakistan has witnessed continuous growth over the last several years. Active borrowers of the microfinance industry, both banking and non-banking sectors, increased with a growth rate of more than 43%, i.e. from 3.6 million in 2015-16 to 6.4 million in 2018. Similarly, the total "Gross Loan Portfolio (GLP)" has grown by more than 20% since 2017; this is shown in the *Microwatch issue No.48*, that a total of PKR.239 billion has been disbursed in the year 2018, whereas, the said figure was accounted to PKR.200 billion, in the year 2017. Likewise, the growth rate of the MF asset base accounted a 25% in the year 2017. Table 2-10 below shows changes in a number of microfinance indicators for the years 2017 to 2018. As shown, in Table 2-10 that since the last year 2017 the microfinance market has almost covered all the Pakistani districts. For the first time the microfinance institutions, banks, NGOs, and RSPs have extended their operation to 138 districts out of 140 districts, excluding Kashmir and Gilgit Baltistan[24] *(Microwatch Issue No 48, September 2018)*. Similarly, the number of borrowers and Gross Loan Portfolio (GLP) has grown with 19.46 and 28.7 percentage points, respectively. Since the year 2015, the government of Pakistan is taking a keen

[24] *Due to their controversial positioning, on the United Nation's Global map, the districts of Kashmir and Gilgit Baltistan, the northern regions, have been excluded.*

interest in the microfinance sector and has provided ampler financial support; due to which the average loan size has been increasing. The average loan size for the year 2018 has shown a 12.4 growth, which is an indicator that the borrowers are utilizing the loans efficiently. This is also evident from the "Value of Total Savings" and "Average Loan Savings Amount" which shows a growth rate of 29.5% and 27.85%, respectively.

Figure 2.10: The Current State of Microfinance in Pakistan

Indicators	Year 2018	Year 2017	%Change
Number of Branches/Units	3,948	3,484	11.75
Number of Districts Covered	138	106	23.18
Penetration Rate (%)	31.5	24.95	20.79
Active Borrowers	6,460,015	5,202,872	19.46
Gross Loan Portfolio (PKR Millions)	239,364	171,008	28.55
Number of Loans Disbursed	1,735,131	1,507,803	13.1
Disbursements (PKR Millions)	88,947	67,644	23.95
Average Loan Size (PKR)	51,262	44,863	12.4
Number of Savers	25,799,503	25,211,463	2.2
Value of Savings (PKR Millions)	209,298	147,549	29.5
Average Loan Savings Balance (PKR)	8,112	5,852	27.85
Number of Policy Holders	8,023,973	6,347,260	20.89
Sum Insured (PKR Millions)	227,405	167,868	26.18

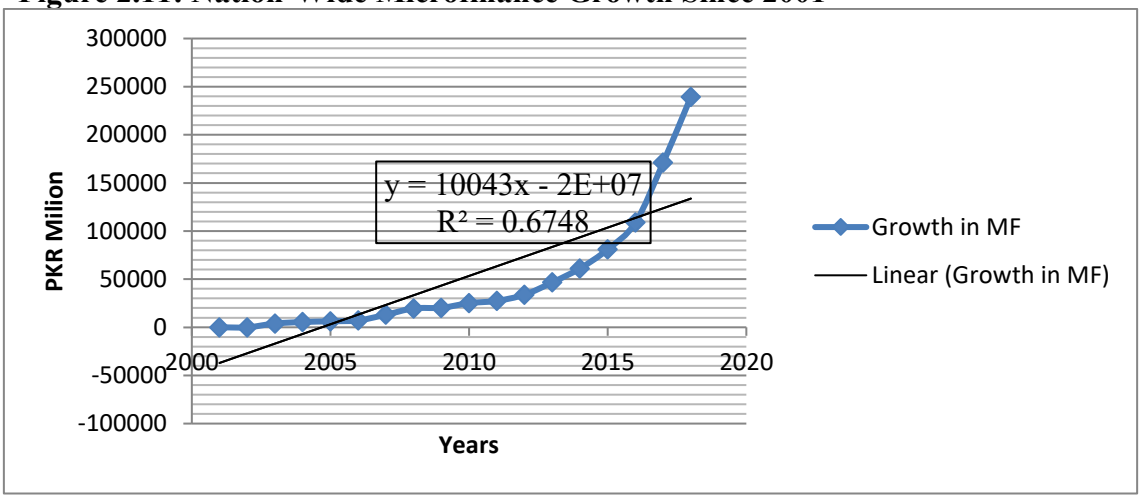
Source: Pakistan Microfinance Review 2018

2.12 Regional Distribution of MF in Pakistan:

As mentioned frequently, the microfinance sector in Pakistan institutionalized in the late 1990s; however, the availability of microfinance statistics in its early years is still an issue. The PMN annual reports and quarterly issues are available since 2005-06; which offer a good insight on national, provincial and district level distribution of microfinance. With an estimated amount of around PKR.4 billion, national total, microfinance concentrated in the provinces of Punjab and Sindh; the province of Khyber-Pakhtunkhwa got a handful of microfinance amounts. The poorest regions such as the province of Baluchistan and Federally Administered Tribal Areas (FATA) were completely neglected. In the province of Punjab 442 offices of microfinance, lenders initiated their services and disbursed MF loans to more than 300,000 borrowers. Similarly, in Sindh around 222 offices of the MF served more than 115,000 poor borrowers. Nevertheless, due to the success and rapid growth in the sector, microfinance spread to those neglected regions; and, as noted, today microfinance operations are present in almost every single district of Pakistan. Figure 2.11 below shows the growth estimates, over

time, of the microfinance gross loan portfolio. We calculated around a 25% average growth rate by estimating a trend line of microfinance GLP since its inception in 2001.

Figure 2.11: Nation-Wide Microfinance Growth Since 2001



(Estimated by the Author)

2.13 Provincial and District-Level Growth of Microfinance:

From the above discussion from the very beginning, the outreach of the microfinance sector is on the rise, over time, with an exception in the year 2008. Although, during the year 2008 the economy performed quite off-color due to certain factors including the assassination of the popular political leader Benazir Bhutto and the prevailing "Global Recession of 2008", yet the MF sector did not stagnate completely. During that year almost, every major indicator exhibited a slump beyond negative while microfinance sustained its growth, as shown in Figure 2.11. The reason behind this sustainability of the MF sector was the victory of the Pakistan People's Party (PPP) in the general elections of 2008. Their popular slogan- that also led them in the general elections- was to provide "Food, Clothing, and Shelter" and to address issues on a very grassroots level. At the very beginning of their government, they initiated certain cooperative projects including the "Benazir Income Support Program" and several other small-scale credit programs. For the former one, they provided the very foundation; however, for the latter promise, they injected funds in the existing structure of microfinance.

Moreover, Figure 2.11 illustrates an exponential growth since 2014-15 as the sector had attracted attraction very much from different governments. Since the year 2014-15, the MF industry expanded even further to the very remote areas of Pakistan. As mentioned earlier, that the province of Baluchistan and the FATA were the two neglected regions in the start; however, after the launch of the mega project of "China Pakistan Economic Corridor (CPEC)" a noticeable growth happened in the number of

microfinance borrowers. We discuss the effects of this mega project, CPEC, on microfinance in one of our next sections. Here we forward some statistics regarding the changes in the microfinance sector on provincial and district levels. We have tabulated the PMN's statistics in Table 2.12 regarding the top three districts of each province of Pakistan, with respect to outreach. Table 2.12 shows a significant increase in the number of borrowers in many districts. The districts of Baluchistan province show the most rapid and accelerated growth in terms of borrowers. This is the province, which was declared, by the government, a remote region around 6 years ago and a very handful of microfinance units were operational. Nevertheless, being the core site for CPEC the province has a huge potential for large-scale as well as microfinance investments, indicated by the current growth of the microfinance industry. In contrast, the region of FATA[25] shows negative growth, in its two main districts due to the prevailing law and order situations in the area.

Figure 2.12: Growth in Microfinance (Provincial and District-Level)

Province	District	Active Borrowers (Q2)	Growth	Column1
Baluchistan			Net	%
	Quetta	3,926	418	11.9
	Nasirabad	3,924	963	32.5
	Lasbela	1,257	-93	-6.9
FATA	Bajaur Agency	7,515	-180	-2.3
	Khyber Agency	5,875	-389	-6.2
	KurramAgency	3,234	92	2.9
Islamabad Capital	ICT	24,655	141	0.6
Khyber Pakhtunkhwa	Haripur	22,885	-255	-1.1
	Abbottabad	15,558	1,226	8.6
	Nowshera	12,730	665	5.5
Punjab				-
	Lahore	323,146	22,668	7.5
	Faisalabad	291,169	16,900	6.2
	RYK	244,446	15,967	7
Sindh	Karachi	232,134	5,185	2.3
	Hyderabad	83,894	6,600	8.5
	Sanghar	83,767	9,176	12.3

Source: Pakistan Microfinance Review 2017 (PMN)

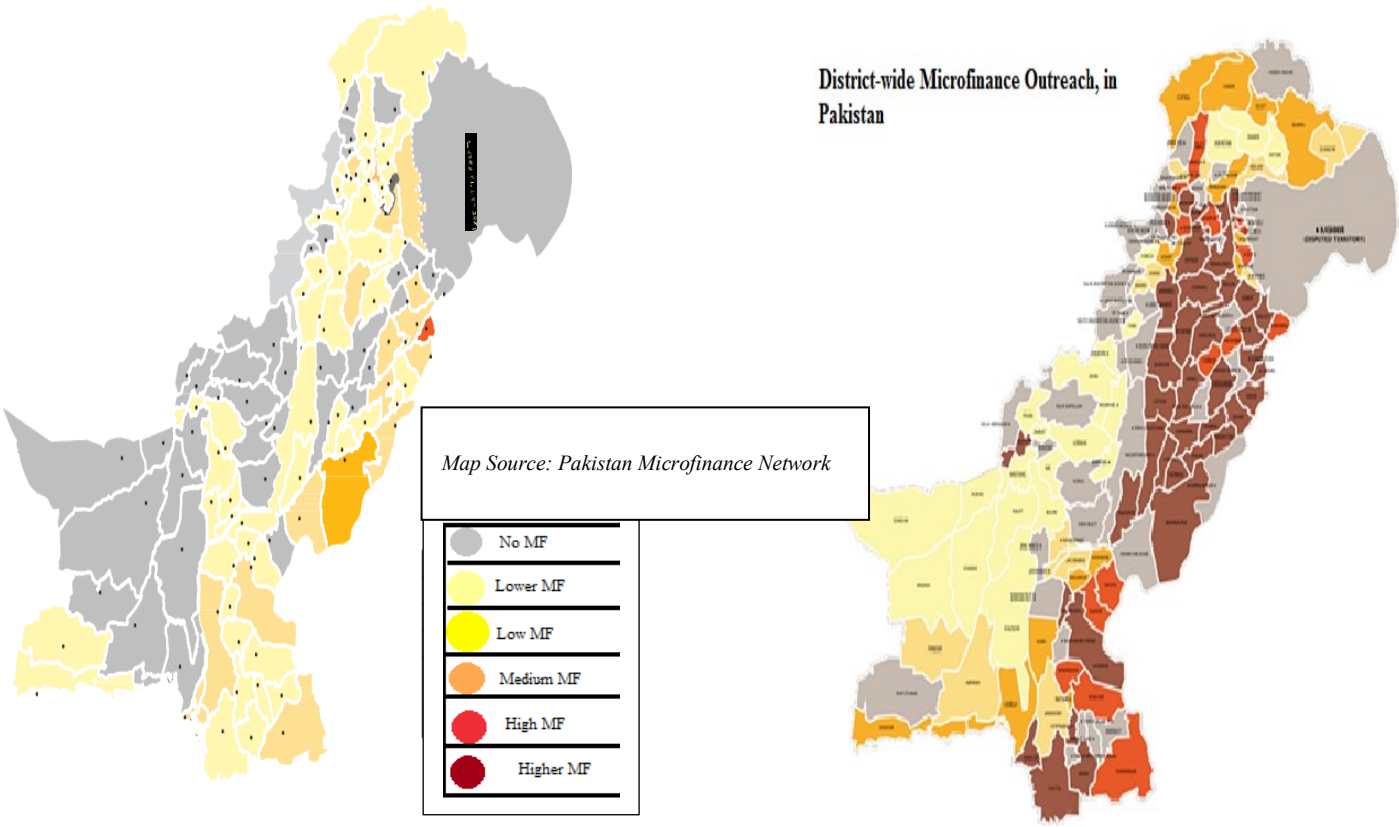
The provinces of Khyber-Pakhtunkhwa (KP) and Sindh have maintained their positions and the number of borrowers is slightly increasing. The negative growth in the district of Haripur is surprising as this district initially surpassed many other districts in the utilization of microfinance investment.

[25] FATA (Federally Administered Tribal Areas) was a semiautonomous region of Pakistan that has recently been merged with the contiguous province of Khyber-Pakhtunkhwa.

However, after the huge earthquakes struck the district in 2005-06 a huge chunk of the young people left for the Middle Eastern countries. Accordingly, the mainstay of Haripur's economy shifted from an agro-manufacturing sector towards the foreign remittances. On the other hand, the Sanghar district of Sindh shows a boosted growth in terms of microfinance borrowers. Parallel to most of the districts of Baluchistan, Sanghar also happens to be one of the main districts of the CPEC roots.

Punjab is the prime recipient of microfinance loans, from the very beginning where until date MF is steadily growing in all districts. Punjab is an agricultural province with a well-regulated irrigation system installed during the colonial era. Therefore, the inhabitants who were mostly farmers, including owners and tenants, from the very early years of Pakistan's foundation used to "lend and borrow" agricultural inputs, and money, in order to facilitate each other. This informal give and take cultural system provided a good reason for the microfinance market and accordingly the process has led the province to the most successful and highly concentrated microfinance market in Pakistan. The lower class, poor people of Punjab, has received an optimum level of the microfinance investment. All they need to do is only to sustain it. Figure 2.13 below gives an insight into the microfinance sector from its early years (on right-hand) to the recent years (on left-hand) on district-levels.

Figure 2.13: District-Wise Microfinance, Distribution in Pakistan, Over Time



2.14 Microfinance and "China Pakistan Economic Corridor (CPEC)":

The current macroeconomic environment in Pakistan is very much feasible for the MF industry to grow further. Decreasing overall price levels due to lower inflation caused by the mega-investments, like CPEC, and tumbling prices in the international oil market provide an opportunity to lowering the operational costs of MF and hence borrow more from the international commercial sources. As per 2017 estimates, the value of the developmental projects under the CPEC stands at USD 52 billion. The project of CPEC was launched in the year 2015, and the projected completion date is 2030 (Mustafa & Zafar, 2017). The project has its inception point in western-most China and it leads to the western-most part of Pakistan known as Gawadar. Gwadar is the southernmost part of Pakistan, situated in the Baluchistan province and considered as the main player of the CPEC project. The expected returns of CPEC have estimated an all-time high foreign direct investment in the history of Pakistan. The Association of Chartered Certified Accountants (AACA, 2017) estimates an equivalent of 17% of Pakistan's GDP through the projects under CPEC.

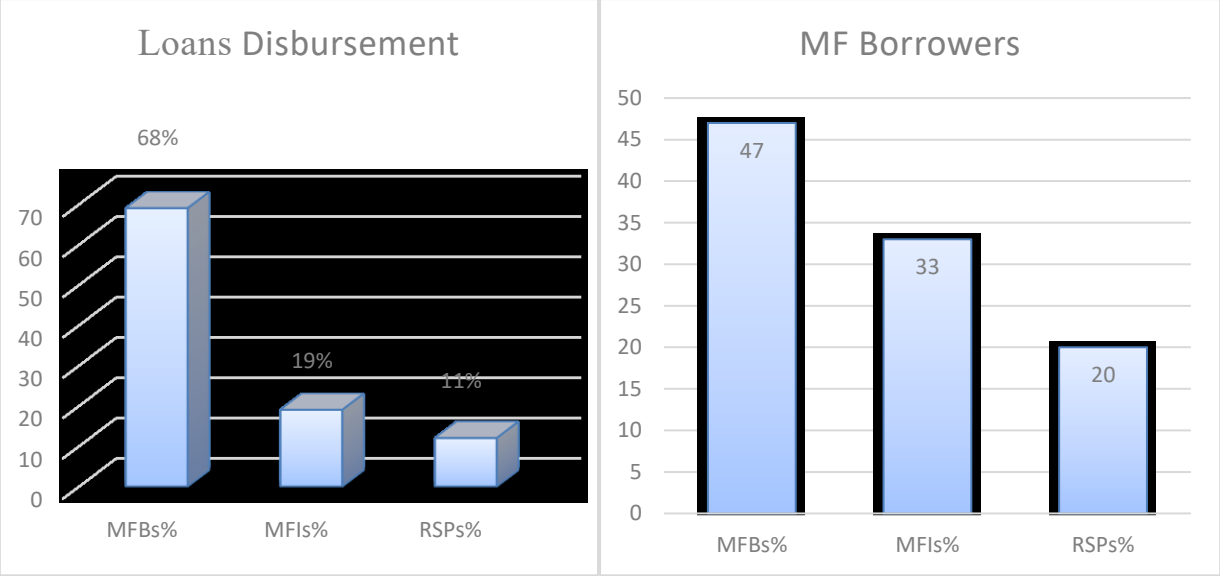
Looking at the anticipated outcomes of CPEC, the majority of the microfinance providers are keen to expand their services to the areas exist alongside the corridor. Most of these areas are underprivileged and underdeveloped; therefore, the MF investment in these areas will not only be beneficial on the supply side but will also produce substantial effects on the demand side. Similarly, the opportunity of installing a greater number of small and medium enterprises would expand the job market for the local and non-local workforce. Thus, CPEC seems to be the potential platform for the microfinance industry and therefore for the development of the marginalized communities of Pakistan. Consequently, the potential increase in the MF market would further strengthen the MF industry through high competition amongst the peer groups. Accordingly, Chines investors and financial institutions are keen on taking interest in Pakistani territories, as they have recently opened the franchises of Ali Baba, in Pakistan.

2.15 Different Programs of Microfinance in Pakistan:

A number of microfinance programs (MFPs) are operational across Pakistan. The Pakistan Microfinance Network categorizes these programs into three groups, i.e. Microfinance Banks (MFBs), Microfinance Institutions (MFIs) and Rural Support Programs (RSPs). MFBs are the commercial banks working under the State Bank of Pakistan (SBP). Currently, 11 MFBs, with multiple branches, are active across the country. The services of microfinance banks are not limited only to their MF

borrowers but can also accept deposits from non-MF borrowers. MFIs are all non-banking and non-government organizations (NGOs) providing microfinance services. These organizations are registered under the Society Act, Trust Act, and Companies Ordinance. The peer group of MFIs consists of both local and multinational organizations. However, these organizations are now in the transformation process into none-banking MFIs under a new regulatory framework laid out by the Security and Exchange Commission of Pakistan (SECP). RSPs are solely the NGOs registered as non-profit companies under the Companies Ordinance. RSPs are different from the MFI peer group based on a purely rural focus of its credit operations[26]. Figure 2.14 provides an overview of loan disbursement and borrowers affiliated to each MF categories.

Figure 2.14: Percentage Distribution of MF Loans and Borrowers by Category



Source: Microwatch Issue 48 (September 2018), Plotted by the Author

2.16 Lending Models of Microfinance:

Since various microfinance institutions provide services in Pakistan, yet there exist differences in their respective lending models. Generally, studies appreciate the group-lending model (GLM) of microfinance due to their successful outcomes. Therefore, the microfinance programs of Pakistan prefer "Group Lending Models (GLM)"; however, the Pakistani MF programs apply various changes to the model. Like in India and Bangladesh, the model of "Joint Liability Group (JLG)" is the most prominent one across Pakistan. According to the JLG model, the staff members of an MF program

[26] *Pakistan Microfinance Review (2015)*

shall be trained in order to provide "Compulsory Group Training (CGT)" to the group of borrowers. Therefore, the staff members teach their clients regarding the nature of microcredit, access to the financial services, rules and regulations, and policies and procedures (Sharma, et al, 2017). This is one of the most modern and sophisticated models of micro-financing. The training is a preliminary requirement for loans and upon completion of the training; the MF providers can pick up serious groups, or members of a group, to release the loan. The group selection process is described as follows:

(1) Clients are selected upon the submission of an application, (2) Compulsory Group Training & Group Recognition Test, (3) Loan approvals for the selected groups, (4) Loan disbursement and customer services, (5) Collection and recovery.

There exist other group lending models, such as a peer group-lending model. This is a typical Grameen model, which exists for more than 15 years due to its significant results. This model consists of 4 to 6 potential borrowers, in which every single borrower ensures another group member. Upon the failure of the loan, the other member of the same group is potentially responsible to repay for the failed person. The members of the same group are necessarily be socially bounded .i.e. they shall be from the same village. The insurance of the group members is based on an oath that to repay the loan in case if a member fails to repay. The members are taught to meet several times and share their experiences, acknowledge the loan types, interest rates, deposits, and savings plans (Mazher, 2010). Armendáriz & Morduch, (2010) explain the Grameen lending group contract as:

"Grameen's "classic" group lending contract works very differently from a standard banking contract for small businesses. In a standard relationship, the borrower gives the bank collateral as security, gets a loan from the bank, invests the capital to generate a return, and finally pays the loan back with interest. If borrowers cannot repay, their collateral is seized. But Grameen clients are most often too poor to be able to offer collateral; instead, the classic Grameen contract takes advantage of clients' close ties within their communities. To take advantage of those relationships, the loan contract involves groups of customers, not individuals acting on their own. The groups form voluntarily, and, while loans are made to individuals within groups, all members are expected to support the others when difficulties arise" (Armendáriz & Morduch, 2010).

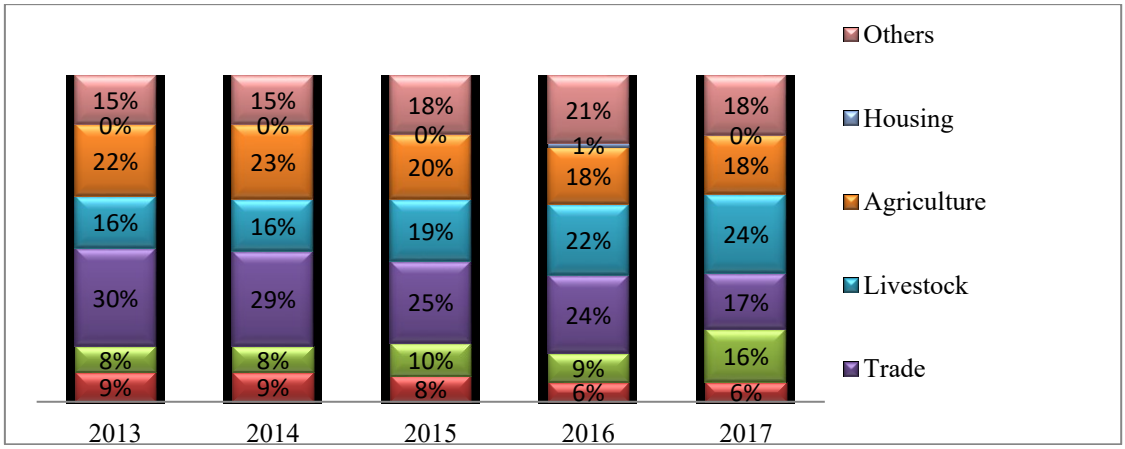
In contrast, individual group lending is quite conventional and easy. The borrowers just need to show their formal identity and collateral, in return another microcredit loan is awarded to the borrower.

However, in the case of Pakistan, this method is considered as the most plausible one. In most cases, the borrowers fail to use the loan efficiently and consequently go defaulter. Initially, upon the implementation of microfinance in Pakistan, the majority of borrowers were mostly individual borrowers; however, with the passage of time, the trend changed, and currently half of the borrowers belong to the group lending methods i.e. more than 3 million borrows under the group-lending model out of 6 million total microfinance borrowers (Pakistan Microfinance Network, 2018).

2.17 Sectorial Distribution of Microfinance in Pakistan:

Initially, most of the microfinance programs were inclined towards the rural agricultural sector; and that was probably the reason that quite often microfinance loans were referred to as agricultural loans, too. Afterward, the sectors such as service/trade, livestock, and manufacturing industries came to the front. In the recent report of "Pakistan Microfinance Review (2017), it can be seen that most of the microfinance loans flow towards the services and trade; the microloans to the livestock sector has grown 2% in the year 2017 as compared to the previous year. On the other hand, the microfinance to the agricultural sector stays stagnant at 18%. The manufacturing and production sector also remained unchanged at 18% and 6%, respectively. The trade sector receives 7% fewer loans for the year 2017 as compared to the year 2016 leaving the services and livestock the only sectors that show an increase in the total loans received. The services and livestock sectors received 7% and 2% additional loans for the year 2017, respectively (*Microwatch Issue 49, 2017*). The data is plotted in the following chart:

Figure 2.15: Sectorial Distribution of MF in Pakistan



Source: Pakistan Microfinance Review, 2017. Plotted and estimated by the Author.

A few loan products like "housing/Shelter" have recently added by a few MFIs. However, the loan utilization is based on the borrowers' priorities, the loan amount and repayments are not structured to reflect their use. Thus, most of the MF borrowers use other sources for borrowings, as well. The following section provides a brief overview of the products and the use of microfinance loans.

2.18 Uses and Products of Microfinance:

Usually, the payback cycle of microfinance loans ranges between 6 months and one year, which fairly is shorter compared to conventional loans. It is not surprising to mention hear that microfinance providers themselves borrow money from most of the conventional banking sector. That might be one of the reasons that microfinance providers charge high-interest rates. In order to expand their businesses and make profits the MF providers charge their customers, as the sector has turned to a corporate rather than a cooperative scheme, as it were. The operational costs of microfinance are high, including risk management and other services and for a financial institution to remain sustainable, it has to cover its costs. A large bank can charge lower rates in order to recover its costs. Because of the smaller loan size and more transactions, the MF providers charge higher minimum rates on their loans. The 'Micro Banking Bulletin' reports that 63 of the world's top MFIs had an average rate of return of 2.5% of the total assets. This figure raises the hopes that microfinance can be sufficiently attractive for investors. However, the returns on microfinance investment still vary to its uses particularly in the rural areas of developing countries. Table 2-1 shows the microcredit uses, and products with respective interest rates, as under:

Table 2-1: Microfinance Products and Uses in Pakistan

Product	Uses	Terms	Interest Rates
Income Generation	Through Asset Building	50 weeks, payback weekly	12.5%- 25% (Average)
Mid-Term Loan (MTL)	Same as IGL, available at the middle (week 25) of IGL	50 weeks loan paid weekly	12.5% (flat) 24% (effective)
Emergency Loans	Emergencies such as the fee for schools, health, funerals, etc.	20 weeks loan	Mostly 0%, yet some providers charge a small amount.

Source: Microwatch Issue 2017

The uses of MF depends on the priorities of households, as maintained earlier. Some households borrow loans to finance the education expenses of their children; some borrow to generate incomes in the short run, while some prefer investing it in relatively longer production sectors. The "Income Generating Loan (IGL)" is an MF category that households or firms use exclusively for a variety of purposes that generates incomes. These loans generally finance investments such as crop productions, livestock, poultry farming, and fisheries. The potential borrowers submit a loan application and upon

agreement receive the loan after one week. The loans have to be repaid in 50 equal weekly installments. After completion of a loan cycle, the client can submit a loan application for a future loan. The approach with a smaller short-term loan is to avoid long-term economic problems with bigger loans. Similarly, the "Mid Term Loan" is available to clients after 25 weeks of repaying their 'IGL' loan. A client is eligible for an 'MTL' if the client has not taken the maximum amount of the 'IGL'. The remaining amount can be taken as an MTL. The terms and conditions of the MTL are otherwise the same as IGL (Team P. M., 2015).

Another kind of MF loans is the Emergency Loan; these loans are available to all clients over the course of a fiscal year. The loan is interest-free and the MF provider and the client agree upon the amount and repayment terms on a 'case-by-case' basis. The amount is smaller than the IGL and is provided to the poor only in emergencies to cover expenses such as funerals, hospital admissions, prenatal care, and other crises.

The Individual Loan is planned for clients and non-clients that have particular needs beyond the group-lending model. These loans are offered to an individual outside the group lending process. The amounts are typically higher than that of the IGL and repayments are less frequent. Applicants are obliged to complete a strict business appraisal process and have both collateral and a guarantor. These loans have received most of the critiques among all models of MF schemes.

Another type of MF offers tangible goods and services instead of monitory loans. This model consists of various private-sector leasing companies that offer several types of equipment for lease. However, this model usually does not work in small-scale manufacturing sectors. In small manufacturing sectors, the microfinance borrowers tend to use the loan for buying equipment for handicraft related products, embroidery products, knitting, leatherwork, stitching and sewing products etc., and therefore it is not possible for the MF providers to offer this much variety to borrowers. On the other hand, in agriculture and livestock sectors the borrower use of microloans to buy agricultural inputs such as seeds, fertilizers, pesticides, harvesting machines, plow machines, poultry products, fodders, etc. For instance, the livestock departments in Pakistan offer cattle on a lease basis to the poor farmers, likewise, different other institutions, offer a small landholding to the landless farmers. The repayment in the aforementioned methods either depends on sharing the final output or in monetary terms depends on the contract between the provider and the borrower. It is mentioned in the State Bank's report (Hussein, State of Microfinance in Pakistan, 2010) that at one point the State Bank of Pakistan was

offering technical assistance to MFIs for developing innovative financial products based on Islamic principles of financing. A few MFIs have introduced Islamic products, but these have not really reached any significant scale (Ahmad, 2009).

2.19 State of Microfinance in Punjab:

Punjab, being the largest province of Pakistan by population, is considered as the main hub of microfinance investment. Out of a total PKR.239 billion (USD 2 billion; 2017 exchange rate), Punjab receives a lump sum of PKR.181 billion, making it more than 76% share in the microfinance market. This province is also considered as the founding province where for the first time the MF sector received a formal structure in the year 2001. Currently, this province also provides the main centers, of industry, agriculture, service, and trade sector, to the country. Accordingly, the province of Punjab is the most economically developed province which, as per, Bengali, (2006) and Pasha, (2015) studies share almost 58% of the Gross Domestic Product (GDP) of Pakistan. These are the core reasons that we selected the province of Punjab for our study.

In the province, microfinance is outperforming which has made the province quite consistent in maintaining a positive growth in microfinance. In his analysis, published in *Dailytimes in 2016, (Sivia, 2016)* he states that microloans are very important for the poor, particularly, in Punjab. As the province has a wide range of agricultural lands and with the use of microfinance loans the poor farmers have achieved an increased output, due to which their incomes and consumptions are increased. Accordingly, he concludes that with the efficient utilization of microfinance the poor farmers of Punjab have enhanced their living standards and escaped from the poverty trap.

Cities, such as Lahore, Faisalabad, and Sialkot provide an industrial basis and access to the local as well as international markets for the agricultural and manufacturing products, produced in Punjab. This advantage either does not or rarely exists for the remaining provinces of Pakistan. Within Punjab Southern Punjab, being an agricultural part of the province dominates the agricultural sector while the northern and central Punjab is mostly industrial dominated parts. Districts such as RYK and Bahawalpur are the largest districts having wide ranges of agricultural land. These districts historically were amongst the most developed districts or regions; however, with the time, the districts lost their stature due to a number of factors. Upon the realization by the local and provincial governments, a number of cooperative schemes were initiated in order to restore the previous development of these

districts. In the late 1990s, when microfinance was considered as a panacea for alleviating poverty and enhancing economic growth, the districts were equipped with micro-financing and agricultural financing programs.

Similarly, the district of Sialkot, around the year 1970 was measured as one of the most underdeveloped districts. However, in the 1990s the district achieved high growth in developmental sectors, and accordingly, the ratio of poverty was declined. It should be noted here that in the late 1980 and early 1990s microloans existed, particularly in the central parts of Punjab. Numerous, small scale manufacturing industries and household handmade industries were active in producing, predominantly, sports goods. The abovementioned two districts, RYK and Sialkot are accordingly selected for this study to analyze the socio-economic performance of microfinance.

Figure 2.8.8 District Sialkot, In terms of Microfinance

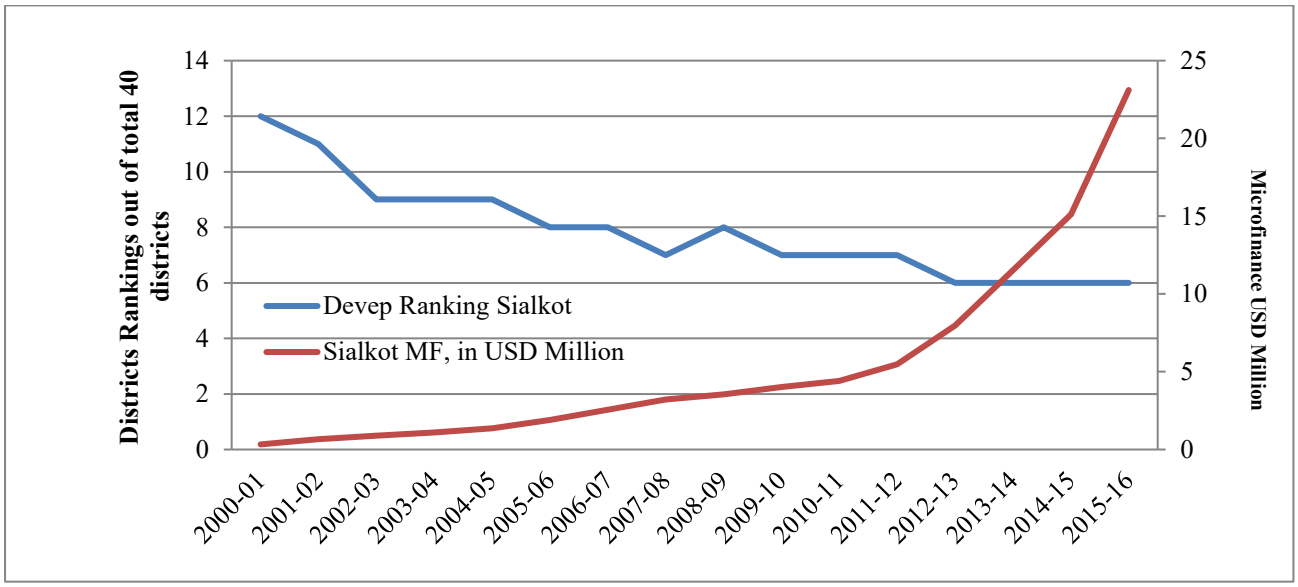
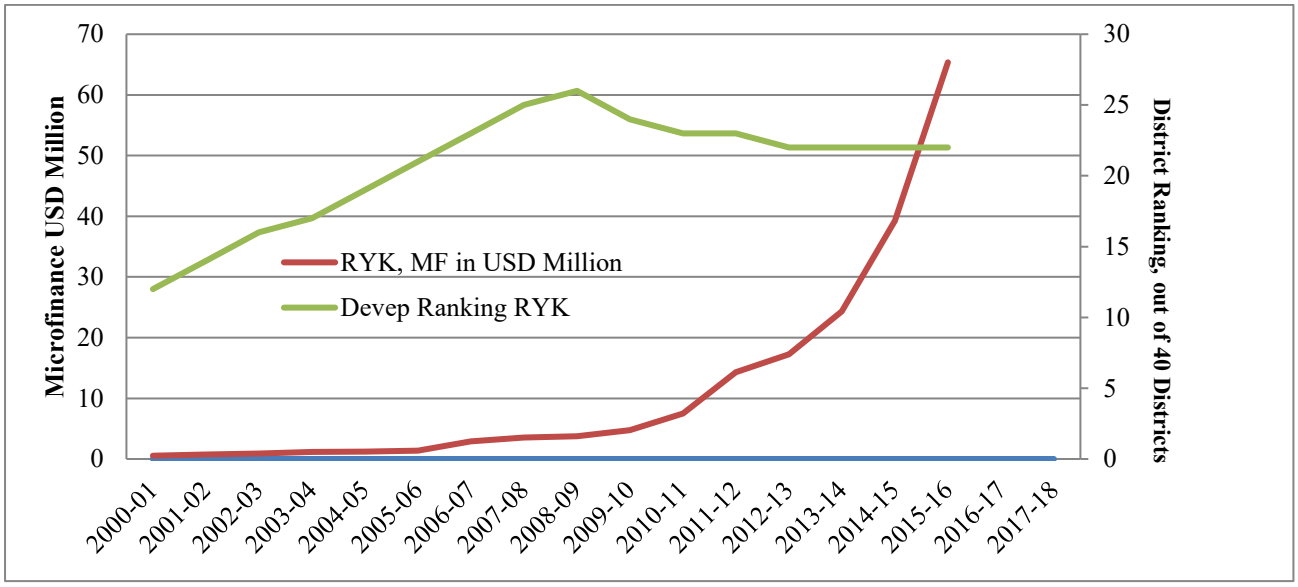


Figure 2.8.9 District RYK, In terms of Microfinance



2.20 Conclusion

The chapter delivered a brief story of the economic situations in Pakistan; in addition, it attempted to visualize how the different governments in different decades executed various developmental projects. It is a fact that governments always priorities a top/down approach in order to coup with low economic growth; however, if the problems persist at the very grassroots levels the policymakers prefer to launch small scale developmental projects, as a bottom-up policy. We have seen that from the very begging the authorities in Pakistan have initiated those "Five Years Plans" programs. The aim was both to enhance the economic growth and to eliminate poverty on the grassroots levels. The plans were mostly equipped with various small-scale agricultural cooperatives, as the economy of Pakistan has always remained an agrarian one. It is evident from the discussion above that whenever the governments emphasized the agricultural sector in their respective FYP the economy overall has shown some progress. This is evident from the decade of the 1960s when despite harsh political situations with India the economy of Pakistan achieved a record high economic growth in 1968. The reason for this is generally regarded as a consequence of the policy of import substitution where the government intended to encourage its local farmers and their produces. Later on, it is apparent from the programs, when the government drastically shifted its focus from addressing the grassroots issues to industrial sector exporting economy; we have seen an extended downswing in economy accompanied by high poverty ratios, in the late 1980s and 1990s. That is the period when the lower classes of the economy were disregarded, and the lower section (majority) started disbelieving in the governmental policies. Accordingly, those sections of the society preferred initiating their small-scale businesses,

predominantly, including handcrafting, microenterprises, cattle breeding, livestock, poultry, and agriculture. Due to the absence of any governmental/ formal crediting program, people started borrowing small loans from various informal sources, in order to establish means of living. These informal small-scale crediting programs ended up in a wide range of microfinance sector later on supported by the government and given it a formal structure with the microfinance ordinance in 2000.

The formal microfinance programs initiated with the help of the Pakistan Poverty Alleviation Fund (PPAF) and Khushali Bank achieved a nation-wide recognition. That is why the microfinance sector has seen exponential growth. Initially, the program has quite a limited range of microfinance providers; however, after its positive results in establishing small-scale businesses, in different sectors, the program has its subsidiaries in more than 110 out of total 141 districts of Pakistan. Currently, microfinance is approaching to the very remote regions where the sector could not provide its services, due to unstable law and order situations, before.

3. CHAPTER .3

REVIEW OF LITERATURE

The topics of microfinance, poverty and economic growth have widely been investigated both in the case of Pakistan and internationally. Most of these investigations emphasize either on questionnaires based micro-level or nationwide macro- level; however, many studies also examine a cross county-level analysis. Therefore, it was challenging, for this research, to find regional level or sub-national level aggregate studies. The literature reviewed on micro- levels, potentially, raises several questions. However, the most striking one is that if the reach of microfinance is extensive and that it affects positively or improves the economic condition of an average borrower; is it necessary to do the same on the aggregate level? Likewise, many studies investigate different effects of microfinance on individual levels and household levels; this includes the effects on incomes, expenditures, savings, and asset building. The same effects of microfinance are analyzed on macro-level for countries other than Pakistan; however, in the case of Pakistan, the aforementioned effects have not caught much of researchers' attention. This chapter forwards a variety of studies that have been reviewed; including books, articles, reports published by governmental and non-governmental organizations, and speeches/lectures in conferences.

This chapter reviews the literature on microfinance, poverty and economic growth. It is divided into three sections. The first section explains the micro-level literature, internationally and within Pakistan specific. The second section explores macro-level literature and the final section provides Meso-level or subnational level analysis of microfinance.

3.1 Micro-Level Studies on Microfinance

As a matter of concern of this dissertation, the micro-level studies have issues in explaining certain effects; including the generalization problem and the problem of analysis, based on regressions. Jolaoso & Asirvatham, (2018), investigate access to microloans financed by microfinancing institutions. The aim of this study highlights the relationship between microloans and poverty alleviation by observing certain socioeconomic indicators of individuals. These include mainly the incomes, consumption patterns, and education level of individuals. The researchers use the *"logistic discrete modeling"* and find a negative correlation between education (or level of education) and

poverty alleviation. Accordingly, they maintain that education plays a vital role in utilizing loans productively and therefore in poverty alleviation. Likewise, Ramezanali & Assadi, (2018), conduct exploratory research in Brazil. They analyze their results based on some national reports on microfinance. Subsequently, they proclaim that microfinance is quite efficient in creating new jobs, particularly, in small-scale enterprises; however, the government needs to initiate other anti-poverty programs and financial assistance projects. Both studies raise quite striking questions; however, lack of proper theoretical structure, to explain a relationship between education and poverty, makes the study (Jolaoso & Asirvatham, 2018) quite skeptical and out of scientific realms. Similarly, the later investigation by Ramezanali & Assadi, (2018), seems to explain the allocation effects of microfinance. Which again put much emphasis on statistical regressions while bypassing any theory to explain the particular effects.

Besides this, a few recent studies examine the productivity of microfinance based on interest rates. Mohammed & Waheed, (2018), analyze the effects and productivity of an interest-free microfinance cooperative program in India. They assess the selected program in terms of certain parameters, like the current status, outreach, beneficiaries, growth, and financial health. Based on several common statistical measures like percentage, mean, mode and median the authors conclude that the interest-free program is effective as well as productive. The reason they provide behind its productivity is that the program has installed modern technology, inducted quality human resources and shares risk with its clients. Moreover, they justify their claim with the expansion of this program in many parts of India.

Mago & Mago, (2013, the effects of microfinance through econometric analysis. They collected data of 250, microfinance, borrowers and compared it with, another sample of the same size, of non-borrowers through the “difference in difference” technique. Overall, they conclude that asset building and asset strengthening is very much central for social transformation and poverty reduction. Furthermore, they maintain that since poor people have lower assets thus they are disadvantaged by financial exclusion. Their statistical results show a positive relationship between the provisions of microfinance and assets building. Most of such household-level studies with a variety of econometrical regression models received scholarly criticism due to their approach towards, generalization and many dependencies over significance tests. Nevertheless, many micro-level studies, however, avoid this problem by limiting their claims to the selected samples or the area under study. Bhaskar, (2015), for instance, explores qualitatively the socio-economic effects of microfinance, in the state of Kerala, India. By conducting questionnaire interviews of microfinance-related officers, administrators, and

microfinance beneficiaries, he concludes that microfinance in that state is quite "culture and context-specific". Furthermore, he argues that Kerala being a communal culture and welfare state are the key drivers for the sector's success.

Munyoro, (2018), explore the significance of microfinance in the development of small-scale cattle farming, in Zimbabwe. He conducts the research by focusing on a single district in a southern province of Zimbabwe. Based on a questionnaire and samples, he uses certain statistical techniques for data analysis and concludes a significant effect of microfinance over cattle farming. He argues that with access to microfinance poor people become able to earn more and save more. The only hurdle is that a major portion of the poor people does not have easy access to microfinance services. Accordingly, he recommends that the government and the microfinance institution should facilitate the poor farmers in attaining microfinance. Similarly, Madugu & Bzugu, (2012) examined the role of microfinance banks in financing the agricultural sector, in Nigeria. Their study is based on primary data of 100 respondents, selected through a randomized sampling technique. The authors maintained that out of the total respondents 68% used the credit efficiently while 31% encountered several problems, including a delay in attaining the loan. Overall, the authors encourage the microfinance system and recommend that the banks should speed up the operational process so that the farmers get loans in time and use it more efficiently.

3.2 Micro-Level Studies in Pakistan

In Pakitan, as noted recurrently, the government had implemented a number of small crediting schemes from the very early years. For instance, in 1960 the government of Pakistan initiated "Subsidized Credit Schemes (SCS)" for the rural poor, particularly farmers. Later, after the weakening of the SCS, the government in the 1980s initiated the "Orangi Pilot Project" followed by Agha Khan Rural Support Program (AKRSP) and National Rural Support Program (NRSP)[27]. However, none of those programs received as much reputation as the initiative of microfinance has received. In the early years of its launching microfinance sector achieved the tremendous success that it gained ample attention from the scholarly circles, both within Pakistan and outside Pakistan.

[27] *A detail of these programs has been provided in the 2nd Chapter of this dissertation.*

One of the early studies by Mudasser (2000) investigates the role of the microenterprise development program of the Sarhad Rural Support Program (SRSP). In this study, he shows that 53% of respondents use credit for the development of enterprises, 36% of the borrowers utilized it for livestock purposes, and 11% for buying agricultural inputs. Similarly, the author reveals that 53% of the borrowers had difficulties in obtaining credit and complained about the insufficiently small credit amount and the high-interest rate. According to Mudassar an increase in the volume of credit offered per customer and a reduction in interest rates will help farmers to increase agricultural performance. Kamran (2002) in his study shows that microcredit increases interest in modern farming techniques and its applications. As a consequence, poor farmers develop ideas to use better and refined inputs so as to increase their production. The efficient use of microcredit enables farmers to medicate and vaccinate animals properly. Furthermore, increases in agricultural production result in an increase of the farmer's income; Gallup *et al* (1997) ascertain that one percent (1%) increase in per capita agricultural output yields a 1.61% increase in the poorest farmer's income. Likewise, Thirtle *et al* (2001) find that a 1 % increase in agricultural yield radically reduces the number of people living on 1 US dollar per day. The studies indicate that farmers having access to financial services invest microcredit efficiently and are capable of overcoming poverty. Javed *et al (*2006) report that the microcredit scheme of NRSP is especially important for empowering women to set up small-scale enterprises and enhancing their living conditions. Based on, a questionnaire Waheed (2009) investigates the importance of microfinance for the reduction of poverty in Pakistan and finds that microcredit improves the income of the respondents by increasing crop production, and by enhancing animal breeding and other small enterprises.

SAAD, et al., (2014), explores the socio-economic effects of microfinance on the agriculture sector, in Pakistan. Accordingly, they support the general view associated with microfinance that it increases farmers' productivity and enhance their living standards. With a mere sample of 120 microfinance borrowers, the researchers find out a number of effects as a consequence of microfinance. The study lacks to calculate farmers' productivity, and erroneously substitute an increase in crop yield for productivity. Moreover, a mere sample of a small number of respondents from one or two towns cannot be generalized for the whole district. Nevertheless, the researchers put their efforts to have analyzed the role of microfinance in the agricultural sector and problems faced by microfinance borrowers, in that area.

3.3 Different Effects of Microfinance

While talking about microfinance as a panacea for reducing poverty, it is necessary to mention the channels of poverty reduction. Bourguignon, (2004) writes a paper on the effects of microfinance and maintains that financial support may have positive effects on economic growth and distribution of resources, which further help in poverty reduction. This argument is further supported by Hermes, (2014) and elucidates that the economic growth effect happens when all incomes of an economy grow proportionally, while the distribution of relative incomes remains constant. He further explains the distributional effect as a situation when the average income level of an economy remains constant while the distribution of relative incomes changes. Hence, poverty reduction can be achieved via average income growth and through positive change in the distribution of incomes or both. However, contemporary literature in international development does not rely only on changes in economic factors and, accordingly, take into account other social factors, as well.

Even though the term microfinance may sound more pertinent towards economics, yet it has widely been evaluated by a majority of other scientific disciplines. The original idea behind the mainstreaming of microfinance was not to address only the financially marginalized class but also to include the socially excluded poor people of a society. Besides, examining the effects of microfinance on purely economic variables such as incomes, consumptions, savings, capital stocks, employment, etc. many studies consider several social consequences, too. Bishwakarma, (2017) writes in his paper that financial inclusion has been the global agenda since the start of this century. However, not much focus has been given towards social inclusion due to certain policies of the Nepali government. His results recommend that social inclusion increases productivity which leads to financial sustainability. Likewise, women's empowerment is something quite frequently discussed in conjunction with microfinance. Hofbeck, (2013), conducted an empirical study on "microcredit and empowerment of women" Kibera/Nairobi. The aim of this project is to assess two community development programs installed in the slum areas of Kibera. The program's objective was to facilitate households' (particularly women) income generation. Their project investigates that encouraging the financial capabilities of poor, in particular of women households, may result in positive outcomes. In addition, their children can live a healthy life and can have a proper education.

Studies have quite frequently explored various social and economic effects achieved via microfinance intervention. Its role in connection to small-scale manufacturing sectors is unavoidable, as well. It is a

fact that the development of small and medium enterprises (SMEs) always plays a vital role in the development of an economy. Lawrence, et al., (2016), conduct a survey of 800 SMEs in four provinces of Nigeria and find a positive correlation between microfinance provision and the development of small and medium enterprises. As usual, the problem of high-interest rates and access to microfinance market persists.

The problem of high-interest rates, however, is one of the frequent issues we came across while reviewing the diverse literature on microfinance. It is, subsequently, reviewed that the problem of high-interest rates is directly related to high default rates. Many academicians and microfinance providers have addressed the problem. Grameen Bank, for instance, is the first of its kind, which attempts to provide various models, in order, to coup with high costs of microfinance[28], and therefore high default rates. The most common one is the model of group lending, quite common, in India and Bangladesh. The model of group lending is investigated by Benjamin, et al., (2010), through an experimental study with the main of "assessing the role of microfinance in building social capital". Accordingly, they show an increase in social interaction due to microfinance accompany informal risk-sharing and a reduction in default. The second set of their field experiment shows that the frequent interaction among microfinance borrowers (group borrowers) increases economic cooperation and hence results in low default rates.

Microfinance, on one hand, receives huge gratitude from a wide range of researchers; on the other hand, several studies evaluate the performance of microfinance very much critically. Along with the socio-economic gains from microfinance programs, there also exist certain social and economic disasters, affecting microfinance borrowers in many countries. A case study of several Indian borrowers might explain something, regarding the 'flip side of the coin'. In the late 2000s and early 2010s, microfinance related NEWS got huge attention published by the world's reputable newspapers. On December 16th, 2010 the British Broadcasting Corporation (BBC) published this news regarding the suicides, of more than 80 microfinance borrowers, due respective defaults. Likewise, the stories of

[28] *Various models of microfinance provision are discussed in our chapter of the "History and Evolution of Microfinance in Pakistan".*

defaulters around several parts of the world made the news, which attracted much of the authors' considerations to explore microfinance the other way around.

3.4 Microfinance Investment Decision for an Individual:

Since the beginning of microfinance, most studies investigating its different determinants emphasize interest rates as the main driving force of microfinance. This sounds quite attractive while talking about an individual borrower, as the interest rate is a cost on such a level. Interest rate either a major actor or one of the main determinants of microfinance is broadly debated by authors around the world; however, we limit our focus only to Pakistan, where researchers investigate microfinance based on the high-interest rate. Although, the studies do not directly refer to the foremost classical/neo-classical (Jorgensen's) or Keynesian theories; yet by declaring interest rate, internal rate of return, and the marginal efficiency of capital, as the main driving forces of microfinance, refer to the said theories.

Zahid, et. al, (2015), analyze the performance of microfinance 'with interest' and 'interest-free' loans in Pakistan. The authors consider a sample of 200 microfinance borrowers from interest-free MF providers such as Akhuwat Bank[29] and a number of conventional microfinance providers, including Khushali Bank, FINCA, and Asha Micro-Trust. The data is compiled through a designed questionnaire including questions regarding poverty, basic needs, living standards, and self-employment. By comparing the data, of 100 borrowers from the interest-free MF institution with 100 borrowers from the conventional MF institutions, the authors conclude the interest-free microfinance as more productive than the conventional microfinance. However, it is a general misconception among common masses of the Muslim world and, particularly, in Pakistan; that there exists such a model[30], where interest-free lending is possible. Nevertheless, we are not intended, here, to forward an anti-thesis, right on the spot to Zahid, et. al. Similarly, Alshebami & Khandare, (2015), investigate the effects of high-interest rate microfinance on borrowers. By using secondary data, the authors conclude that high-interest rate hurts the intended aim of microfinance and to achieve the desired goals of microfinance and therefore, the government should take the necessary steps to reduce interest rate

[29] Akhuwat Bank is generally regarded as the first and probably the only microfinance bank which provides interest free microfinance loans

[30] Islamic Banking is a general model/system operating mostly in Muslim dominated areas of the world. The model claims an interest free lending, however; I do not agree with this claim. I would still go into the contractual details of the claim, which might, possibly, not claim a monetary return on loans rather prefer other means of return.

levied on microfinance. Since this is the most frequent objection the microfinance industry has been receiving from the very beginning. The concerned authorities, in Pakistan, respond that the issue of high-interest rate has always been a hot topic either for policymakers or for politicians; the interest rate is not that big issue for their (microfinance) clients (AHMED S. M., 2009).

Likewise, a variety of the existing literature analyzing microfinance on an individual level based on regressions suggest that a fall in interest rate would call for more investment in the microfinance sector. This type of analysis is mostly dependent on the numerical significance of 90%, 95%, and 99% confidence intervals, quite frequently used in econometric analysis. We uphold this numerical significance as a personal belief as it does not clearly recommend anything for a potential investor. On the other hand, we maintain that interest rate for an individual borrower or investor is simply the price of borrowed loans and hence it is a cost. Therefore, a fall in the price of loans (i.e. microfinance) would motivate the intended borrowers to borrow more and increase their respective profitability. However, contrastingly, this theory does not hold true when we consider an economy. The problem of why a fall in interest rates would not work on an aggregate level is explained in the conclusion to this chapter. Nevertheless, we forward some empirical evidence from Pakistan, both for general investment to interest rate, and microfinance to interest ratios.

The issue of high-interest rates of the microfinance sector was raised in the National Assembly of Pakistan, making it rather a political problem than a problem for the poorest section of the Pakistani society. The Pakistan Microfinance Network (PMN) then handled the issue by releasing a document explaining the reasons behind the respective high-interest rates in the microfinance sector. Accordingly, the document (AHMED S. M., 2009) preserves that since the very inception of the establishment of the microfinance sector (formally) they have rarely received any issues regarding high-interest rates from their respective borrowers. Moreover, they maintain that since the loans are quite smaller in amount, its high operation cost (interest rate) is inevitable. The cost structure of the microfinance industry, compared to corporate sector banking, includes three different types of services, namely, the cost of borrowing, the cost of operations, and the cost of delinquencies. Out of these three services, the cost of operation or intermediation is significantly high i.e. 70% (AHMED S. M., 2009).

3.5 Some Critical Voices

Besides these optimistic and encouraging approaches towards microfinance, there also exist some critical views elucidating the other side of the coin. Coleman, (1999), probes the impact of 'group lending model' on education, assets building, production, and expenditures in Thailand. His focus of the study evaluates the women borrowers and finds that: most of the women borrowers mishandle the credit. The reason for the mishandling of the credit is their household responsibilities. They were inclined towards household domestic expenditures and, hence, spent the borrowed credit for their domestic expenses. Consequently, they borrow additional money from informal sources with enormous mark-up rates, to return the previous ones. The study concludes that microfinance does not contribute to increasing the welfare status of the poor section. Similarly, Amin, et al., (2006), carried out a study in two villages of Bangladesh, using a time-series data of 793 households. They maintained that microfinance does not reach the real vulnerable poor class; they add that through this mechanism microfinance increases poverty and has negative distributional effects. This is also evident from

Coleman, (2006), who compared and evaluated two microfinance institutions in Thailand. Although, his results find positive effects of microfinance on the selected indicators, including non-land assets, agricultural productivity, and livestock, however, he concludes that microfinance services do not benefit the poor. In contrast, the microfinance program is more beneficial for the wealthier class as they have easy access to such kind of subsidized programs.

Crépon, et al., (2011), reports the results of a randomized experiment designed to measure the impact of microfinance in rural areas of Morocco. By applying a "control and treatment" group technique, they find that a little or no effect on average consumption, as well as other selected indicators, principally health and education. Nevertheless, they maintain that they find heterogeneous effects in the treatment group, depending on whether the households had a pre-existing self-employment activity. Those who had a preexisting employment activity decrease their overall consumption, as they tend to save more to expand their enterprises. Whereas, those who had no preexisting self-employment activity increase their daily expenses and their business remained unaffected by microfinance.

3.6 Problems with Micro-Level Studies

The preceding discussion provides an overview regarding some of the micro-level, available studies, both away and inside Pakistan. All of the studies use data at the micro-level, discussing highly context-

specific situations. From time to time, we discuss some of the related problems with micro-level studies, and the reasons why we do not consider a micro level, questionnaire-based study. The literature, however, includes some of the "impact" studies, which claim the aggregate effects of microfinance. However, most of those "impact" studies also have several methodological issues; the prominent one includes the issue of generalization from a sample, of an area or people. That is also the reason that a sampled based micro study only explains the scenario under consideration. Keeping in view that, since the implementation of the microfinance program in Pakistan, the researchers have been churning out these types of studies. A variety of literature has already been explained the diverse consequences, of microfinance, for a variety of samples. That includes village level and household level, sample-based, studies explaining the effects of microfinance; in the agricultural sector, livestock sector, micro-enterprises, the small-scale manufacturing sector, and handcrafting, etc. The saturation of available micro-level literature on microfinance, in Pakistan, compelled me to explain the "socioeconomic consequences of microfinance" on a much broader level in Pakistan.

The problems with these micro-level, questionnaire-based, studies were also addressed by a number of studies. Mahmud & Osmani, (2016), offer an extensive review of the recent literature on microfinance and the problems related to these studies. In their analysis, they provide a critique to the micro-level as well as the so-called macro-level "impact" studies. Accordingly, they argue *"the latest research has revealed, however, that this skepticism is unwarranted, for a number of reasons. Number one is that the critical works that took the subject with the early results of a positive impact on methodological grounds were themselves methodologically weak and flawed. Second, the RCT-based studies, which were otherwise methodologically good, had the basic drawback that they could perceive the impact only over a short period of time, while both common sense and empirical evidence suggest that it is only after an extended exposure to microcredit that poor people can begin to capture significant economic benefits from it. The third one is that a number of latest studies, which avoid the early methodological criticisms by using the panel and quasi-panel data as contrasting to cross-section data, show fairly conclusively that prolonged exposure to microfinance makes a significant positive contribution to the economic lives of the poor"* (Raihan, Osmani, & Khalilye, 2017).

3.7 Macro Level Studies

The macro-level examinations of microfinance had widely been disregarded it the early years of its inception. Even, in the decade of the 1990s, no concrete analysis on a macro level existed; however,

in the early 2000s, quite a few studies emerged with the objectives of the "impact of microfinance" on certain aggregate levels. Yet, much of those studies transmit the same problem as discussed quite frequently in this chapter i.e. the problem of generalization. However, for the various reason those studies are justified; and being the earliest "macro-level" investigations, they provide support for the recent macro-level literature.

Raihan et al. (2017), consider the same question; and analyze the nationwide/macro- level impact of microfinance in Bangladesh. Being a pioneering investigation, this research examines how microfinance affects the gross domestic product (GDP) of Bangladesh. By using a static general equilibrium model (CGE), the researchers operate through various transmission mechanisms. This includes mainly, capital accumulation, productivity improvement, and reallocation of capital and labor in various sectors. Their results discovered that microfinance contributes a significant share to the GDP of Bangladesh; the share ranges between 8.9% t0 11.9%, they maintain. Additionally, they emphasize the share of microfinance to the rural GDP and claim an even higher number of 12.6% to 16.6%. Likewise, a growing empirical literature exists, particularly, in the early years of this decade, evaluating the general equilibrium effects of microfinance. These studies are in similar lines with Raihan et al. (2017), the closest ones are Kaboski & Townsend, (2012) and Breza & Kinnan, (2016).

Buera, et al., (2017) develop a *"quantitative macroeconomic framework"*, which accounts for microfinance as guaranteed small size loans. As the main objective of their study, they compare the impact of microfinance in general equilibrium and partial equilibrium. Accordingly, they find that the impact is substantially different in both equilibriums (and equilibria); i.e. in partial equilibrium, the aggregate output and capital rise with microfinance intervention, however, the total factor productivity (TFP) declines. On the contrary, in general-equilibrium, the impact is rather small on per-capita income; it is because an increase in TFP is offset by a decline in capital accumulation. Overall, they support the claim of microfinance by maintaining that much of the population has benefited from microfinance programs, directly or indirectly. They criticize the higher interest rates of microfinance as it tilts the huge gains towards the upper quintiles (richer), in general equilibrium. Nevertheless, they appreciate the welfare gains of microfinance; as the welfare, gains are higher for the poor and marginalized entrepreneurs.

Cull & Morduch, (2017), contribute a section to the *"Handbook of Finance and Development",* in which they apply a holistic approach towards microfinance and its role in economic development.

They try to reconstruct the idea of microfinance as *"broadly constructed household- finance"* from a narrowly constructed idea of entrepreneurial finance. The aim is to present microfinance as a mean of liquidity provision for a wide range of needs rather than a mere source of boosting business incomes.

Similarly, Hermes, (2014), examines the distributional effects of microfinance by using data of 70 developing countries. His results show that a higher level of microfinance is directly associated with a reduction of the income gap (quintiles) between rich and poor. However, he recommends that the effects are rather small due to the relatively smaller size of the microfinance loans as compared to the national GDPs of different countries.

Maksudova, (2010) explores the direct and indirect role of microfinance in growth through the '*identification of causality'.* Her empirical inquiry is based on pure econometric techniques, and she uses the "Granger-causality test" to analyze the data of 1433 microfinance institutions from 102 countries. Her results uncover different transfer channels of microfinance to growth, depending on the underlying level of development. That is, the transmission channels of microfinance are different for middle and low-income countries. Thus, the interaction of microfinance with commercial banks and money aggregates is of prime importance, due to cyclical/anti-cyclical and spillover effects.

Along with the success stories of microfinance and Grameen Bank, there exists a vast literature of controversies as well. The pioneering studies such as Pitt and Khandker (1998), which claimed to show through careful econometric analysis that microfinance has positively impacted the borrowers' welfare, were subsequently subjected to severe criticism on methodological grounds (Roodman & Morduch, 2014). The criticism is further supported by other studies such as Banerjee, (2013), who states that if the effects of other variables are effectively controlled, microfinance appears to have a negligible impact on borrowers' conditions.

3.8 Absence of Macro-Level Literature in Pakistan

Although much has been written about the microfinance program in Pakistan, yet the nationwide macro-level investigation is missing. It is because, in the case of nationwide analyses of microfinance in Pakistan, the possible results may possess certain fuzziness; due to a relatively small amount of total microfinance outlay. However, the Pakistan Microfinance Network (PMN), Microfinance Gateway, MIX market and other, such, organizations frequently publish annual reports, quarterly reviews, and

newsletters; some of the publications are; (Haq & Khalid, 2011) (Team P. M., 2015) (Team, PMN, 2017) (Sheikh, 2018). These periodicals offer a good insight into the micro-financial market of Pakistan on a larger scale, but it does not provide a scientific (economic) analysis of microfinance. The annual reports published by the said organizations cover the total sector-wise investment, total Microfinance Institutions (MFIs), regional distribution of MF i.e. provinces, districts, etc. annual growth rate of microfinance, and the number of borrowers, etc. Concisely, we can say that a macro-level socio-economic analysis of microfinance is missing due to its small volume and the organizational periodicals (reports, reviews) cannot provide any scientific/academic evaluation to the microfinance program in Pakistan. Therefore, we choose to fill the existing gap by conducting a subnational level analysis of the microfinance program in Pakistan.

The statistics, based on Pakistan Microfinance Network (PMN) and Pakistan Bureau of Statistics, shows that the total share of microfinance to the real GDP ranges between 0.70% to 0.75%. In order, to investigate the role of microfinance on a nationwide macro-level we have to have a perceptible amount of microfinance, compared to the total GDP. Accordingly, we rule out the option of a nationwide macro-level investigation and shift our focus from a macro- level to a sub-national level (also known as meso- level). In contrast, being a pioneering nation of microfinance, Bangladesh, has a visible amount of microfinance both, in terms of money portfolio, amounting to more than 3% of its GDP, and the number of borrowers i.e. more than 26 million, *(MIX Market, 2016)*. So, in order to avoid the aforementioned issue we, accordingly, keep our focus in the middle of micro and macro-level analysis, and, accordingly, execute a sub-national level study. The following section provides an overview of subnational-level literature both on microfinance and other topics. The aim is to introduce the readers of how to conduct a sub-national-level aggregate analysis. It contains studies regarding the comparison of two (or more) countries, states, provinces, and districts.

3.9 Subnational-Level Studies

Subnational level or Meso-level considers a level below a national level and above a micro-level; however, this study also uses the term Regional level- interchangeably. A World Bank report (World Bank, 2010) defines a meso-level in connection to microfinance as “a level which incorporates the basic financial infrastructure aiming to reduce transactional costs, helps in skill-building, increase outreach, and foster transparency among financial institutions”. Moreover, a meso-level structure is used to replicate a subnational region for a whole country, only for research purposes. Kurniawan et

al. (2019) recently investigated the economic performances of the poor and comparatively rich provinces of Indonesia. By using indicators such as per capita gross regional product, the Gini coefficient, the school enrollment, and the fertility rate, the researchers find that there exists no single equilibrium steady state for all the indicators mentioned above for Indonesia. However, their study suggests that some groups of provinces are catching up while others are falling behind.

Likewise, Pakistan, too, needs to examine certain effects of microfinance on the three levels i.e. micro, meso and macro-level. The issue concerning a macro-level study has already been discussed and micro-level studies have already assessed various effects of microfinance. However, no focus has been given to meso- or subnational level analysis, in Pakistan, and therefore we aim at conducting this study on meso or subnational level, in order, to fill that gap.

Obaidullah, (2007), discusses the meso level effects and maintains that; through meso level initiatives a more accurate approach can be delivered, as compared to a macro level. This includes the provision of education, training, better coordination and networking, and technical assistance. CHHORN, (2018), in her recent study, on the role of microfinance and poverty reduction, uses a number of provinces to replicate for Cambodia. Her findings demonstrate microfinance services in all aspects diminish poverty and promote the household's welfare. She uses per capita income as a proxy to measures the welfare of each province. However, this research finds an insignificant effect on per capita economic assets and expenditure on children's well-being.

3.10 Conclusion

The intent of describing different existing studies is to demonstrate the most commonly associated views with microfinance, different approaches to analyzing various effects, and different methodologies of microfinance provision. We classified the existing and reviewed literature mainly in three parts, i.e. Micro, Macro, and finally Meso level existing studies. After having gone through all the three main sections, the reader might conclude that the micro-level studies have received more attention, particularly, in the earlier phases of evaluating microfinance. This is the same all over the developing world, that researchers find it quite convenient and more straight forward to conduct a micro-level investigation. However, in the later phases especially, the current decade, the macro-level aggregate investigations on microfinance received some attention from international academia and quality research publications came to the forefront. These studies are carried out in countries where

microfinance exists in a rather visible amount, like India, Bangladesh, Ghana, Nigeria, and some Latin American countries. However, as mentioned in our case the national level aggregate analysis fails to deliver certain visible results, due to a low level of microfinance investment. Nevertheless, we choose a subnational-level or Meso-level but aggregate study. Studies looking at the socio-economic consequences, from a sub-national perspective, in Pakistan, would, therefore, at least potentially, be helpful for future policy and research purposes. Accordingly, we select two sub-national regions, within Pakistan, having a relatively high level of microfinance investment. It is because a study (Imai, Annim, Gaiha, & Thapa, 2012) finds the relationship between microfinance and poverty reduction and show that economies with a higher level of gross loan portfolio are more likely to have lower levels of poverty.

Accordingly, we find a little literature in case of subnational level investigations for microfinance, both within and outside Pakistan. Therefore, we treat sub-national regions with a high level of microfinance portfolio, as small economies. Among the existing studies we find (Buera, et al., 2012), (Hermes, 2014), and (Raihan, Osmani, & Khalilye, 2017) the most striking and supportive of the study in hand. The reason is that all of these studies reflect the most relevant part of our study that is the aggregate level investigation. Although, all of these relevant studies use either national level or cross-country level methodologies, yet they suggest techniques of analyzing different effects of microfinance on an aggregate level. Out of these three studies Buera, et al., (2012/2017), and Hermes, (2014) provide an utter blueprint to isolate the particular effects of microfinance intervention. This is further elaborated in the methodology chapter[31].

[31] See, section….in our chapter on Methods and Statistical Techniques.

4. CHAPTER.4

Methodology and Statistical Techniques

4.1 Introduction

Concerning the socio-economic consequences of microfinance loans and in particular, about scrutinizing the claim that microfinance loans contribute to an overall reduction of poverty in Pakistan, empirical methods, as well as statistical techniques, are applied. In general, the main task of empirical science is regarded, in proposing satisfactory explanations and predictions of events, facts, and processes scientists consider worth explaining. By studying the structure of prevailing explanations and predictions of different disciplines, it is possible to uncover the requirements that explanations and predictions have to meet, to be regarded as satisfactory by scientists. Such investigations belong to the realm of epistemology or rather to the realm of the logic of science. Therefore, to consider problems regarding different kinds of explanations and their different logical structures and the different kinds of statements applied, in order to justify and form an argument. One, and perhaps the most important result is that explanations and theories of empirical science are decided by experience; an internal critical standard, that forms the basis of the "truth" decision of empirical theories and explanations. According to this view, empirical theories and explanations are not decided on the basis of endogenous subjectivist wishes or beliefs, but by one exogenous critical standard called experience. Experience, being a program and not a psychological problem, for instance, the class of so-called basic statements, upon which scientists agree. Since 'experience' is regarded as the critical standard of the empirical explanations and theories, and as characteristic demarcating empirical from non-empirical science and other realms of human intellectual endeavors, such as testing by confronting empirical explanations and theories with experience, becomes a significant issue in empirical science. Accordingly, the first section of this chapter provides a general outline regarding the methods applied in this thesis to test and examine empirical theories and explanations. This method is deductive only and does not involve any invalid content enlarging and truth-preserving, i.e., inductive inferences. It consists of inferring predictions from conjectural theories together with a set of singular initial conditions describing the concrete historical situation. These predictions are confronted with the falsifying hypothesis of the so-called empirical basis, which is conjectural as well. Like the conjectural theories, the falsifying hypothesis of the empirical basis cannot be verified (certified) or "probabilified" (partially certified), but can only be provisionally classified as "true." If the falsifying hypothesis is provisionally classified

as “true” and conflicts with the prediction (which is deductively inferred from the conjectural theory), the prediction is false. Accordingly, the falsity of the prediction is transmitted by the so-called deductive inference of the ‘modus tollens’ to the set of the premises i.e., the conjectural theory and the singular initial conditions from which the prediction was derived. Methodological rules are required, here, in order to decide, against which part of the set of premises, the falsification is directed i.e., the conjectural theory or the initial conditions. The falsification itself relates to the logical relations of statements only and is incapable of justifying the rejection of the falsified conjectural theory. If the theory passes the test, i.e., the inferred prediction from the theory is confirmed, then we have no reason not to classify that conjectural theory provisionally as “true”; on the other hand, if the theory fails the test because the predictions were falsified then we have no reason not to classify that conjectural theory provisionally as false.

In contrast to a seemingly verified theory, no prediction regarding the future performance of the theory is being made. Since the falsification of a conjectural theory only refers to the logical relationship of the statements involved, in particular to that of the prediction and the falsifying hypothesis additional methodological rules are required in order to choose between different (falsified) conjectural theories and reject the theories that are evaluated as worthless to continue working with. The choice of the ‘best theory’ among the available theories will be based on the concept of ‘Verisimilitude’ as developed by K.R. Popper.

The second section of this chapter describes specific statistical techniques that are applied in order to formulate basic-statements. The techniques are applied to form falsifiable hypotheses and, thus, elements of the empirical basis that can be used to confront the predictions inferred from the conjectural theories. The data to which these statistical techniques are applied are statistics provided by the concerned statistical authorities of Pakistan.

4.2 Methodology

In prevailing empirical researches, particularly in economics, much emphasis has been given to various statistical and econometrical methods in order to find a “best” theory. However, this chapter intends to examine that these types of statistical significance tests of hypotheses are not quite adequate to the task of empirical testing of a theory. The significance tests actually measure a degree of certainty by accepting a zero or null hypothesis (H0). However, this does not mean that by accepting or rejecting

H0 we actually talk about the truth or falsity of a theory. Nevertheless, the application of statistical techniques has the potential in order to critically, as well as, empirically discuss theories. This implies that by using adequate statistical techniques, accompanied by methodological rules, may be helpful in finding a "best" theory. It is also worth mentioning here that most of the prevailing research in economics erroneously regards the subsequent empirical testing of theories equivalent to the concepts of statistical calculus. However, the Popperian postulates regarding the empirical testing of theories are different from that of statistical tests. The Popperian philosophy of Critical Rationalism uses the idea of "verisimilitude" instead. "Verisimilitude is a measure of the explanatory power of the theories and hypothesis which is different from the concept of probability in statistical calculus". The concept of verisimilitude describes theories based on their performances and the theory with the best performance is regarded as a "best theory". At the end of this chapter, we discuss both of the concepts, i.e. statistical significance tests and verisimilitude, in more detail. Before that, we will review the structure of scientific explanations.

4.3 Structure of Scientific Explanations:

In social scientific research, the choice of problems is determined by the scope and interest of researchers. Therefore, it is maintained that science starts with problems, which need to be solved, rather than observations. There exist two different types of structures of scientific explanation; which are further divided into two categories: i. methodological essentialism and ii. methodological nominalism.

i. Methodological Essentialist explanation usually maintains that the method of social sciences is historical; which means that the task of social sciences is to uncover the origin of institutions and to explain the development of these institutions. However, keeping in view the aim of this dissertation, we are not very much concerned with the methodological essentialist's explanations and therefore, we will not discuss them any further.

ii. Methodological nominalism maintains that satisfactory explanations in social sciences are the explanations that explain social situations as well as the functions and tasks of social institutions, by introducing behavioral hypotheses. They can be divided into two broad classes' i.e. singular explanations and models (Milford, 2015).

A. Singular Explanations

   1. Singular Theoretical explanations

2. Singular Historical Explanations

B. Models
    a. Methodological Individualism
    b. Methodological Macro Analysis

Singular, theoretical and historical, explanations have the same structures; however singular historical explanations focus on research regarding concrete historical situations and the application of "social laws". Therefore, respecting the aim of this thesis, we bypass the singular historical explanation and describe the structure of singular theoretical explanations.

4.3.1 Singular Theoretical Explanations:

In the social sciences, to formulate an adequate explanation requires "strictly universal and empirical theories". The aim is to uncover regularities, proposed in terms of statements (the so-called laws) which are strictly universal and empirical theories. These laws must be decidable by experience and accordingly empirically testable. In his book The Logic of Scientific Discovery (2002), Popper for the first time describe the structure of such singular causal explanations.

"To give a causal explanation of an event means to deduce a statement which describes it, using as premises of the deduction one or more universal laws, together with certain singular statements, the initial conditions" (Popper, The Logic of Scientific Discovery, 2002).

For simplicity, we apply the accelerator theory, considering the concrete situations of a Pakistani district, as an example.

Explanans

Theory; hypothesis, laws (Strictly universal and empirical)

Whenever aggregate demand/consumption increases more investment will be forthcoming

Initial conditions (singular [empirical] existential statement)

In district Sialkot of Pakistan in the year 2002/03 aggregate consumption increases

In district Sialkot of Pakistan in the year 2002/03 more funds invested

Funds invested predominantly means microfinance loans, and consumption expenditures are defined as purchased goods and services by the lower quintiles[32]

Explanandum/Prediction

In district Sialkot of Pakistan in the year 2002/03, an increase in aggregate demand/consumption increased investment expenditures (microfinance).

Causal Explanation: A causal explanation is a logical inference, where the explanandum or prediction is inferred deductively from the theory, or explanans. The explanandum is a singular empirical observational statement describing the event or process to be explained. The explanans consists of two types of statements: Statements that are strictly universal and empirical, and singular existential statements. Statements that are strictly universal (specific general) claim to be true, independent of time and location; empirical statements are statements that are decided by experience. As Popper (2002: 40-42) maintains *"to regard these statements as non-verifiable statements which can be put in the form of all points in time and space (or in all regions of space and time) …By contrast, statements which relate only to certain finite regions of space and time I call specific or singular statements".*

This discussion distinguishes two problems: a). Nothing observable follows from an 'All statement'. In order to test a theory or law empirically, singular initial conditions have to be added. b). we use strictly universal and empirical statements because the class of potential falsifiers is not empty.

In the sample, given above, the strictly universal statement - which is an aggregate theory of investment determination - is tested empirically by inferring predictions for a particular district in Pakistan i.e. the singular initial conditions. Now one can easily ask, "Why do we need strictly universal and empirical statements to derive certain predictions"? "The predictions or explanandum can be derived from universal existential and empirical statements". To answer this: because the universal existential statements are logically weaker compared to the strictly universal and empirical statements. In our

[32] Lower Quintile and microfinance have a particular, conceptual, relationship defined in the analytical chapter.

given sample of investment and consumption, the universal existential statement might be referred to as:

"There exist situations where an increase in aggregate demand results in more investment".

The statement above (Universal existential statement) incorporates a larger class of statements; it does not exclude the existence of facts, in contrast, a strictly universal and empirical statement does exclude certain facts. We need statements, which conflict with each other, in our example the strictly universal and empirical statements are capable of being in conflict with the singular existential statements. The strictly universal and empirical statements can also be defined as 'All statements'. Thus to conflict an 'All statement' it is necessary to find at least one existential statement negating the 'All statement' (Popper, The Two Fundamental Problems of the Theory of Knowledge, 2008) . This means that in an 'ALL statement' the class of potential falsifiers is not empty. On the other hand, the class of potential falsifiers is non-empty for the logically stronger statements i.e. the strictly universal statements.

From the Popperian point of view, the above discussion results in the postulate of strict universality. Moreover, there is the postulate of science to be empirical that is decided by experience. Accordingly, Popper maintains that by the consequent use of empiricism, empirical science can be demarcated from non-empirical science. In this sense, experience does not constitute an empirical basis from which strictly universal statements (theories) can be inferred, rather an internal critical standard that must be me satisfied by the theory. Subsequently, we test theories by inferring certain predictions from the theories in hand, and given the singular initial conditions, we confront those predictions with basic statements (available data). If the basic statements confirm the prediction, we direct the prediction to the theory and therefore we have no reason not to classify the theory, provisionally, as true.

4.3.2 Models

Models are the simplest representations of a certain complex phenomenon in social as well as in natural sciences. However, in the social sciences and particularly in economics, researchers are more interested in explaining the events by designing models. Popper (1996: 165) discusses models as social theories or theories incorporated in a framework to solve problems. Thus, he in a way regards models as theories; however, he refrains from the argument that all theories can be regarded as models. Accordingly, he maintains, "models represent typical initial conditions rather than universal laws".

Hence, a Model is a combined framework of several universal laws accompanied by "initial conditions" prepared to explain types of empirical observations, in the presence of systematic theories. A model requires the so-called animating laws in order to explain any change; and to put the model to an empirical test the initial conditions must be substituted by "singular initial conditions (Popper, The myth of the framework, 1996). In economics, models are of two types: i). Micro-models ii). Macro-models:

i) Micro-models are a consequence of methodological individualistic models. According to this position, satisfactory explanations in the social sciences are explanations that explain social institutions like prices as the unintended consequence of the interplay of intended actions. Accordingly, and as footstep explanations regarding the individual decision are required.

ii) Macro models are the descriptions of social situations animated by highly aggregated empirical behavioral hypotheses that propose regularities between different aggregate methods in the model. For instance, in this thesis, a simple Keynesian model constituting aggregates like aggregates of consumption, investment, government expenditures, is applied, and the laws establishing regulations between those aggregates are tested. However, in order to test such models for instance for the case of certain districts in Pakistan, the typical initial conditions have to be substituted by singular ones. Otherwise, it is impossible to infer singular predictions and to test the theories incorporated in the model.

As noted earlier that models are the simplified abstract formulations of complex realities, therefore all models are false; as they can never depict the exact reality. Yet, for policy and research purposes, the simplest of simplest models can offer the opportunity to test their required assumptions. To conclude our discussion, the predictive statement from a mutual fulfillment of these requirements, in combination with the strictly universal and empirical statement, that animates the model, results in an empirically testable, deductive statement (Krennmair, 2018) Popper 1996: 172. Like most of the theories, as stated earlier, models, too, can be classified on the basis of their explanatory power in order to contribute to the scientific progress. Popper has illustrated this as following:

"*To take a familiar example, the most important part of classical economic theory is the theory of perfect competition. It may be developed as situational logic of the idealized or over-simplified*

social situation- the situation of people acting within the institutional logic framework of a perfectly free market in which buyers and sellers are equally informed of the physical qualities of goods that are bought and sold. Similarly, the pure theory of monopoly and duopoly is nothing but the situational logic of certain idealized social situations". (Popper 1996: 170)

To sum up, we require two types of statements: (a) statements that are strictly universal and empirical (theories) and (b) statements that describe singular initial conditions. This results in the principle of strict universality and the principle of empiricism.

4.3.3 Strict Universality and Empiricism:

The principle of strict universality follows from analysis regarding the types of statements used in scientific explanations. They maintain that theories and statements claim to be true independent of time and location and are empirical. While the principle of empiricism follows from consideration regarding the critical standards of empirical theories. Moreover, empiricism emphasizes that experience is the basis of the truth decision of singular, as well as strictly universal statements that are empirical. Apparently, both the principles are in a conflicting position to each other. That is, strictly universal statements transcend experience and the problem of how statements that transcend experience are decided by experience.

4.3.4 The Problem of Induction:

The principle of induction can be treated as one possible solution. If the content is enlarging and truth-preserving inferences are valid (inductive inferences); then the problem regarding the possibility of statements that are strictly universal and empirical can be solved. Since a content enlarging inference must logically satisfy, the transition from a limited set of singular observational statements towards a strictly universal statement, for that reason it must be content enlarging. The argument assumes each *singular and existential statement* as true and the *strictly universal and empirical statement* is considered as an inferred conclusion from the countable number of *singular existential and empirical* premises. Consequently, such a principle needs to be truth-preserving. Moreover, the premises of inductive inference are generally considered weaker than their conclusions.

4.3.5 Hume's Logical Objection:

David Hume maintains that there does not exist any induction and hence denies its logical validity. Accordingly, he argues that even after the frequent observations of some repeated and constant conjunction of objects, we have no reason to draw any conclusive inference, regarding any object, beyond our experience of that object. To elaborate on Hume's argument, the justification of any conclusive inferred statement i.e. strictly universal and empirical statement is not possible even if every singular existential and empirical statement would be proven true with absolute certainty. By accepting Hume's objection, it becomes apparent that there exists an unattainable conflict regarding the existence of strictly universal and empirical statements. This conflict, as maintained by Milford (1989: 4-5), elucidates the problem of induction not only logically but also on the epistemological basis. (Krennmair, 2018: 40).

4.3.6 Popper's Solution (Fallibilism):

The basic ideas or principles upon which Popper's conclusion is based are:

a) Falsifiability
b) Separating Truth and Uncertainty

Popper maintains that there exists no conflict between the principle of strict universality and the principle of empiricism. Free from any inductive idea the Popperian solution offers a concept that allows the immediate fulfillment of the requirements proposed by the two principles. Accordingly, the fulfillment of those requirements provides a satisfactory solution to the problem of demarcation (of empirical from non-empirical sciences) as well as to the problem of induction. This solution abandons the aim of certainty, whereas it gives much focus on approaching the truth (Popper 1996: 174-175). The solution is known as fallibilism.

As noted, earlier the aim of science is to solve problems; and that science does not start with observations rather it starts with a problem in mind. However, in order to have a problem in mind, one has to have some previous knowledge, with which a researcher formulates certain hypotheses. The aim of science regarding fallibilism is to offer truth-aiming explanations; which focus on two steps:

a. To propose hypotheses

b. To empirically test those hypotheses

In order to approach the truth, associated with an acceptance of a loss in certainty, it is necessary to classify statements either true or false. The falsifiability of statements assumes a non-empty class of potential falsifiers. Through which we can summarize the falsification as follows:

We infer predictions, from a theory accompanied by the singular initial condition, which is then confronted with basic statements. If the prediction conflicts with the basic statement, which is classified as true, then the prediction is false, and the falsity of the prediction is transmitted by the modus tollens to the premises (That is the theory or explanans) from which the prediction was inferred. Theories can only be falsified in terms of logical relations of statements. And in order to reject a theory, we need methodological rules which further demand methodological decisions, i.e. which of the premises are falsified.

Miller, as mentioned in Krennmair, (2018: 42), states that *"This natural, but essential, qualification is Popper's criterion of demarcation between science and non-science: a hypothesis may be admitted to the realm of scientific knowledge only if it is falsifiable by experience"*. Likewise, he mentions Pähler (1989: 6), who emphasizes that *"Theories with empirical content are falsifiable, falsifiable theories are empirically scientific theories".* (Pähler, 1986). Moreover, Popper maintains that there exists a logical asymmetry between falsification and verification. Accordingly, he argues that verification is not possible, and that falsification is logically stronger than verification. This means that a failed hypothesis conveys the information that the tested theory is currently inappropriate, while in contrast if a hypothesis passes a test gives the information that it has not failed. Subsequently, Schurz (2013: 28) states that a hypothesis that passes a test empirically does not contribute much. This reasoning leads to the fundamental question of how scientific progress is possible. (Schurz, 2013)

Miller (2015:6-7) explains the Popperian methods and the justificationists methods as "the Popperian methods rely on expulsion procedures, rather than the entrance examinations, as the dominant mode of maintaining academic standards. For the justificationists, in order to be submitted to the realm of science, a hypothesis has to pass a test, or it has to be confirmed; if a particular hypothesis fails a test or it fails to be confirmed it is excluded. On the other hand, the falsificationists consider that a hypothesis has to be admitted to science, first, and tested afterward. If a hypothesis fails any of the tests, to which it is put, then it is expelled from scientific realms; and if it passes a test or all, then all we can state is that it has passed and is retained.

It is worth mentioning here that whether a few stray basic statements or anomalies or outliers do have the potential to falsify a theory. The answer is no, as it is described in Popper (2002: chap: 22), "That theory can only be falsified if we have accepted a basic statement which contradicts it". The single occurrences or anomalies have to be explained but they are of no significance in science. Thus, the single occurrences will hardly induce us to reject a theory. *"We shall take theory as falsified only if we discover a reproducible effect which refutes the theory. In other words, we only accept the falsification if a low-level empirical hypothesis, which describes such an effect, is proposed and corroborated".* (Popper, The logic of scientific discovery, 2001)

Furthermore, neither an ultimate verification nor an ultimate falsification exists. A theory, that is falsified and is rejected only for a particular point in time and space where it is tested empirically. Thus, a theory's truth status can never be classified with absolute or partial certainty as false. Likewise, the falsification of a model does not imply that every single component is falsified; based on hypotheses, towards a research question, it can be tested again. A theory that faces the more severe testing procedure, the more support it receives and the more it approaches towards the truth. This means that if a more withstanding theory faces the harshest test of our current methodology, it either gets refuted or, given the current time and location, the test shows no evidence for not supporting the theory. This is emphasized by Popper (2002: XIX) as follows:

"*The point is that, whenever we propose a solution to a problem, we ought to try hard as we can to overthrow our solution, rather than defend it".*

By accepting the fallibilistic concept as a solution to the problem of induction, a number of problems regarding scientific progress and its transformation arise which can be discussed methodologically. For empirical testing of different theories, different methodological considerations are required in order to rank the tested theories. Regarding the application of theories in applied situations, the decision-maker can choose from those theories which are ranked based on their explanatory power. However, the choice and application of the best-tested theory, justified by its past corroboration are argued to encompass an inductive logic. Popper justifies the explanatory power of a theory based on its past performances and thus he implicitly makes an implicit prediction on the future performance of the theory.

It is quite clear from the above discussion that the rational choice in a pragmatic setting is theory-based. Therefore, Popper emphasizes the search for a 'best theory' and he accordingly maintains that

the best theory is the one that survived the most severe tests. This argument makes it clear that the explanatory power of a theory is identified by the constant use of fallibilism, i.e. a consequent decision based on experience.

4.3.7 Identification of the Best Theory:

Our discussion regarding fallibilism, as the central element to empirically test theories, leads us to the main question of how theories get tested in economics. As noted earlier that in empirical social sciences the use of statistics is nowadays the most established technique. This is also evident from most of the modern-day researches in economics using statistical and econometrical methods. This is why, it is necessary to investigate whether statistical techniques offer satisfactory methods for inferred predictions to confront basic statements, which describe facts in empirical economics.

Statistics apply different mathematical concepts that address several purposes. In fact, these techniques and tools are logically valid for testing theories. However, these methods for testing statistical hypothesis are not equivalent to that of an empirical test, particularly when the falsification of theories is concerned. The significance test is a quite common and prevalent method in statistical techniques: significance test aims at formulating a null hypothesis (H_0) which, with partial certainty, has a presupposed character of being true. That is how significance tests, by definitions, are not sufficient to be used to falsify an economic theory. Moreover, in the light of critical rationalism, the application of statistical techniques in empirical contexts does not imply satisfactory investigation. Statistical tests do not prevent the inductive use of statistical procedures – that is the attempts regarding the interpretation of statistical results. Generally, statistical methods are used to observe and describe correlations and other descriptive elements, such as mean, median or mode. This is quite a good form of gathering information in order to describe a particular situation i.e. the description in terms of singular existential statements. Therefore, this is, also, valid use of statistical procedures from a critical rationalist point of view, where no generalization is involved. Furthermore, from the perspective of the Popperian philosophy, the attempts to rank theories by critically discussing them or by confronting the inferred predictions with basic statements and describing economic facts i.e. testing them empirically are genuine practices.

However, in order to identify the best theory by subsequent empirical testing is not essentially related to concepts of statistical calculus. Consequently, in contrast to the concept of probability in statistical calculus, we introduce the concept of ‘verisimilitude’. Verisimilitude is a concept in critical rationalism

which measures and rank theories, and hypothesis, based on their explanatory powers. Accordingly, a 'best' theory is identified that shows the best performance scaled by the concept of Verisimilitude.

1. Significance Tests

This section emphasizes one particular class of statistical tests that are widely used for instance in econometrics. These tests were first established by Fisher, (1935) and are commonly referred to as significance tests. As noted quite frequently that we refer critically to statistical methodology and significance tests which in most of the economic analysis are reasonably questionable. These misperceptions regarding the use of statistical tests and false conclusions directly influence the quality of interpretations of results.

For the purpose of illustration, the performance of a statistical test is assumed, given a logically consistent theory from which prediction is inferred, for empirical testing. A proper statistical testing procedure is one, which compares inferred predictions, from the theory, given the singular initial condition, which confronts basic statement and describing facts. This confrontation of the inferred statements with data (basic statement) from a representative sample, taken from the population in a randomized way, actually leads to an empirical test. Afterward, with certain numerical methodological rules of the significance test, it can be declared whether the test has been passed or not. We allocate this particular section in order to investigate those issues, which are actually tested by significance tests, and we emphasize whether significance tests can be designated to falsify empirical theories.

According to Fisher (1935; 1955), significance tests comprise of the following steps:

i. Choosing the appropriate type of test-statistics: while testing for differences in the distribution between certain groups a *t-test* or *Chi-square test* can be used.
ii. Setting up a Null Hypothesis (H_0): A null hypothesis is formulated which has the character of being a true and exact statistical hypothesis. The parameters such as *variance* and *degrees of freedom* are calculated from the sample while another parameter like *frequency distribution* is deducted theoretically *(Perezgonzalez, Fisher, Neyma.Pearson or NHST ? A tutorial for teaching data testing, 2015)*.
iii. The probability of Empirical Results: Given H_0, which is conjectured as true, the probability of the statistical results, is calculated. That is the probability of research results under such a null-hypothesis is of the core interest.

Probabilities in such statistical results are commonly referred to as the P-value and used as evidence against the *Null Hypothesis* (H_0). Principally, the P-value reports the probability of the research results i.e. the statement to be tested against the assumingly accepted H_0 as true. Subsequently, this leads to the interpretations of the significance of the results. There is always a prefixed threshold of acceptable probability by the researcher. Accordingly, if the results happen in between the prefixed threshold the results are classified as *significant* otherwise *insignificant*. The results in both cases provide different information. The whole process leads to the answer of how probable the empirical data is, under a certain hypothesis. This means that there is no final proof of *falsification;* all it proclaims is just classification in terms of probabilities under the *null hypothesis* being true (Krennmair, 2018) (Perezgonzalez, Fisher, Neyma.Pearson or NHST ? A tutorial for teaching data testing, 2015).

Krennmair, (2018) and Perezgonzalez (2015), describes Neyman and Pearson (1933) as an improvement of Fisher's significance test. This approach is widely prevalent in most of the econometrical researches these days. According to the updated methodology two instead of one hypothesis is formulated: the main hypothesis H_M, which substitutes Fisher's Null hypothesis H_0, and an alternative hypothesis. The main hypothesis H_M is the one that actually experiences a statistical test, given the level of *alpha* as a controllable parameter. Hence, by testing the main hypothesis H_M, if commits a type 1 error i.e. the error of rejecting H_M, inevitably declares the alternative hypothesis, as, true. However, *alpha* has to be set before the test which serves as a benchmark of the decision. Furthermore, it is maintained by Perezgonzalez, (2015) that *"Neyman-Pearson's approach is not a test of significance but a test of acceptance i.e. to decide whether to accept H_A (alternative hypothesis) instead of H_M*".

To falsify a theory, based on *alpha-level* and probability distribution, it is necessary to formulate a methodological rule, i.e. the construction of numerical interval. Afterward, the numeric values estimated from a particular test-statistic is compared to these numeric interval-regions. The interpretations and comparison of the calculated values/results depend upon the *a-priori* decided methodological specifications. If the calculated results/values from a test-statistic ensue within the rejection region, the main hypothesis H_M must be falsified, and the alternative H_A is supported. In contrast, if the critical value is not within the rejection region, that means there is no evidence against the H_M, given the reliable amount of power of the test.

A number of studies investigate the key differences in Fisher and Neyman-Pearson's approaches, (CHRISTENSEN, 2005; Mayo & Spanos, 2011; Perezgonzalez, 2015). According to those studies, Fisher's approach is mainly an exploratory research approach to acquiring statically information. Fisher tests only the *Null hypothesis* (H_0) having no alternative hypothesis which is, apparently, a fallibilistic concept; however, an inductive procedure. Inductive in a sense, that the significance test of Fisher is an inferential procedure, which uses a sample from a population, partly using data, to conclude on the general importance of a factor. However, Neyman-Pearson's approach relies largely on a number of *a-priori* methodological rules and classifies theories based on certain distributional and statistical aspects. Moreover, Mayo & Spanos, (2011) maintain that both Fisher and Neyman-Pearson's approaches are not compatible; nevertheless, both theories use the same statistical tools and produce the same statistical results.

To conclude, the significance tests are the mere measurements regarding the degree of certainty under a particular assumption of H_0 being true. Therefore, it is maintained that statistical significance tests are not sufficient tests to falsify an economic theory; however, significance tests can be used for testing hypotheses. Neyman-Pearson's approach classifies competing theories and therefore offers a possibility to rank theories and, hence, can be useful for a critical discussion of theories. The prevailing approaches in economics mostly emphasize Neyman-Pearson's statistical methods. Therefore, in order to formulate a falsifiable hypothesis and to confront them with basic statements we also use certain statistical techniques, as discussed in section 4.2 of this chapter. However, we support the argument, that in general statistical methods are not equivalent to the Popperian postulate of empirically testing theories, in empirical social sciences. As Krennmair, (2018) refers to Hager's, (2013) confirmation of the argument and quotes Popper, (1934/1992) as:

> *"Statistical hypothesis refers solely to random variables, whereas substantive hypothesis typically is conjectures about unobservable hypothetical entities, states, processes, and the relationship between the concepts"* Popper, (1934/1992).

2. Verisimilitude

In our previous section, we have discussed statistical methods and procedures for finding the 'best theory', in empirical social sciences. Accordingly, we have discussed inadequacies and problems related to the uses of statistical calculus. We do not completely reject statistical techniques as mentioned, in the previous section, that we use certain statistical tools in the present research.

However, it is also maintained, that the frequent use of probability measures is not capable of falsifying theories. Therefore, in order to find the 'best' theory we need to check the performances of the available theories. So, in order to check the performances of different theories; there exists a different idea under the philosophy of critical rationalism. The philosophy of critical rationalism preserves the idea of objective truth as a regulative idea of science and thus aims to find the 'best theory'. The particular concept, developed by Popper, is known as "Verisimilitude" which attempts to describe the performance of theory.

Popper (1965:226) defines verisimilitude as "*a conceptual measure of explanatory power regarding hypothesis and theories"*. This idea is mainly based upon the empirical content of theories and objective truth. Truth as a "regulative principle" is the main idea behind objective truth; this means that although general truth criteria cannot be established; however, progress towards truth is possible.

Generally, authors (Mill for instance) aimed at testing theories in order to certify and probabilify them, while Popper's idea of falsification neither aims at the confirmation of theories nor immediate rejection. It is maintained by Miller that Popper's idea of falsification does not mean a confirmation of the non-falsified theories. However, in contrast, the aim of the verificationists and the probabilificatioists is to test theories and accordingly verify them. According to Miller (2015, 22-23), the task is not to falsify theories in order to verify other competing theories and to decide among verified and falsified theories. The main aim, he maintains, is to decide and choose among the falsified theories.

Additionally, the Popperian philosophy considers verisimilitude as an indicator which emphasizes on the explanatory power and on the empirical content of a theory. Popper interprets the idea of verisimilitude as a combination of truth and content which also offers criteria regarding the critical discussion between competing theories. In conclusion, the most important aim of this discussion is to segregate between the ideas of verisimilitude and probability calculus. Here it is worth stating that a theory that has better explanatory power is more improbable one due to its larger class of potential falsifiers.

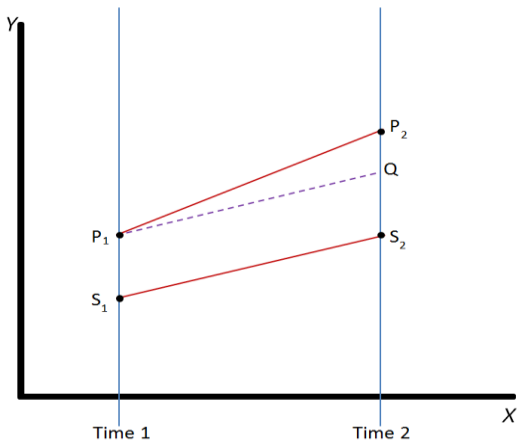
4.4 Statistical Techniques:

In addition, we use certain statistical techniques in order to formulate the basic statement and test the falsifying hypothesis. Ordinary Least Square (OLS) such as Regressions and Correlation techniques are used for a time series data of microfinance, household incomes, household expenditures, savings,

regional per capita income, employment and a number of proxies for the variables which do not exist in its raw form. It is worth mentioning here that we do not test the aforementioned theories by using these statistical techniques; as Ackley points out that a statically we can never verify a theory. Techniques such as "Difference in Difference" are also used in order to compare the two regions. The "Difference in Difference Technique" for simplicity is given as under:

4.4.1 Difference in differences (DID):

DID is a statistical technique used in econometrics and quantitative researches in the social sciences, particularly in economic, which, analogically, attempts an experimental research design using observational study data. The technique uses the differential effect of a 'treatment group' versus a 'control group' in a natural experiment (Angrist & Pischke, 2009). It calculates the effects of a treatment or an independent variable on an outcome or dependent variable. Accordingly, through 'DID' we compare the average change, over time, in the dependent variable for the treatment group, compared to the average change over time for the control group. Although it is intended to mitigate the effects of extraneous factors and selection bias, depending on how the treatment group is chosen, this method may still be subject to certain biases (e.g., mean regression, reverse causality and omitted variable bias). Graphically it can be represented as follows:



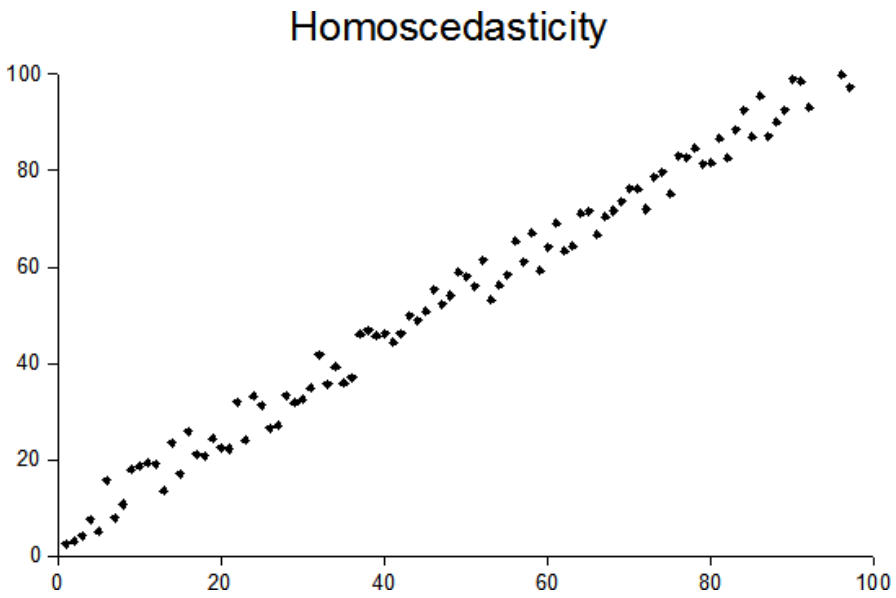
4.4.2 Statistical Software(s) and Data Assumptions

We use statistical software such as Excel and SPSS in order to organize data, estimate and plot charts, and run the required tests. The consumption, income and investment models, mentioned in our dissertation, require certain assumptions; like Homoscedasticity, No-Autocorrelation, No-

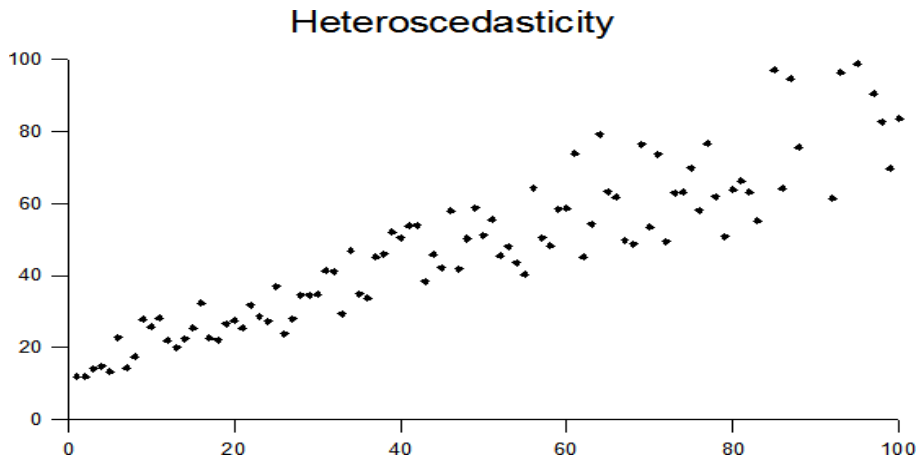
Multicollinearity, and Stationarity in data sets. However; upon the detection of the problems, such as Outliers, Heteroscedasticity, Autocorrelation, Multicollinearity, and non-stationarity, we diagnose them accordingly. Tests such as Breusch–Pagan, Durbin Watson, and Dicky-Fuller are applied, respectively, in order to detect and diagnose the problems. Each of the above-mentioned assumptions is explained, briefly, as follows.

- **Homoscedasticity:**

Homoscedasticity refers to the assumption that the standard deviations of the error terms are independent of all predictor variables included in the model (Achen & Shively, 1995). *Irrespective of the predictor's value, each probability distribution for the dependent variable has the same standard deviation. Graphically it is represented as follows:*



Accordingly, if the said assumption does not meet, this means there exists "Heteroscedasticity" in the data. Heteroscedasticity occurs when the standard deviation for the probability distribution of the dependent variable varies with the values of independent variables. The figure below provides a sample of data where Heteroscedasticity exists.



Hence, we check this problem by applying the Breusch–Pagan test, as the series is a linear model in this study. Mathematically the Breusch–Pagan test is expressed as follows:

- ***Breusch–Pagan Test:***

$$LM = nR^2$$

Where:

$$LM = \left(\frac{\partial l}{\partial \theta}\right)^T \left(-E\left[\frac{\partial^2 l}{\partial \theta \partial \theta^t}\right]\right)^{-1} \left(\frac{\partial l}{\partial \theta}\right)$$

And n is the sample size and R^2 is the coefficient of determination.

The steps of Breusch–Pagan tests are:

i. Fit any linear model
ii. Estimate the residuals
iii. Fit squared residuals on predictors

$$e_i^2 = \gamma_1 + \gamma_2 z_{2i} + \mu_i$$

z is the independent variable

iv. Calculate test statistics LM; which follows Chi-square distribution with degrees of freedom p-1 under the null hypothesis.

- **Autocorrelation**

In order to analyze the different effects of microfinance (as the independent variable) over a number of dependent variables such as income, consumption, savings, employment, capital accumulation, and socio-economic variables such as education and health; the values need to be independent of each other, over time. In contrast, if this does not follow then the problem of auto-correlation exists, in a time series data. As per its definition *"Autocorrelation is the representation of similarity between a given time series and a lagged version of its successive intervals, over time"*. Thus, the existence of autocorrelation, in data, can harm the aim of our analysis. Consequently, to check the data for the existence of the said problem, statisticians and econometricians follow an algorithm as stated below:

$$R(s,t) = \frac{E[(X_t - \mu_t)(X_s -)]}{\sigma_t \, \sigma_s}$$

Where:

E is the expected value operator, $\sigma_t \, \sigma_s$ represent the deviation at times *t* and *s,* respectively.

- ***Durbin Watson Test:***

Autocorrelation is resolved via the Durbin Watson test. The test static for Durbin Watson is:

$$d = \frac{\sum(e_t - e_{t-1})^2}{\sum e_t^2}$$

Where *t* is the number of observations and *e* is residuals.

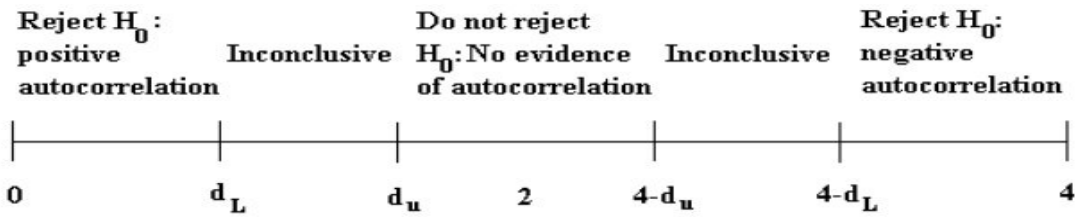
The steps for the Durbin Watson Test are:

i. Fit any linear model

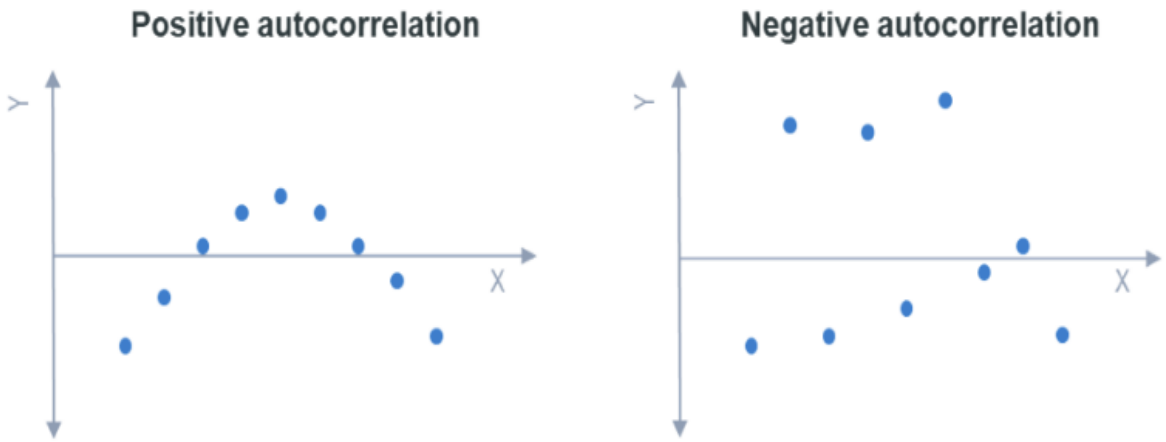
ii. Estimate the residuals

iii. Calculate *d* static from the equation

Following is the chart for interpreting Durbin Watson test's results



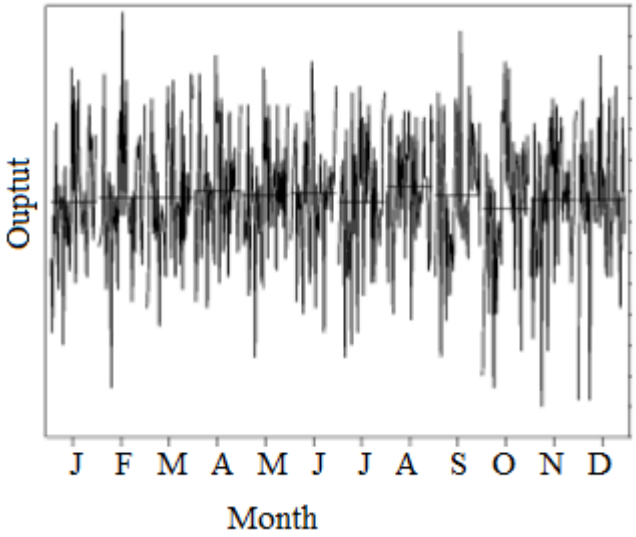
While the graphical representation of positive and negative Autocorrelation is as under:



- **Stationarity:**

For the purpose to check the dependency of predictor variables over the independent variable it is necessary for our data to be stationary. In "Stationary Time Series" the statistical properties such as mean and variance is constant over time. However, if it is otherwise, then by taking repeated differences, of the time series, could provide a solution and, accordingly, the non-stationarity can be

omitted. We apply the Dicky Fuller test in order to test stationarity. The following pectoral model represents data with stationarity.



4.5 Data for empirical Analysis:

We use a number of sources for our required data, including Pakistan Bureau of Statistics (PBS), State Bank of Pakistan (SBP), Punjab Bureau of Statistics, Pakistan Microfinance Network (PMN), World Bank databases, and International Monetary Fund's (IMF) databases (in some cases). We mention quite often that the data situation, precisely for this study, is very challenging and most of the variables required for this study do not exist, as expected. Because we keep our focus on subnational-regions[33] and we use administrative, provincial and district, boundaries. However, the data and statistical bureaus of Pakistan avoid publishing regional economic statistics, for some unknown reasons. Yet, for the purpose of our analysis, and to avoid further interruption, we agreed to use different published reports and articles to extract our desired indicators. A detailed description of each of the statistical bureau and data institutions, which we use, is given below.

- **Pakistan Bureau of Statistics:**

Established in 1950, the Pakistan Bureau of Statistics (PBS) – then Central Statistical Office (CSO) - conducts surveys and compiles statistics regarding, agriculture, industries, population, Economy, Transportation, etc. As per PBS claim, it conducts primary surveys regarding Price, Labor Force,

[33] Subnational-regions, for this dissertation, are defined in our chapter on "Regional Analysis".

Demographics, Household Income and Expenditures, Socio-economic, and Construction. The surveys are supposed to provide regional statistics for the afore-mentioned subjects, explicitly, yet the claim fails to provide a robust data regarding regional economic variables (regional variables/data do exist for most of the other, stated, sectors). Nevertheless, published data on a national level regarding the required variables, i.e. GDP, GDP per capita, Investment, CPIs, Agriculture, Industries (Small and Large scale), etc. do exist, and have been used for the intended study. PBS also publish HIES, PSLM and MICS surveys on provincial levels which provide the desired data for the study.

- **State Bank of Pakistan:**

SBP is the central bank of Pakistan, which has a great rule in the monetary sector of the country. The database of the SBP is used for data regarding interest rate and Net Domestic Credit.

- **Punjab Bureau of Statistics (BOS):**

Punjab Bureau of Statistics is a bureau of Punjab province, providing statistics for a number of sectors including social and economic sectors. It is an attached department of the Planning and Development department of the province. Since the year 1972, the bureau has frequently published developmental reports with the name "Punjab Development Statistics" offering a good insight into data regarding the Labor Force, Prices, Tax, Inputs, and Outputs of the three main sectors of the economy i.e. Agriculture, Industry, and Service. The Bureau also publishes household statistics on provincial and districts level, which largely provide help for the current study.

- **Pakistan Microfinance Network (PMN):**

The Pakistan Microfinance Network (PMN) was established in the year 1997 in response to a number of informal microfinance practitioners. This network aimed at the provision of a proper platform for coordination, peer learnings, and the exchange of ideas. Since, its foundation the network has grown significantly and has acknowledged itself as an association for retail players in the MF industry, both in Pakistan and globally. Moreover, when the government officially proclaimed the MF industry in 2001, the PMN registered itself with the Securities and Exchange Commission of Pakistan (SECP) under Section 42 of the Companies Ordinance. The network has an important role in the expansion of the MF industry and owns a proper database of the MF services. The PMN, on its official website, provides quarterly data of microfinance with the name *Microwatch Issues*; currently, almost 50

quarterly issues are available that have microfinance data on national, provincial and districts level. Besides that, PMN publishes annual reports analyzing the microfinance activities for various microfinance structures in Pakistan; (i) for Microfinance Banks (MFBs), (ii) Microfinance Institutions (MFIs) and (iii) Rural Support Programs (RSPs). Similarly, PMN offers a good insight into microfinance data, on national, sub-national and sub-regional levels regarding:

i. Total MF investment (Gross Loan Portfolio)
ii. Total Number of Borrowers
iii. Total Number of Savers (Indicates Account Holders)
iv. Total Number of Microfinance Institutions, Banks and Programs.
v. Total Number of Districts covered
vi. Percent (%) Change in total microfinance Investment.
vii. Percent (%) Change in number of borrowers
viii. Percent (%) Change in number of microfinance providers
ix. Microfinance Inclusion
x. Average Loan Size (PKR)…

Apart from Pakistani bureaus and institutions, we regularly look into a number of international databases, online, like the World Bank, IMF and Microfinance Exchange (MIX). Apart from online sources I have, personally, visited Pakistani institutions like; Pakistan Bureau of Statistics, Punjab Bureau of Statistics, State Bank of Pakistan and Pakistan Microfinance Network.

- **Base Year:**

Since we refer to the Pakistan Bureau of Statistics for our required data, which mostly insides prices, revenues, and other monitory values therefore, we use the base year that PBS has allocated. PBS publishes its surveys, data, and reports in 2006-07 prices; however, the prices are mostly in Pakistani Rupees (PKR). However, we also convert several values into USD 2006-07 exchange rates unless and until mentioned. For the data collected through international organizations, we have put our level best to adjust them accordingly.

5. CHAPTER.5

Towards a Theory of Aggregate Investment

5.1 Introduction:

The main aim of this chapter is to explain how and why we frame microfinance as an "investment" strategy. Usually, the literature on microfinance does not regard the term microfinance as an investment. The existing literature quite often uses the terminologies of loan, credit, lending, finance, etc. (Mazher, 2010) (Imai, Annim, Gaiha, & Thapa, 2012). For the readers, the use of different terminologies may not be so important, but we have a reason to explain. Considering the example of Pakistani academia, where most of the researches conducted on microfinance regard it as loans and credit schemes. Most of the authors seem too much concerned about the role and effects of microfinance, confirming/rejecting previous claims of microfinance, without providing any theoretical considerations of investment. Microfinance, being a tool to reduce poverty and or to enhance the living standards of poor, stands on the very basic component of any investment strategy, i.e. through acquiring proper capital and its uses to the best of its levels. In any manufacturing sector, small enterprises acquire microfinance in order to buy certain equipment, like, sewing machines, washing machines, and other handcrafting machines. Likewise, in the agricultural sector poor farmers tend to borrow loans in order to purchase different inputs, such as seeds, fertilizers, and pesticides, etc. However, borrowers also invest microfinance in livestock and dairy products, like cattle breeding, poultry farming, etc. (Weber & Musshoff, 2012) (Bose, 2017). The aim of the argument is to explain that a small farmer or entrepreneur is as rational in his/her decision as a bigger investor is. This also endorses the very basic claim of the microfinance's pioneer- Muhammad Younas- that every human is innately an entrepreneur if provided the required resources.

In contrast to those studies, we regard microfinance loans as investment spending having income and capacity effects, because these loans are mainly used to finance investment demand for the particular products as mentioned in chapter 2 of this study, under the section "Uses and products of Microfinance". Consequently, our investigation regarding the socio-economic effects of microfinance on an aggregate level requires a satisfactory explanation of aggregate investment demand.

As an objective of this study, we focus on analyzing these socio-economic effects of microfinance investment on the aggregate regional or subnational level. Here it is worth mentioning that we avoid nationwide macro-level analysis and micro-level questionnaire-based analysis for some principle reasons. First, due to the relatively smaller volume of microfinance investment expenditures[34] nationwide macro analysis will not be capable of providing substantial insights regarding the socio-economic consequences of microfinance investment in Pakistan. Second, we reject the micro-level questionnaire-based analysis because micro-level effects may cancel out on the aggregate level. Third, many things that the individual investor considers as given turn out to be variables on an aggregate level.

To deal with those problems mentioned above we shall review different classes of theories, which explain investment behavior on an aggregate level. The four main classes of theories include classical, neo-classical, Keynesian and Accelerator theories of investment. However, the development of a theory explaining aggregate investment also meets various difficulties theoretically as well as empirically. Theoretically, because the prevailing explanation of aggregate theories is based on theories explaining individual decision to invest but violate the methodological principles of methodological individualism and empirically because of the small volume of MF investment in Pakistan. Furthermore, sufficient literature already exists evaluating microfinance on a micro-level, both in the case of Pakistan and internationally. The most common thing that is clearly observed is that despite high-interest rates in Pakistan the default rate of microfinance is quite low. This characteristic of microfinance's low default rates and high-interest rates already excludes the possibility of selecting the theories of investment that are determined by interest rate.

5.2 Importance of Investment:

Generally, economists regard investment as one of the most important economic activities that businesses and governments can commence. Aggregate fixed investment is an important determinant for aggregate income and GDP and a substantial component of aggregate demand. A change in aggregate investment can be used as an indicator to find or analyze a change in capital stock and overall employment rate, so we can say that a fall in aggregate investment could cause capital stocks and

[34] *The total volume of microfinance (Gross loan portfolio) is 2.03 billion dollars. Source: Pakistan Microfinance Network, 2016-17, Microwatch, December 2017*

employment rates to shrink. Investment at present can be used as a predictor for future economic activity; because of capital formation and addition to the capital stock, more goods and services will be produced through which future productive potential can be determined. It is maintained that investment is the most volatile part of aggregate demand and therefore has a greater impact on the business cycle (Ackley G. , 1978) (Cooper, 2013). If investment in an economy is sluggish, it will cause low growth and unemployment, and consequently, labor productivity and wages will fall which will lead to a fall in living standards. On the other side with more investment forthcoming in an economy, it is obvious that there will be more capital accumulation and more efficient labor, which leads to improved technologies of production and as a consequence, the productive capacity of that economy grows, and more labor force can be accommodated.

As mentioned earlier, investment is the most volatile part of the economy and for most of the economic fluctuation's investment is considered as the most important factor. Normally in the short run, most of the economic activities like consumption, production, and demand for money do not change, however; there occurs a smooth change in long-run periods. Therefore, we can say that irregular movements in GDP/GNP are mainly the consequence of irregular shifts in investment demand. However, factors, other than investment demand, can also influence economic activity. Thus, investment is not the only factor responsible for economic vicissitudes. Other factors contributing to economic fluctuation are; non-stability of private demand, changes in government expenditures, taxation, and money supply. We are not going into the explanation of those factors now, however, we will interact with those factors from time to time while explaining investment behavior on the aggregate level.

5.3 The Problem of Developing an Aggregate Investment Theory:

Frequently theories explaining the decision to invest on a micro level, i.e. on the level of a firm are regarded as satisfactory explanations of aggregate investment spending; i.e. as satisfactory aggregate theories of investment (Baddeley, 2003) (Yang, Wang, Chen, & Yuan, 2011). Moreover, the authors maintain that these theories of aggregate investment are based on individual calculations; i.e. on the calculations of a representative agent (Baddeley, 2003). Typical examples here are the theories of Fisher and Keynes. They share the characteristic that they are based on individual calculations, but otherwise, they are quite different.

5.4 Fisher and Keynesian Theories of Investment

According to Fisher's analysis, capital as a stock does not exist and 'investment' is a process where capital circulates and is consumed in the production process. Accordingly, the output is determined by investment rather than capital stock. He emphasizes, "Investment is a response to the choice between consumption today and consumption tomorrow". In "*The Rate of Interest"* (1907) and "*The Theory of Interest"* (1930) Fisher explains the basic factors determining the interest rate and investment, and asserts that there is always a 'trade-off' between 'spending today' and or 'to save' for tomorrow; he called the former as the principle of *'impatience'* and the latter as the *'investment opportunity'*. Subsequently, the interest rate (real interest rate) equilibrates the 'impatience' and 'investment opportunity', as considered by humans. He refers to the discount rate as the rate of return over costs or the internal rate of return; however, Keynes (1936) on the other hand calls it the marginal efficiency of capital (MEC). Keynes does not regard interest rate as a crucial determinant of investment, he states that investments are made until "*there is no longer any class of capital assets of which the marginal efficiency exceeds the current rate of interest"* (as quoted in Eklund, 2013, p. 1). Another major difference between Fisher and Keynes's investment theories is that Fisher considers the investment a continuous process towards achieving an optimal capital stock while Keynes does not regard it as an adjustment process, instead uncertainty takes the central position.

5.5 Difference between Fisher and Keynes' Theories:

Besides, some similarities there exist a disagreement between the two theories, especially their different focus regarding the factors determining the decision to invest. Fisher's theory seems more focused on market interest rates in determining the profitability of an individual investment, while Keynesian theories are more focused on the importance of the factors determining the expected income flow of an investment, and emphasizes the formation of expectations.

5.6 Jorgenson´s Neo-classical Theory:

Jorgenson´s model is, simply, a more refined version of Fisher´s theory of investment and it provides the basis for the modern-day neo-classical theories of investment. He describes the optimum or desired level of capital (k^*) accumulation, of a profit-maximizing firm, by integrating a marginalist approach in Fisher´s theory; and shows when the marginal productivity and marginal cost of capital are in balance. Likewise, Jorgenson refines the concept of current cost by including interest rate, depreciation

and expected changes in the value of capital. Furthermore, the aggregate investment function is a simple "blowup" of the behavior of a firm. The equation for the optimum stock of capital is as follows:

$$k_t^* = \gamma \frac{p_t}{c_t} y_t$$

He further incorporates the "Cobb-Douglas" production function at any point in time, which is:

$$y_t = \alpha k_t^{\gamma} l_t^{1-r}$$

Where

y = the firm′s real output

γ = the exponent of k in the Cobb-Douglas function

l = amount of labor

p = price of firm′s output

c = rental cost of capital i.e. = q (r + δ) - Ɋ

q = The price of capital goods (Ɋ is the expected rate of change in q)

r = the investor′s rate of time discount

δ = depreciation rate on k (assumed constant)

Including taxes on profits (w_t), the rate of investment tax credit (m_t) and present value of any accelerated depreciation (% of investment cost) the cost of capital can be stated as:

$$c_t = \frac{q_t(\mathrm{r} + \delta)(1 - m_t - w_t z_{t)}}{1 - w_t} \text{ Ɋt}$$

Jorgenson assumes that investment in perfectly competitive firms takes place instantaneously and hence adjusting or avoiding the problem of `lag structure` between the optimal stock in the current period and the optimal stock in the previous period. He claims that predictions to future optimum

capital stocks are irrelevant to the current capital stock adjustment because capital stock, for a firm, is like ´putty putty´ capital; that is, inputs of capital and labor are perfectly substitutable for each other both in *ex-ante* planning stage and *ex-post* expenditures stage.

Thus, by restricting our discussion only to the capital theory of Jorgenson, we will have the following formulation.

$$k_t = k_t^*$$

This means that a firm will always have at its optimum or desired level of capital. So, the net investment becomes as follows:

$$i^N_t = k_t^*$$

Regardless of the total investment occurring in the aggregate economy (one of the main problems in this theory regarding our empirical analysis) Jorgenson assumes that firms always have perfect foresight of the future. Firms have had to order most of their required capital goods in advance, so whenever needed it must be available. Whereas, the time lag required for each equipment is different the investment made at any given time must be an output of a series of earlier made decisions. So, one can say that a firm´s net investment depends on a series of earlier decisions, made in anticipations for relevant variables.

Assuming that all expected future values are taken as proportional to the current values at the time of each investment decision and by considering output and capital goods prices as indicators of the prices which influence the investment decision, our aggregate investment model (for statistical testing) can be written as:

Equation 1

$$I_t^N = \sum_{i=0}^{n} \gamma b_i \Delta \left(\frac{PY}{Q(r+\delta)}\right) t-1$$

Where all the capital letters i.e. P, Y, and Q represent aggregate variables, *r* and δ are averages; b_i is weights of distributed lags tax laws and *T* and the expected rate of change in capital goods prices i.e. Ɋ are ignored for simplicity. Furthermore, by integrating replacement investment, that is, $I_t^R = \delta\ k_{t-1}$, we have the gross investment:

Equation 2

$$I_t^G = \sum_{i=0}^{n} \gamma b_i \Delta \left(\frac{PY}{Q(r+\delta)}\right) t-1 + \ \delta kt-1$$

5.7 Criticism of neo-classical and Keynesian Theories:

To conclude, it is worth mentioning here that those theories, i.e. the classical/neo-classical theories- developed by Fisher and Jorgenson- and the Keynesian theory, are inadequate explanations of aggregate investment spending. The claim that changes in interest rates trigger more investment on the aggregate level does not hold true for principle reasons.

On theoretical grounds, the first and foremost erroneous derivation of the investment determination through interest rate is that at any given point in time any firm may be aware of a number of possible investment projects, and for each of the projects the firm will calculate its marginal efficiency *(m)*. That apparently leads to the claim that the firm is well aware of all the relevant variables. Given this, the firm can then rank all the investment projects and their potential marginal efficiencies *(ms)* ranges from the highest to the lowest. This means the firm will go for all those projects where *m* exceeds the interest rates *i*. From this information, as a rule of thumb, it seems clear that a firm will invest whenever *m* is greater than *i,* whereas rejecting the otherwise. Accordingly, the classical theory maintains that the same schedule is then aggregated into one economy-wide schedule. Consequently, given the market rate of interest, the amount of all the aggregate investment projects can be determined.

The schedule appears quite promising- given the derivation for a firm and therefore for an entire economy- until there exists a temporary disequilibrium in the internal structure of a firm's and the economy's capital stock. In a competitive economy with no, lag structure, having perfect knowledge and foresight in the resulting instantaneous and continuous equilibrium the yields of all the investments would be identical and equalize the rate of prevailing interest. This means that any other investment that would yield more than other investments, firms can instantaneously rush to invest in it, which will consequently increase the cost of factors involved in it, and the resulting rise in the supply will drive down the price of the same kind of output, and therefore upsetting the profitably.

5.8 Empirical Testing of Classical/Neo-classical Theories:

The estimated results of Jorgenson's neo-classical model are given in Table 1 in Appendices. The results are achieved through a constructed program by fitting equation 2 in the Statistical Package for Social Sciences (SPSS). The model shows an insignificant and negative relationship between a long-run investment and the user's cost of capital (Jorgenson predicts a strong negative relationship between investment and user's cost of capital). The model, however, seems econometrically a good fit (i.e. adjusted R^2=0.954), for the unrestricted model, while based on the *p-value* all long-run results are insignificant. In contrast to the restricted model, which is a high fit too (i.e. R^2 = 0.959) most of the results are significant at 95% interval. Besides that, the set of all diagnostic tests confirm the model's high fit, yet the results are not theoretically consistent.

However, as we maintain continually that our focus is not to test theories econometrically i.e. at 90, 95, or 99 % significance threshold, as we maintain that this is just a subjectivist belief and does not have anything to do with the rejection and confirmation of a theory. All it does, and we do, is just to formulate a basic statement to check a relationship between two or more variables.

Similarly, we estimate simple graphs, below, through SPSS by fitting a regression model between Pakistani data regarding real interest rate and investment to GDP ratio. Apparently, the graphs do not show a negative correlation between the said variables. However, there are periods such as 2011, when an all-time lower investment to GDP ratio is recorded, while the real interest rate hits its lowest -5%, i.e. subsidies. Likewise, in the year 2016, the decade's high investment ratio is recorded; while the rate of real interest achieves its peak of more than 8%. The results lead us to the claim that interest rate does not determine investment on an aggregate level as the effects may cancel out. In the same way, a relationship between microfinance and the mean interest rates of the microfinance sector is plotted.

Although, there exists a variety of microfinance programs offering microfinance services with different mark-up rates – ranging from 0% to 40%, however; since the very inception of formal microfinance industry the average interest rate, for MF, stays almost stagnant i.e. 20 to 23%. Figure 5.1 reveals significant growth in microfinance investment, over time, in response to the respective interest rate.

Figure 5.1: Relationship between Real Interest Rate and Investment/GDP Ratio of Pak (2004-2017)

Figure 5.2: Relationship between Interest Rate and Microfinance Investment in Pakistan

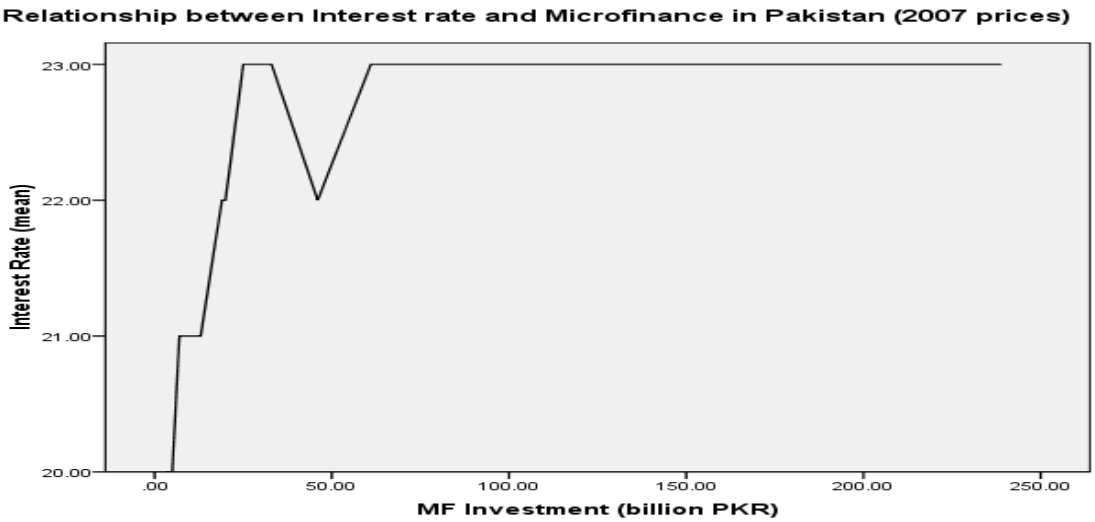


Table 5-1: Regression Model for Microfinance and Interest Rate

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-13.804	44.125		-.313	.758
	Interest Rate	3.153	2.122	.348	1.486	.157

On methodological grounds, the aforementioned theories are rejected because of their inadequacy of aggregate-level explanations and they violate the methodological principles of 'methodological individualism' by the concept of a "representative agent". These theories are based on individual calculations and individual decisions to invest. Thus the theories are rejected on empirical grounds as well, as demonstrated by our empirical testing. Furthermore, the theories are rejected theoretically, too, as the prediction of the inverse relationship of interest rate and investment do not follow. The problems related to individual calculations and its generalizations to an aggregate level possess a number of theoretical as well as empirical issues.

5.9 The Theory of Capital Accumulation:

Ackley provides a simple version of Goodwin´s (1948) model, which asserts that during the equilibrium situation, firms do not add further capital because the currently demanded output is produced through the current capital stock. In a complete equilibrium situation there occurs no change in output (Y) demanded hence net investment stays zero, but since depreciation is inevitable, the capital goods industry thus produce for mere replacement purposes, so gross investment equals depreciation.

Ackley argues that a slight disturbance of this equilibrium, say an increase in the desired stock of capital, may lead to a very intensifying situation. With a little intervention of government, *G,* this shortage of the capacity could lead to an immediate increase in orders to the capital goods industry. The capital goods industries then hire more laborers and more machines leading to an increase in employment and incomes. Consequently, an overall rise in incomes then leads to a rise in aggregate consumption demands, hence, causing more shortage in capital stocks. This shortage of capital stocks could only be covered by ordering more to capital goods industries prolonging the period of capacity operation in industries. Finally, the shortage is covered up and the desired stock equals the actual stock of capital. But the economy still does not catch a new equilibrium because once the actual stock reaches

the desired level there still exist orders in line for replacement goods; which means that incomes and employment are receding in the capital goods industries. This ultimately causes a lower level or decline in consumption demand because when actual stock and desired stock equals there must be a drop in aggregate consumption demand.

So, a fall in aggregate demand then causes a fall in the desired level of capital stock which means the production of capital goods drops to zero. At this stage, the capital goods industries have no options but to fire most of its workers resulting in aggregate unemployment. Consumption, income and aggregate demand drop further and causing more contraction in the desired stock of capital. This is the time when most of the firms have more redundant capital stock due to a negative change in output; the actual stock now exceeds the optimum, which can be attained through depreciation. Finally, through depreciation the actual stock drops to the desired stock and the redundant stocks are worked-out. Again, the capital goods industries start to receive orders for replacement goods and they are set to hire labor for the production of replacement goods. Consequently, again, there is a rise in income and employment as the capital goods industries are again operational providing the basis for another expansion; that is a high aggregate consumption demand will be achieved only through adding more capital stock and the cycle repeats.

- **Criticism of the Theory of Capital Accumulation:**

The theory of capital accumulation, apparently, may not be practical for the capital financed by microfinance loans as the equipment financed through microloans are rather small, and do not contribute much via depreciation. Most of the capital goods financed through microfinance are replaced immediately and are considered short-run equipment compared to other capital goods financed by huge loans. The capital goods financed by other than microfinance loans need adjustment costs, and immediate response to its adjustment or a delay may cause a huge investment or disinvestment in aggregate. It is because more labor and inputs are required to “bolt-down” new equipment. In contrast, either for the equipment financed through microfinance is replaced as a whole, in case of bigger faults or does not need too much labor-time and extra inputs. This means, that if a micro financed machine stops working the “operator” may not stay redundant, for as long as, an employee of a bigger industry does. Nevertheless, an introduction to the theory of capital accumulation was intended to provide readers with a brief insight into capital accumulation; as the upcoming section introduces a more modified form of the accelerator theory, which incorporates the capital theory. The

present discussion concerns more regarding inferring an investment theory for my intended empirical analysis than a capital theory. The next section introduces a flexible accelerator theory of investment based on the readings from *Ackley (1978) and Baddeley (2003).*

In conclusion, the historical theory of capital accumulation is rejected because they claim to have found laws of historical development on methodological grounds. For the reason, that laws of historical theories are not testable therefore we exclude the particular theory of "capital accumulation" from our intended analysis.

5.10 Investment Decision on Individual/Firm Level:

In order to choose a satisfactory theory explaining aggregate investment demand and in order to support the proposition that investment theories based on individual calculation are inadequate, the decision to invest on an individual level will be discussed in more detail. An individual investor or entrepreneur or a single firm aims at acquiring knowledge regarding the success or failure of his next investment; i.e. the partial certainty with which the next investment can be classified as successful. According to Keynes, (1935), this partial certainty can be measured by probability, i.e. a probability measure pertaining to a single event. Accordingly, Keynes considers probabilities in terms of probability calculus, which refers to classes and not to single events as inadequate to meet that task. He provides an explanation of the factors determining an individual decision to invest and quotes that *"It would be foolish, in forming our expectations, to attach great weight to matters that are very uncertain* (Keynes J. M., 2018)*"*. He further adds in the corresponding footnote that 'by "very uncertain" ' do not mean the same thing as "very improbable" and suggests to consider chapter 6 'The weight of arguments' of his treatise on probability in that context. Keynes emphasizes that the formation of expectations regarding the success or failure of a particular investment, i.e. *'The state of long-term expectation… does not solely depend on the most probable forecast we can make'*. According to Keynes *' It also depends on the confidence with which we make this forecast on how highly we rate the likelihood of our best forecast turning out quite wrong'* (Keynes J. M., 2018), *Page 148*.

Although, Keynes in his Treatise on Probability aims at solving an epistemological and methodological problem, compares the problem situation of finding a satisfactory theory. He explains how to determine the partial certainty (the state of confidence) with which we evaluate one's expectation of a

particular investment to be successful and of finding the satisfactory concept of a probability measuring the partial certainty with which we classify a hypothesis as true. Similarly, both (Investment theory and treatise) aim at solving the problem of measuring the partial certainty with which one can classify one particular event as true or successful. According to Keynes, the expectation regarding the expected flow of return are formed, based on the factors determining the state of confidence.

To calculate the profitability of a single investment, the investor must consider the expected values of each of the aforementioned variables. Ackley mentions that investor´s expectations for those variables determining profitability may ultimately be subjectively reducible to a single most probable value. However, that most probable value is always surrounded by many uncertainties. As J.M. Keynes points out that such subjectively, determined values might be drastically affected by the "political climate" of the day and by "*the nerves and hysteria and even the digestions and reactions of the weather*" of those who make an investment decision. However, as mentioned in Baddeley (2003), the Post Keynesians argue that in every corner of the world, uncertainty exists and it rationally limits the expectations of investors. They further assert that there exists no objective model to be discovered, the world is unpredictable due to many irregularities. So instead of focusing on the rational behavior of dynamic optimizers, the Post Keynesians prefer non-rational, sub-rational and irrational forces such as conventions, herd behavior, and animal spirits[35].

Then how can the problem of explaining an individual/firm-level investment and aggregate investment be resolved by providing any 'rational' economic basis? What possibilities do we have in order to develop a satisfactory theory of aggregate investment? All these questions need to be answered properly in order to solve the problem of investment determination on an aggregate level.

One thing is clear from our previous discussion that is the inadequacy of micro found theories. By discussing theoretically and testing empirically the classical/neoclassical and Keynesian theories, we already reject the idea that macro theories have to be based on micro theories, on principle grounds.

[35]*Based on M.C. Baddeley's book on Investment Theories and Analysis Part II, chapter 3 Conventions, "Herd Behavior and Animal Spirit can be stated as;*
Convention: In forming expectations, investors accept the existing state of opinion at least until new information emerges because it is assumed to incorporate a more accurate assessment of future prospects. Thus, conventional valuations are important determinants of investment decisions.
Herd behavior: In response to new information, investors will often assume that other investors may have better information. Therefore, investors will rely on 'conventional judgments', the judgments of others. Investors will tend to follow the crowd.
Animal Spirit: Although the precise definition of animal spirit by Keynes is difficult to find but animal spirit is associated with "spontaneous response" i.e. to act now rather than to wait for later".

This section is devoted to explaining the aggregate theory of investment spending by considering the following problems.

- What standards and requirements does a satisfactory theory of aggregate investment demand have to fulfill?
- What possibilities do we have to formulate such a theory?

To proceed we have the following three possibilities, to start with,

- Methodological Individualism
- Historical Theories
- Aggregate theories that are not based on micro-foundations, on principle grounds.

We know that at the time of any investment decision, a firm knows many things. The firm also understands that some of those known factors may have changed recently, which could quite substantially improve the expected future profitability. The profitability may have been calculated using the equation of 'net present value' NPV or internal rate of return of the investment. For instance, if the interest rate, for some reason, may have changed recently, it may affect the decision of borrowing loan for a particular investment project Ackley's (1978).

Consequently, the decision affects the profitability of that specific investment. Similarly, an advancement in the current technology affects/increases the profitability of a firm's investment, either by enhancing the productivity of an already existing asset or by reducing the operational cost. Likewise, if a sudden rise in demand happens for a particular output the firm, instantaneously, allocates its resources for the production and supply of that specific output, raising its expected profitability. Moreover, a recent change in the relative cost of input resources affects the prices of the particular expected output, which the investment would supply, may change the profitability of that particular investment. On a single firm level, the investor quite accurately knows about the existing capital stock and its replacement (depreciation) cost. Government intervention, for instance, by imposing new tax laws, for some specific products, can affect the expected profitability of those particular investments. Many of these factors do not behave in the same way, as discussed when we consider investment on an aggregate level.

The whole discussion regarding an aggregate investment theory and the problem of the lag still need to be resolved. As we have mentioned earlier that an adequate theory, for our empirical analysis, needs to be fit for aggregate level investment as well as have a lag structure of adjustment of actual to the desired capital stock. Perhaps, Jorgenson has provided a good theory of capital adjustment by showing that the desired stock depends not only on the level of output but also on the interest rate, relative prices, and tax rates. However, his theory does not qualify certain conditions as discussed, due to which it is ruled out.

5.11 Investment Behavior on Aggregate Level:

As mentioned in the first paragraph of this chapter that we have shifted our attention from a micro or single firm level to an aggregate level due to two main reasons. That is (a) many things that may determine investment decisions on a micro or individual firm level cancel out in aggregate, and (b) many things that are known on a micro or single firm level turn out to be variable on the aggregate or macro level. Here we elaborate on these two problems/points with examples.

As we have seen, on a firm level, that if a sudden upswing happens in demand for a particular product the firm allocates its resources to that particular product, raising its future profitability. On an aggregate level, an increase in demand for one particular product means a decrease in demand for another or relative shifts in expected profitability of one kind of capital equipment over another. So, investment, in one product, and disinvestment in another product will continue until, in the long run, profit rates are matched resulting in zero profit on an aggregate level. Consequently, canceling out the overall effect on an aggregate level, these are considered mere shifts in demand from one product to another. Likewise, ceteris paribus, a fall in interest rate may better off an individual investor by borrowing more funds, now, to finance his/her investment project and increase profitability. Again, via market mechanisms, as maintained, changes in one set of variables may trigger changes in a different set of variables and the effect cancels out in aggregate. Usually, a fall in interest rate may occur as a consequence of increasing the propensity to save, if so, then the positive effect on profitability may cancel out due to lower consumer demand resulting in a falling expected price.

The second problem is that many things that are known or considered as given, on an individual firm level; turn out to be variables when the aggregate or macroeconomy is considered. For example, a firm knows the interest rate, as it is either a cost for financing investment (when borrowed funds are used)

or an 'opportunity cost' (when owner's funds are used). While on the aggregate level, interest is a variable depending on the aggregate amount of investments. The discussion above leads us to the main question of this chapter i.e. what determines investment on the aggregate or macro level. In the proceeding section, we put an effort to evaluate different classes of theories of investment, their determinations and extensions to aggregate levels.

5.12 Income determination of Investment:

A short description of the theory of level of income or output as a determinant of investment, on a firm level, has already been provided in the preceding sections. However, here we consider a rather elaborated form of this theory on an aggregate level from Ackley (1978). We know that how businesspersons and investors, on a single firm level, respond to the hope or expectation of future profits; how they (firms) allocate all their resources for an anticipated high demand for a particular output. That is a typical microeconomic explanation of a constant level of aggregate demand, where the production of a high demanded output must be at the expense of other output- canceling out the overall effect. Nevertheless, the theory of investment dependency on output can be extended to the aggregate level under the assumption of ´variations in aggregate demand´. If there is an increase (or decrease) in aggregate demand for different products, profits can be expected by many firms hence stimulating (or depressing) investment on an aggregate level. Since profits are considered as a response to the level of output or income (Y) thus investment, too, is a response to changes in Y. For simplicity, this theory can be stated in its linear form as:

$$I = b0 + b1Y$$

Where I represent investment, b_0 represents autonomous investment, and b_1 represents marginal propensity to invest. To understand the Investment (I) dependency on income or output (Y), we need to have the equilibrium equation of income Y. We have a simple Keynesian model:

$$Y = C + I + G \quad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

$$C = c0 + c1\, DI \quad \ldots\ldots\ldots\ldots\ldots (2)$$

$$DI = d0 + d1Y \quad \ldots\ldots\ldots\ldots\ldots (3)$$

$$I = b0 + b1Y \text{ ……. } (4)$$

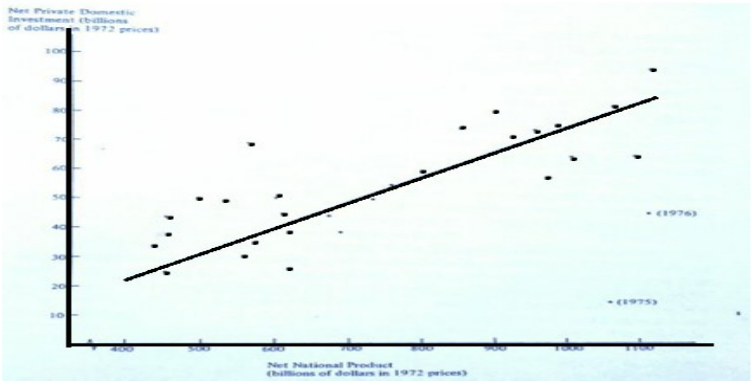
By substituting equations (2), (3), and (4), into equation (1), we have the equilibrium Y as follows:

$$Y = \frac{1}{1-c1d1-b1}(c0 + c1d0 + b0 + G) \text{……} (5)$$

Any increase in additional autonomous investment (b_0) will certainly increase income equal to the amount of "super multiplier" represented by$\frac{1}{1-c1d1-b1}$. Thus, a rise in income (Y) will increase consumption (C) and investment (I), which will further create opportunities for more expansions in income, consumption, and investment, with a diminishing rate.

Ackley (1978) points out some plausibilities in the theory, discussed. In this theory, people provide the basis for an increased income by saving more, which is actually plausible. He argues that an increased propensity to save (in aggregate) actually reduces income as there is no effect on total saving and investment. He supports his argument by the so-called paradox of thrift[36]. In response to this, people who consume more actually save more and so do with income. The second form of this theory is that investment is more determined by profits rather than directly by Y, but profit itself is a function of Y. Other models, of the same genre, assume that there are two shares of income, wages, and profits. If all the wage income is consumed then stability depends on the coefficient of the profits term in investment equation being less than 1. Furthermore, *Ackley* empirically testes the model by providing a time series of US data of net national product (NNP) and net private domestic investment-in constant dollars, for 1946-1976.

[36] *Paradox of thrift: The paradox states that an increase in autonomous saving (S) will ultimately lead to a decrease in aggregate demand and hence a decrease in total output (Y); subsequently a decrease in total output (Y) will in turn lower total saving(and investment)* (Thies, 1996).



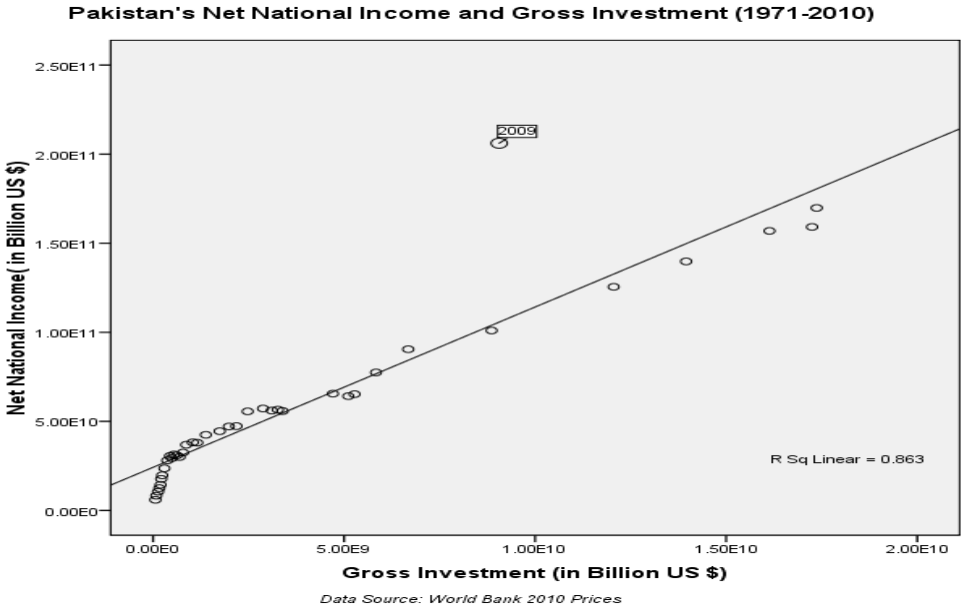
Source: Ackley, (1978); Macroeconomics: Theory and Policy

The Figure above shows that every time when the net national product (NNP) increases or decreases, investment does the same; so by saying that at any point high or low income causes high or low investment could only be a statistical estimation. Ackley argues that this interpretation, of the relationship, maybe highly doubtful and that this could be a misinterpretation of the causation. It is quite obvious that the causation could run the other way, too, i.e. high investment causes high income via the multiplier effect. However, the idea of the relationship between investment and income or output can be considered for further evaluations of aggregate investment demand. Accordingly, we empirically test the theory for Pakistan by providing data regarding "Adjusted Net National Income" and "Gross Investment", for the period of 1973 to 2010.

- **Testing for Pakistan:**

Following Ackley's methods, we test the Pakistani data of "Adjusted Net National Income" and "Gross Investment", for the period of 1973 to 2010. The Pakistani Bureau of Statistics compiled Gross Investment statistics until 2010, and from thereafter the bureau has substituted GI data with Gross Capital Formation. Nevertheless, we exploit the available data, until 2010, of GI and NNI of Pakistan for our desired testing purpose. The graph below is estimated with the help of the Statistical Package for Social Sciences (SPSS). Our result is in line with Ackley's case presented, above, for the United States, the data for Pakistan show that investment and NNI behave the same way as is does in Ackley's testing for the US. The graph below demonstrates a positive relationship between NNI and GI; however, for some reasons only in 2009, the investment is lower when the adjusted NNI of Pakistan is at maximum.

Figure 5.3: Pakistan's Net National Income and Gross Investment (1971-2010)



The anomaly is explained by Ali in a *Staff Note* submitted to the State Bank of Pakistan (SBP) (Ali, 2016). The paper discusses the saving and investment, and ease of doing business in Pakistan, through historical data. Looking into the statistics above one can easily grasp that investment corresponds the same way as the Net National Income of Pakistan does. However, the business environment of Pakistan in 2009 had confronted certain irregularities and difficulties. The most common and prominent reasons for the year's low investment was a sudden hype in political uncertainty and terrorism. Accordingly, the government's priorities had been shifted from the development sector towards defense, in terms of budget allocation. The deteriorated law and order situation in Pakistan, in 2009, resulted in hurting the investors' confidence.

Overall, the theory of "income as a determinant of investment" provides a basis for our quest for a better theory of investment. However, keeping Ackley's point of the possibility of "reverse causality" in mind, we continue to elaborate the theory in more detail by considering the acceleration principle, which incorporates Keynes' theory of income/output. The class of theories under the acceleration principle explains a 'continuous demand of output' as a determinant of aggregate investment demand.

5.13 Acceleration Principle:

Maurice Clark (1917) was among the first people who proposed the accelerator theory. According to Clark, businesses invest in response to the growing demand for output and not to the level of demand *Baddeley* (2003). To be quite specific, for any change- increase or decrease- in demand for output, producers require a change in their ′velocity′ for capital equipment i.e. ′acceleration- principle′. Therefore, an increase in aggregate demand for out will require more capital, to be added, in producers′stocks to produce the extra demanded output. There are a number of theories incorporating the "acceleration-principle" concept; however, we look at the simplest Keynesian models, first, to include an acceleration theory.

- **Simple Accelerator Theory:**

We know that in the determination of investment demand, the simple Keynesian model emphasizes the expected future income from an investment and the prices of capital goods. Now by including the acceleration principle in the simplest Keynesian model, *Ackley* (1978) assumes that there exists a fixed proportion between the rate of production of consumer goods and the stock of capital required for its production. And we also know that each capital equipment has a limited capacity to produce consumer goods; and in order to produce more goods, more capital equipment is required. So, *ceteris paribus,* by extending our discussion to aggregate level, the desired or optimum capital stock depends on the aggregate demand for consumer goods. Accordingly, a change in consumers′ goods output will eventually accelerate the capital stock by x times the change in consumers′output ($\Delta\ C$); and the product of these terms is a net investment *(I)*. This can be represented mathematically as $I= x\ \Delta C$. This implies that whenever there is no change in consumer demand i.e. $\Delta C=0$ net investment (I) will be zero. In a nutshell net investment (I) is directly proportional to C and/or Y.

We now incorporate this simple accelerator theory in the macro model of income or output (Y) in any period as:

$$Y_t = C_t + I_t + G_0 \text{ .....} (1)$$

Where Y is income or output, C is aggregate consumption, I indicates investment in any time period t, and G_0 represents a constant amount of government purchases.

$$C_t = c_0 + c_1 DI_t \qquad (c_0 \geq 0,\ c_1 < 1) \ldots\ldots\ldots\ldots (2)$$

DI is disposable income in any time period *t* and its function can be written as,

$$DI_t = d_0 + d_1 Y \qquad (d_0 > 0,\ d_1 < 1) \ldots\ldots\ldots\ldots\ldots (3)$$

While a simple accelerator investment function is,

$$I_t = w + x(C_t - C_{t-1}) \qquad (w \geq 0,\ x > 1) \ldots\ldots\ldots\ldots (4)$$

It is clear from equation (4) that investment (I) in any period (t) will happen equally to the number of capital goods, added, in order to produce the incremental or ′demanded′ consumer goods which have occurred since the last period *(t -1)*, *w* represents any constant amount of investment or any exogenous variable(s). Now by substituting equation 3 into equation 2, then into equation 4 and finally, into equation 1, we will get equation 5 as:

$$Yt = \frac{-xc1d1}{1-c1d1\ (1+x)} Yt - 1 + \frac{1}{1-c1d1\ (1+x)}\ (c0 + c1d0 + w + G0) \ldots\ldots\ldots\ldots (5)$$

And solving for the equilibrium steady-state value of Y, we have

$$Y_{t-1} = Y_t = Y_E$$

And get equation (6) as:

$$Y_E = \frac{1}{1-c1d1}\ (c0 + c1d0 + w + G0) \ldots\ldots\ldots\ldots\ldots (6)$$

It is quite clear now that by solving the dynamic or changed income (Y_t) equation(s) in order to get the equilibrium steady-state output or income i.e. Y_E the whole equation (s) collapses into the simple Keynesian model or multiplier, with government leakages (G_0) and some exogenous variable or a constant of investment (*w*) replacing (I). Here *x* is excluded from the whole equation because it was noted earlier that whenever C is changing, acceleration will occur in Y; however, in equilibrium

condition there occurs no change in Y and hence no acceleration (x) in net investment (net investment is zero).

- **Problems in Simple Accelerator Theory:**

Due to a number of shortcomings in the simple accelerator theory, Goodwin and Chenery in 1948, proposed a ´flexible accelerator´ model (Baddeley, 2003). In a simple accelerator model, the two major deficiencies are; (i) that net investment always adjusts its desired or optimum capital stock in one period and (ii) that the estimates of capital-labor ratio, examined by Chenery (1952), are significantly lower than the average capital-labor ratio. Ackley (1978) has quite accurately considered these problems, he asserts that in the simple acceleration model the accelerator (assumed) is too fixed and rigid while the claim of the acceleration principle is that it is based on technology; that is more output (Y) stimulate investment and in order to produce more output more machines (technology) is required. Accordingly, more machines, for more output, need more time and hence a time lag is more important.

However, Ackley also argues that this technological relationship is not a very strictly technological, but an economic one. Consider if all the machines are in use and if there is a sudden rise in demand, this rise can still be met through a number of ways, temporarily, i.e. by drawing down inventories, by overtime, by extra shifts, and/or by making the standby machines operational. Here, Ackley (1978) also identifies some problems with the suggestions he proposed. It is not possible to draw down the inventories below zero while producing the extra demanded output through overtime work, extra shifts or by standby machines acquire more cost. Another possibility to encounter the rise in extra demand may be to raise prices but that could only work if the increased demand is temporary. So, only if the rise in demand is, recognized as, permanent or long-lasting then extra machines will be ordered, and the extra demand will be met, by incorporating, a lag structure in the previous simple accelerator model.

Furthermore, the simple accelerator model disregards the rate of production of capital goods. For that, the theory of optimum capital stock (K*) implies that; following an acceleration (x) or increase in output (Y) actual stock (K) must be adjusted to its optimum or equilibrium level. Mathematically it can be written as $K^* = xY$. Thus, the investment can also be defined as a difference between desired or optimum capital stock (K*) to actual capital stock (K). Here it leads us to the question of what happens when the optimum stock (K*) is less than that of actual stock (K)? A simple accelerator theory has

been refined further and maintains that whenever there is an adverse change in Y, the actual stock will be adjusted to its optimum or desired level (K*) in a negative manner (through depreciation) and hence net investment will be negative. Which, according to Ackley, has further consequences, as he asserts that during a decline process, there may often be 'out of work' or idle machinery. So, if there an unforeseen increase occurs after a recent fall in demand, no new equipment will be added to the stock and that idle machines will be brought to operations first. Consequently, there will be no acceleration effect during that period.

Thus, concerning the problems mentioned above, we consider a different theory that incorporates most of these problems. Here it is worth stating that since investment is determined by a change in output (Y) and that change in Y is attainable through a similar change in capital stock i.e., from the actual stock of capital (K) to the desired stock (K*); then how could be a change in capital stock determined? Economist Richard Goodwin presents a theory of capital accumulation which considers the upper and lower limit of gross investment to produce further variants of accelerator-multiplier interaction *Ackley, (1978)*.

- **Further Consideration of the Accelerator Theory:**

By identifying that, the capital stock adjustment process is not instantaneous and that a lag structure is, required Ackley reformulates the accelerator theory. *Baddeley* (2003) also considers *Goodwin's (1948)* formulation of a *"rudimentary flexible accelerator model"* which shows that investors adjust their desired capital stock over a number of times. Nevertheless, there exist mere technical variations between the two reformulations; we prefer Ackley's consideration of the accelerator theory: since most of our mathematical equations, in this chapter, are taken from *Ackley* (1978). Ackley incorporates Eisner's version of the acceleration principle[37] (permanent income) into the simple accelerator theory. Eisner's investment equation is:

$$I_t^G = \alpha \sum_{i=0}^{n} b_i \Delta Y_{t-i} + \delta K_{t-1} \qquad (\sum b_i = 1)$$

The simple accelerator theory defines net investment as a gap between the desired capital stock K^* in current time *t* proportional to output *Y*, in time *t,* and the desired capital stock K^* in previous time period *t-1*, proportional to output *Y* in previous time period *t-1*. That is:

$$I_t^G = K_t^* - K_{t-1}^* + \delta K_{t-1} = \alpha (Y_t - Y_{t-1}) + \delta K_{t-1}$$

Or

$$I_t^G = \alpha \Delta Y_t + \delta K_{t-1} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Equation (1) describes that the actual stock of capital in a previous period (known in the current period) was the desired or optimum stock for producing output in the previous period. As one cannot expect exactly that investment in current time *(t)* would produce the required optimum level of capital stock in the current period, likewise the actual stock would have been different from the desired stock in the previous period *(t-1)*. Therefore, while making an investment decision, currently *(t)*, the actual stock of capital, for the previous period, and the depreciation rate i.e. ($\delta \mathbf{K}_{t-1}$) is known. So, the equation for a simple accelerator theory becomes:

$$I_t^G = K_t^* - K_{t-1} + \delta K_{t-1} = K_t^* - (1-\delta) K_{t-1}$$

- (1-δ) $\mathbf{K}_{t-1}$ is the portion of capital stock from the previous period that is useful for the current period. In addition, since the desired capital stock K* is assumed equal to the expected change in output, which is $K_t^* = \alpha Y_t$, the investment equation becomes as follows:

$$I_t^G = \alpha Y_t - (1-\delta) K_{t-1} \ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

But as mentioned earlier that any level of output (αY) or a change in output (ΔY) is not known in the current period *(t)*, Ackley introduces a moving weighted average of previous time periods output i.e. *ΔYs* from Eisner's theory-

$$I_t^G = \alpha \sum_{i=0}^{n} b_i \Delta Y_{t-i} + \delta K_{t-1} \qquad (\sum b_i = 1) \ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

And, merge equation (2) into Eisner's formulation (3), to replace the level of output in the current period (Y_t) with a weighted average of past Ys. The equation becomes

$$I_t^G = \alpha \sum_{i=0}^{n} b_i Y_{t-i} - (1 - \delta)K_{t-1} \qquad (\sum b_i = 1) \ldots\ldots\ldots\ldots (4)$$

Ackley further refines equation (4) by arguing that since any estimate of Y_t is uncertain to be predicted exactly while making an investment decision, in the current period; accordingly, investors are inclined to discount their best estimate of Y_t by investing somehow less than the required to get the desired level of capital stock. The reason behind this is that the adjustment of underinvestment is far easier than that of overinvestment. Therefore, he incorporates a computed coefficient β for such behavior in equation (4)

$$I_t^G = \beta \left[\alpha \sum_{i=0}^{n} b_i Y_{t-i} - (1 - \delta)K_{t-1} \right]$$

or

$$I_t^G = \alpha\beta \sum_{i=0}^{n} b_i Y_{t-i} - \beta(1 - \delta)K_{t-1} \ldots\ldots\ldots\ldots (5)$$

Where $0 < I > \beta$

For the purpose of statistical estimation, the equation can be written as:

$$I_t^G = \mathrm{A} \sum_{i=0}^{n} b_i Y_{t-i} - \mathrm{B}K_{t-1} \quad (\sum b_i = 1) \ldots\ldots\ldots\ldots (5a)$$

Equation (5a) is formulated for a statistical regression purpose, where A is the acceleration coefficient replacing α and B is a computed coefficient for (1- δ).

Thus, both the versions of investment equations i.e. (2) and (5a) are derived from a simple acceleration principle, which largely seems realistic than the other ones, described in this chapter. Because it does not assume that, the capital stock from the previous period (in the current period) would not be the same as what would have been required to produce the previous period's output. In fact, this version takes into account a weighted average of many previous years' outputs (Y_s). Consequently, Ackley

redefines this version of the accelerator theory, as *"investment is a function of the average degree to which existing capital is utilized".* This means that if the output (Y) grows relative to capital (K) more capital will be utilized, and more investment will be forthcoming or, whenever the rate of investment is high, more capital (K) will be required compared to output (Y).

5.14 Conclusion:

The chapter provides a deep insight to deductively select a better theory that explains more realities of investment on an aggregate level. Now, to analyze the possible effects of microfinance investment expenditures we need an adequate theory; and an adequate theory of microfinance investment requires both a good theory of the demand for capital (microfinance related equipment) and a theory of the adjustment of actual to the desired stock. Although, microfinance is not generally regarded as an investment for heavy machines rather microfinance loans are used for small machines, such as sewing machines, stitching machines, cooking utensils, handy crafts equipment, etc. Yet there is a possibility of lag structure required in a theory; for instance, in a situation of increased aggregate demand, for particular equipment or product, the capital goods industries may fall short of time to its clients´ orders.

We have already elaborated on four different classes of investment theories. Classical-neoclassical theories, which maintain that investment expenditures depend on the interest rate, Keynesian theories emphasize over Marginal Efficiency of Capital (MEC) being central to investment demand, theories investment dependency on level of income, and theories of acceleration principle maintaining that investment expenditures depend on changes in aggregate demand or consumption. It is intended here to adopt an investment theory, which has adequate appeal to the particular kind of microfinance investment; but as mentioned earlier theoretical economists have not given much attention towards microfinance investment. Nevertheless, there exist studies like Maksudova (2010), who do regressions like "Granger causality test" using Arellano and Bond (1991) methodology. Buera *et al* (2012) investigate the redistributive impact of microfinance in general and partial equilibrium, yet their focus and theoretical aspects are completely different than the objectives of this study.

Similarly, the theories discussed in this chapter include Fisher's theory and Jorgenson's neoclassical theory of investment. Accordingly, these theories explain that investment demand depends on interest rates, here it is worth revealing that microfinance investment is rather interest inelastic as microfinance loans are mainly used to buy short-run equipment. Like Jorgenson's theory of a single profit-

maximizing firm, many micro-level studies on microfinance propose the relationship between microfinance and interest rate and predict that a fall in interest rate would trigger an increase in investment expenditures, since, ceteris paribus, falling interest rates increase the profitability of an investment. And, as mentioned in *Baddeley (2003)*, a single firm's behavior can be generalized, then, to an aggregate level as the difference between a micro-level and aggregate is just a matter of scale. However, this is completely an erroneous approach. It is not possible just to add all the individual micro-level firms to aggregate or macro level. Therefore, the prediction regarding aggregate investment cannot be based, simply, on the profitability of a single firm's investment; as a fall in interest rate is a cost on a firm's level but turns to be a variable on an aggregate level. Accordingly, changes in one set of variables may trigger changes in a different set of variables via market mechanisms and the effect cancels out in the aggregate. For instance, if the fall in interest rate is due to a high propensity to save, the positive effect on the profitability of investment, in aggregate, may cancel out due to low aggregate demand resulting in falling expected prices, hence canceling out the effect on profitability, in aggregate level.

Additionally, the theory of 'investment dependency on income' is rejected due to its claim that investment occurs in response to the hope or expectation of profits, and that the only reliable information an individual investor has as to the future level of profits is their current level. Here, again the problem of canceling out of aggregate effects arises. This theory, indeed, explains a usual microeconomic behavior that how production is adapted in response to demand for a particular product. However, shifting or investing all resources for the production of a demanded product is, in fact, disinvestment in another product, in aggregate. Eventually, in the longer run, atomistic market, this investment, and disinvestment will continue until profit rates are equalized at zero pure profit.

So, in order to avoid most of the aforementioned problems we use the acceleration principle (and theories based on acceleration principle) for my intended model, for two main reasons. First and above all is that accelerator theories are not micro-founded, and these theories propose behavioral hypotheses regarding the behavior of aggregates. Second, the accelerator theory, as tested in many studies mentioned in Baddeley (2003) and Ackley (1978), has a superior "explanatory power" and has a character of explaining more facts on an aggregate level than other theories. Third, in most of the investment theories the capital stock adjustment occurs simultaneously, while Ackley resolves that problem by introducing a lag structure into the simple accelerator theory. However, as described earlier that most of the equipment financed by microfinance investment may not need any lag structure; yet

in a situation of aggregate demand the capital goods industries even for smaller equipment may require time.

6. CHAPTER.6

Regional Analysis and Model Specification

In order to address the main research question of this dissertation that is; to avoid a nationwide macro level and micro level questionnaire analysis due to several reasons[38], this study analyzes different effects of microfinance on a meso-level. Generally, meso-level indicates a size, which falls in between, and connects, micro and macro levels. Examples of meso-level units of analysis include community, district, city and province or state. For the study at hand regional level, aggregate analysis is to be considered. For that purpose, we need to define a region within a country; as sometimes the term region applies internationally to a block of countries. We frequently refer to Richardson, (1978) and a number of empirical studies, while describing regions and regional economic models.

6.1 The concept of a Sub-national Region:

There exist no specific methodologies, to come up with sub-national/regional analysis, regarding economic, administrative, historical or other criteria. Yet, most of the regional economist compromise on certain inconclusive ideas for the sake of research and planning purposes. Czamanski (1973) defines a subnational/region (despite the fuzziness) as " *an area within the national economy that is sufficiently comprehensive in a structure that it can function independently"*. However, one can not ignore the fact that in the real world no such region exists which has no strong links with the rest of the economy. Likewise, Ahmed, (2011) asserts that studies on socio-economic inequalities consider regions as independent units to avoid the likely possible spatial interaction between regions. Richardson further elaborates on the concept and classifies a region into three different types (i). *Homogeneous* region: which has more unifying characteristics and where intra-regional interactions and internal differences are considered as unimportant; (ii). *The nodal* region has little regard for uniformity, but where the characteristics of cohesiveness are the result of internal flows, contacts, and interdependencies are polarized towards a center or node, and (iii). Planning region: This is an *ad hoc* concept designed for certain political, economic, and administrative, policy purposes, where a set of planning instruments or programs apply. Accordingly, it is maintained that planning region tends to be in contradiction with

[38] These Reasons are mentioned in introduction to this thesis and in the chapter on "Towards the theory of aggregate Investment".

those of homogeneous and nodal region; which could be settled, only, if the boundaries of a planning region are designed not too different from those of homogeneous and nodal region; otherwise, the policy measures will be affected.

A homogeneous region concept considers the relationship of a region with the rest of the economy as more important to that of intra-regional differences. Moreover, perhaps that is the reason that most of the regional macroeconomists and neo-classical analysts prefer the concept of the homogeneous region because regional macroeconomic models are space-less and homogenous. Regional macroeconomic models either ignore spatial fractions or exclude it simply by assuming zero transport cost. Similarly, as Richardson defines that "*a region is assumed to grow or decline as a whole, rather than in parts, because of the regional influence on different industries located at different centers within that region".* Accordingly, he maintains that the national economy is a set of spatially separated points called `regions`. For a region to be considered as `economically homogeneous`, it has to have certain similar economic parameters or indicators. For instance, regional macroeconomic models consider per capita incomes, marginal propensity to consume, save, or import marginal capital-output ratios, etc. to predict certain short and long-run variations in regional economic activity. In contrast, if a region has wide-range dissimilarities in those key economic indicators, the model will face the problems. However, certain approximations and assumptions can work, in order to infer predictions.

A nodal region concept deals more explicitly with intra-regional differences, quite in contrast to that of the homogeneous region concept. In their paper on "*Delimitation of Nodal Regions based on transport flows Case study of the Czech Republic*" Kreaft, *et al* (2014) describe that the idea of a nodal region stands on the basic assumption that a nodal geographical area is heterogeneous. This heterogeneity, in relation to a human geographical sphere, relates to the foundation of spatial interactions of different sizes. Therefore, nodal regions have the limitations of the intensity of these interactions, between different geographical parts having one or more centers. It is, therefore, the centers and their respective contiguities that shape an integral part of a nodal region. Thus, the centers of nodal regions i.e. towns have a distinctive concentration of the majority of the socio-economic activities to which the contiguous regions are functionally inclined, based on the intensity of flows.

Additionally, Richardson explains the `spatial and heterogeneous characteristics` of a nodal region in terms of population and industries. According to a nodal region concept the population and industries are agglomerated at specific locations, and hence are scattered unevenly over space. He further

classifies regions as; within a national economy, there are core regions, which are densely populated, highly industrial and urbanized than other regions. The core regions have dominant centers called 'cities' which gravitate to major factors of production inputs i.e. goods and services, labor force and traffic; and in cities, there are nuclei where most of the businesses and social centers exist. Concisely, a nodal region is a set of heterogeneous nodes i.e. towns, cities, and villages specialized in different products and services; these nodes are functionally connected to each other. The specialty of each node can be identified through the communication of different factors, goods, and people.

As we have stated earlier that a planning region concept serves solely for policy and research purposes. Planning regions are structured for certain administrative or political purposes such as better management, and proper statistical accounts. Here, the term "planning" means taking decisions to implement them in order to attain economic development. Thus, an entire economy, subject to the whole world, is a planning region for the implementation of national plans; accordingly, a state or province is a planning region, within an economy, to device state or provincial plans and likewise, a district is considered. According to *Richardson,* the key importance of a planning region approach is that data can be collected on an administrative unit base allowing policymakers and researchers to evaluate and analyze different objectives conveniently. Although the boundaries of planning regions may not be consistent in the long-term, yet this approach can be used as far as the boundaries are unchanged, or a slight dissimilarity can be ignored.

The study in hand compares two subnational regions of Pakistan for its intended analysis. The two regions are the administrative units of the province Punjab. Consequently, we consider the approach of planning region; while, the concepts of homogeneous regions and nodal regions are avoided, here, due to certain, prevailing, political and geographical issues. Furthermore, the planning region concept seems to allow us to consider or design two regions based on the pre-existing administrative boundaries of districts in the province of Punjab, Pakistan. Another reason is that, by adopting the administrative unit as ´region´, the major part of the 'domestic territory' of the 'region' is clearly defined. In the proceeding section, we provide a detailed demographic, social, economic and political description of the intended regions. However, we start from the top hierarchical position of Pakistan, just to provide the readers with an overview of its geo-economic and political reputation in the world.

6.2 Pakistan (A Brief Profile):

A South-Asian country with, a population of more than 209 million people, and an area of 881,913 square kilometers Pakistan ranks the fifth most populated and the 33rd largest country, by area, in the world[39]. It has a coastline along the Arabian Sea and the Gulf of Oman in the south and borders India to the east, Afghanistan to the west, Iran to the southwest and China to the far northeast. The total outlay of Pakistan´s GDP, as of 2018 Budget report, estimates over USD 304 billion (nominal)[40], while GDP growth rate is 5.79%[41]. The GDP composition comprises the service sector (58.8%), the agriculture sector (21%) and the industrial sector (20.2%). The total labor force of Pakistan constitutes 61.04 million, of which the agricultural sector employs 42.3%, the service sector 35.1%, and the industrial sector 22.6%[42]. The total trade deficit of Pakistan has augmented from USD 19.2 billion in 2016 to USD 26.5 billion in 2017; which is 8.7% of the GDP. Major exports include textile worth USD 12.4 billion, food USD 3.610 billion, petroleum USD 0.413 billion, and other manufacturing products worth more than USD 4.5 billion. Main export partners are USA (17%), China(8%), UK (8%), Afghanistan (6%), Germany (6%), UAE (4%), and Bangladesh (3%). While major imports contain food products worth USD 5.419 billion, machinery USD 7.875 billion, transport USD 2.643 billion, textile USD 3.884 billion, agriculture and other chemicals USD 7.124 billion, and metal USD 3.786 billion[43].

The internal geography of Pakistan is divided into four provincial units, Khyber-Pakhtunkhwa, Punjab, Sindh, and Balochistan; which is sub-divided into `divisional` and `district administrative` units. Besides the four provincial units, Pakistan entitles three other territories, Azad Kashmir and Gilgit Baltistan in its north, and Federally Administered Tribal Areas (FATA) in its west, as its administrative regions. Among the four provinces, Punjab is the largest by population while Baluchistan is largest by area. A detailed account of the selected region is given after the next section. However, before that, it is necessary to mention some issues in the regional level analysis in Pakistan.

- **Issues in Regional Accounts of Pakistan:**

Considering sub-national regions as a unit of analysis requires a good system of the regional accounts database. However, unfortunately, in Pakistan no efforts have been made (except 1986 for Sindh

[39] *Pakistan Bureau of Statistics (6th population and housing census, 2017)*
[40] *Budget Breief 2018-19 (Ministry of Finance, Government of Pakisatn)*
[41] *Pakistan Bureau of Statistics (Macroeconomic Indicators)*
[42] *Labour force Statistics 2015 (Pakistan Bureau of Statistics)*
[43] *State Bank of Pakistan 2018 (Monthly Statistical Bulletin).*

province, 1988 for Karachi city only), officially, to compile and construct regional income accounts. Nevertheless, academicians like Bengali and Sadaqat, (2006) put forward their efforts in regionalizing the national accounts of Pakistan for the period of 1971-2000. Although, the time period of our study ranges between 2002-2017/18, yet Bengali and Sadaqat´s (along with other research studies) methodology could be worth considering, particularly, in the case of Pakistan. Accordingly, a most recent work by Pasha, (2015) provides a good insight into the regional/provincial accounts of Pakistan; which ascertains that the Pakistani authorities are now serious in constructing the regional accounts.

Pakistan is a country of multi-ethnicities and, in the same way, a heterogeneous regional economy. A varied number of industries, levels of activities, productivities make these regional differences. However, it is worth mentioning here that regional level economic studies or analysis have been discouraged, authoritatively, by officials in Pakistan; presumably due to potential socio-political problems. As, it has been maintained in studies (Ikram, 2009) that the separation of East Pakistan (now Bangladesh), in 1971, was a consequence of such efforts. Nonetheless, this study does not attempt to construct regional accounts nor provides political inquiries of regional differences. Our major aim is to exploit the published data by different data centers (officials) in Pakistan for our particular objectives.

The above section projected a handful of the description of the Pakistani economy, its internal regional splits, and issues of its regional accounting. After having discussed that, we now proceed to the second hierarchical order of provinces. Out of four provincial units- Punjab, Khyber Pakhtunkhwa (KP), Sindh and Baluchistan- we consider the province of Punjab; and provide a detailed description of its geo-economic, administrative, and political positioning in the country.

6.3 Punjab (Province):

With an estimated population of around 110 million people, Punjab is the most populated province, making up almost 54% of the total population of Pakistan. Geographically, Punjab is the only province bordering all other provinces, within Pakistan, and neighboring eastern Punjab of India (Indian Punjab). This is the most developed, industrialized and agriculturally fertile province of Pakistan; It is considered as the heart of Pakistan's economy for contributing more than half of the country's annual production of goods and services. According to the *Punjab Board of Investment and Trade (2018)*, this province contributes 59% to the national GDP of Pakistan. The Punjab government in their recent

economic report claims that, due to the economic weight of the province, the national economy is strongly correlated with Punjab's economy. Therefore, most of the socio-economic indicators of the Punjab province can be used parallel to the national indicators of Pakistan (Punjab, 2017).

Among the Pakistani provinces, Punjab tops the list of Human Development Index's (HDI) ranking with 0.732 points, followed by Sindh (0.640), Khyber Pakhtunkhwa (KP) (0.628) and Baluchistan (0.421). Similarly, Punjab is on the top with average schooling years of 10.1 followed by KP (9.7 years), Sindh (8.3 years) and Baluchistan (7.4 years). Likewise, Punjab has the better living standard indices among its counterpart provinces: with 83 percentage points, Punjab again has the best living standard measures. Consequently, this province has been reported, having a High Human Development, by *UNDP's Human Development Index report, 2018.*

We have picked up the two regions (districts) as the unit(s) of our analysis of "socio-economic effects of microfinance investment" from the province under discussion i.e Punjab. A number of reasons justify the selection of Punjab province, as a general population (N), and the two districts as samples (n) being units of our analysis; however, the most prominent and worth mentioning one is of data availability. Accordingly, being a production center of different agricultural products and manufacturing goods, Punjab provides the major part of the services sector to the national economy and that, probably, is the reason that this region serves an investigative focus for most of the research and policy purposes. Apparently, Punjab province is the region where most of the microfinance has been invested. As per Pakistan Microfinance Network's (PMN) reports, Punjab is the only province in Pakistan where microfinance operations take place in every district; hence providing a chance for deep insight to researchers and policymakers to study the socio-economic effects of MF, both on district and provincial level.

6.4 Selected Regions/Districts:

The district is the third tier in Pakistan's regional hierarchy, after provinces. This structure exists for most of the political and administrative policy aims, as mentioned earlier. However, in some cases, a district is treated as the fourth tier of Pakistan's regional hierarchy depending on the aim of considerations. Pakistan's regional hierarchy is inherited from British India, where it was constructed in order to control regions to the lowest possible levels. Figure 6.1 below compares the hierarchical structure of British India and present-day Pakistan.

- **Regional Hierarchy of British India vs. the Present Day Pakistan**

There may not be as such, apparent, difference between the regional hierarchical structure of British India and present-day Pakistan; however, various technical changes had been made to administer subnational regions. In the year 1967, an act was passed with the name of "The West Pakistan Land Revenue Act" implementing the new sub-national hierarchical structure of West-Pakistan (Present day Pakistan). The act upholds that *"All the provinces of Pakistan, be divided into Divisions – There shall be as many divisions in the provinces, with such limits and such areas, as the government may direct by notifications. Accordingly, the Divisions to be divided into Districts and Districts into Subdivisions or Tehsils-subjected to the government's notification. Furthermore, Subdivisions or Tehsils to be divided into sub-Tehsils (or Union Councils) which are further divided into Village councils or villages- subjected to prior government notification" (Government of Pakistan, 1967).*

Figure 6.1: Regional Hierarchy of Pakistan

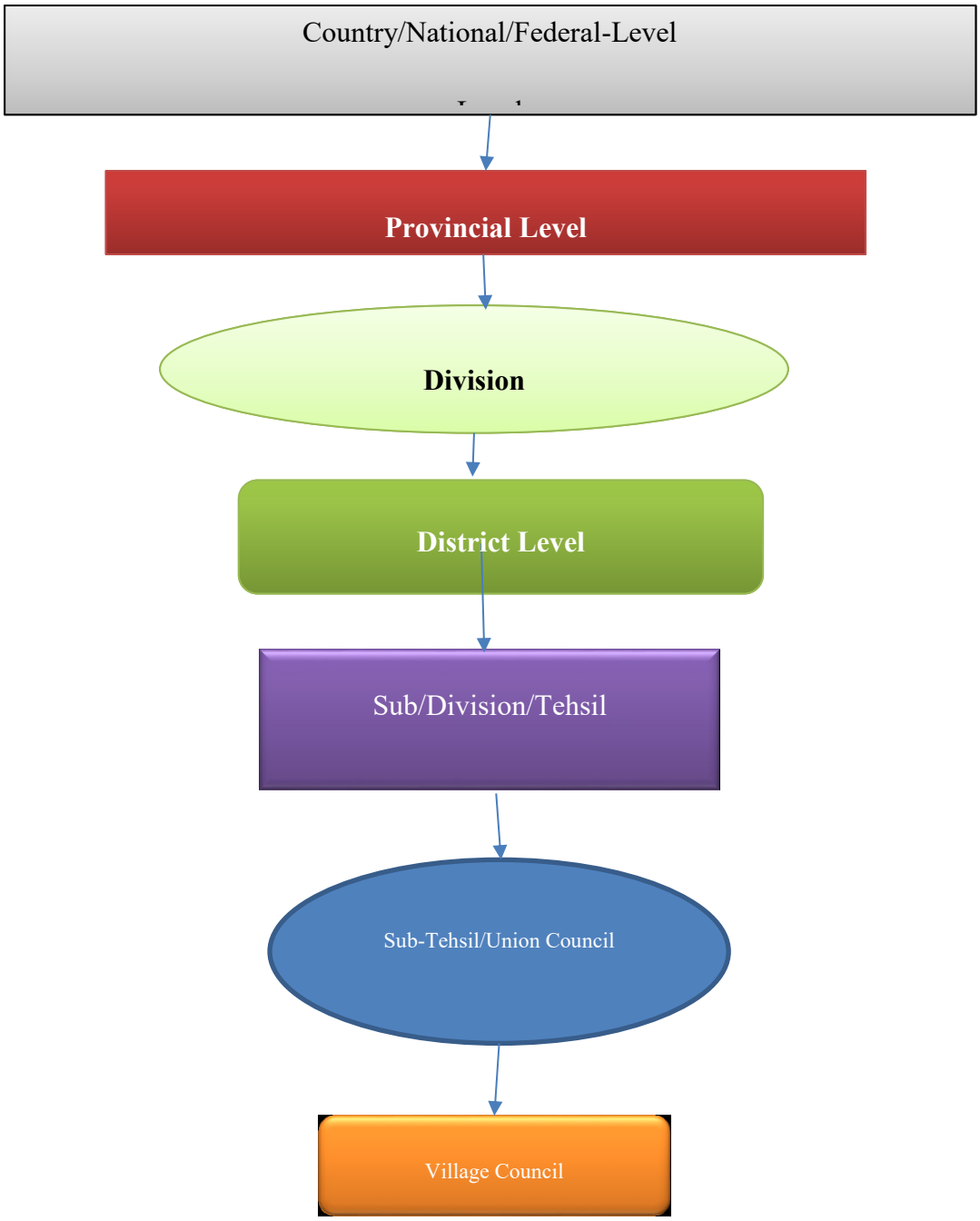


Figure 6.1 provides an overview of the regional hierarchical structure of Pakistan. In the early decades of the 1950s and 60s, the Pakistani authorities used the structure, developed by the British authorities, for most of their administrative planning and the electoral process. However, with the passage of time, authorities made certain changes and implemented the structure in accordance with the existing issues in Pakistan. For instance, the "Divisions" used to make the third tier of the regional hierarchy, which is now replaced by the "Districts" level. However, the old structure still exists in some parts of the

country. The existence of the old version is also applicable for a number of administrative structures, such as, in "Local Body Elections" the local government is designed on a district level and the administrative hierarchy goes down through tehsil, or town, to union councils and villages. While in other institutional bureaucracies, the "Division" level is still functioning due to the prevailing British rules.

Keeping in view the policy of a 'local government', which allows a district to have its own government, defined boundaries, a central market for various goods and services, we, therefore, select two districts. The two districts are RYK, from the southern Punjab, and Sialkot, from Central Punjab. We already have provided a short description of the two selected regions in our previous chapter on "State and Evolution of Microfinance in Pakistan". However, here we intend to provide a more detailed account of the two selected districts; regarding the history, geography, agriculture, industry and predominantly the economy. Before going into the detail, the location of the two districts, with respect to each other, is necessary to be mentioned here (Burki, et al., 2012). Both the districts share their longest border with India and both of the selected districts have switched their respective developmental rankings with each other; which is a particular reason for analyzing the said districts. Because, both the districts border India, and since there is no bilateral relationship between India and Pakistan, the total trade between the selected regions and India sums up, to zero. However, the other characteristics of individually selected districts are given in the proceeding sections.

- **Rahimyar Khan (RYK):**

District RYK, being a part of southern Punjab, lies contiguous to other districts with almost the same production and consumption capacities. It shares its boundaries with districts, Bahawalpur in the east, Muzaffargarh in the north, and Rajanpur in the west; in the south exit the Sindh province and India in the southeast. A local study carried-out by Awan, Nadeem, & Sheikh, (2015) splits the district into three primary regional features (i) Riverine region, (ii) Canal region, and (iii) Sweet or Deserted region. The Canal irrigated region is separated by main Minchun Bund and lies mostly in the south. The approximate height of the irrigated region is one 150 to 200 meters above sea level. The deserted region is known as "Cholistan desert"; which lies near the Indian border in the southeast. The surface of the desert includes successions regarding sand dunes rising from places to a height regarding 150 measures and covered with the vegetation distinct to soft sand tracks.

The total population of the district RYK is around 5 million, out of which a larger share of 82% lives in rural areas while the remaining 18% reside in the urban areas. As noted earlier that this district lies in the agriculture-dominated southern part of the province, accordingly, the major portion of district RYK, i.e. 67%-70% is dependent on agriculture. The district is considered a pioneering region for cotton production; however, wheat, sugar, and oil are also the main agricultural products of the district. That is the reason that most of them, cotton production and processing, large textile units, flour mills, sugar and oil mills, and large-scale power generation projects, are installed here. The district also has an advantage in producing a number of fruits such as mangoes and oranges. In the early 1990s after a continuous decline in the developmental ranking, the local authorities prioritized small-scale manufacturing industries such as embroidery, handicrafts, and clay products, as well.

- **Sialkot:**

Sialkot district is considered as the main economic hub where more than 90% of the manufactured goods are exported internationally. It is the third richest and industrialized district of Punjab province. The district has an area of 3016Sq. Kms and is surrounded by other industries rich districts of Pakistan. Sialkot District lies southeast of Gujrat District, southwest of Jammu district (in Jammu and Kashmir, India), while Narowal District is to the southeast and Gujranwala District is situated to the west.

Through its exports, only, Sialkot is earning an amount of USD 1.60 billion annually. Unlike RYK, Sialkot was one of the most underdeveloped districts in the early 1970s; when most of its households prefer handcrafting and embroideries. This was realized by a number of local entrepreneurs and started financing the households to prepare certain small-scale goods, in the early 1990s. That provided the basis for their daily life earnings and soon the district became a central market for most of the handmade goods. Currently, Sialkot is internationally famous for making a good verity of footballs, field hockey sticks, cricket gear, boxing gloves and a number of surgical instruments. The trends of industrial technology and production line have totally been changed worldwide, but due to its historic tradition still, most of the small-scale industries rely on small loans. The express tribune, one of Pakistan renowned newspaper, in one of its published articles claims that:

"Sialkot exports goods worth $1.6 billion every year. This is an incredible $4,000 of export revenue per capita. If the rest of Pakistan did exactly what Sialkot does, our export earnings would have been $675

billion — 25 times more than the current level. That would have made Pakistan the world's sixth-largest exporting nation, just behind Japan" (Saeed, Tribune.com, 2014).

The current study does not put the sole responsibility of Sialkot's development over microfinance; however, it certainly provides an emphasis to investigate the role of micro-loans in the development of the district. Accordingly, this is done by extracting out the households/businesses that borrow micro-loans for the purpose of their, income/profit earnings, consumptions smoothening and assets development.

6.5 Indicators/Variables:

Before presenting our model for regional analysis it is necessary to highlight our core indicators. Different studies on regional/subnational analyses and regional/subnational comparisons use a variety of variables, depend on the aims and objectives and availability of the required data. However, the studies by Pasha, (2015) and Bengali & Sadaqat, (2006) offer the state-of-the-art for the intended analysis. In an effort, Bengali and Sadaqat (2006) estimate the regional accounts of Pakistan for the period of 1972-1999/2000, which is then extended by Pasha (2015) to 2016/17. For the purpose of examining changes over time in microfinance investment and its dependence over changes in income and or output, on provincial and district levels, we use certain indicators from Bengali (2006) and Pasha (2015 along with secondary source databases. However, in order to investigate the socio-economic consequences and the role of microfinance investment in poverty changes, we use Multiple Indicators Cluster Surveys (MICS), Household Income and Expenditure Surveys (HIES) and Pakistan Social and Living standard Measurement surveys, published very frequently by Pakistan Bureau of Statistics. The main variables for this study are the following.

6.5.1 Regional Income (Y):

Provincial/Regional gross domestic product (PGDP) for provinces replicates the concept of GDP, in national accounts, developed by Bengali and Sadaqat in 2006 for the period of 1972-1999. Subsequently, the gap between 1999 and 2017 is then filled by Pasha (2015), following the same methodology. According to their results, Punjab is the largest economy of Pakistan, contributing above 56% to the national GDP. However, to avoid fuzziness and to get more accurate results, a relationship between microfinance invested and sectorial output or income is used instead of provincial GDP (output). Subsequently, the percentage share of microfinance investment in sectorial output can then

be generalized to the provincial and national output (GDP). The main Sectors of Punjab's PGDP are the Agriculture sector, Manufacturing Sector, and Service Sector.

$$Y = C + I + G$$

6.5.2 Household Income (HI):

Household (HH) income is a measure of the combined incomes of all the members of any household; it may include salaries, wages, income from investments, pensions, government transfers, etc. According to Pakistan Bureau of Statistics:

"*A household may either be a single person household or a multi-person household. A single person household is one where the individual makes provision for his/her own food and other essentials of living, without combining it with any other person and without any usual place of residence elsewhere" (HIES 2015-16, PBS).*

Studies quite frequently use household income as an indicator to represent the strength or weaknesses of an economy. In their analysis, regarding the "Socio-Economic Characteristics and Household Savings", Burney and Khan (1992) use household income to predict the relationship between savings and economic development for rural and urban regions. Likewise, Bigsten and Levin, (2011-12) measure the relationship between growth, income distribution, and poverty, using household income and consumption data.

Correspondingly, we substitute the variable of aggregate household income (HI), as a proxy variable, for disposable income (DI) in our aggregate model. A household income function without lag can be written as:

$$HI = d_0 + d_1 Y \qquad (d_0 > 0,\ d_1 < 1)$$

6.5.3 Household Consumption (C):

Similarly, for the consumption function we use, aggregate, average household consumption statistics published in HIES reports. The consumption function represented mathematically as follows:

$$C = c_0 + c_1 HI \qquad (c_0 \geq 0, c_1 < 1)$$

HI is disposable income or household income (in our particular case) without lag

Note: Pakistan Bureau of Statistics (PBS), on provincial and district level, compile "Household Integrated Economic Survey (HIES)" on every alternate year. It includes data regarding averages/percentages of, household size, distribution of employed persons, HH consumption expenditures, HH incomes, and HH savings, etc.

6.5.4 General Investment (I_{Gen}) and Microfinance Investment (I_M):

The model incorporates the, selected, accelerator theory of investment, however, since, there are a number of other factors influencing regional income and growth, yet we try our level best to isolate the effects of microfinance specific effects. For that purpose, the uses of microfinance loans in different sectors (mainly agricultural and manufacturing sector) for different equipment are discussed, explicitly. However, a statistical technique is also applied in order to disintegrate the overall net investment (I_n) of a specific region into two parts; general investment (I_{gen}) and microfinance investment (I_m). I_{gen} is a set of all other, possible investments other than microfinance influencing regional income and the effects of such type of exogenous variables are accumulated by *w* in our model; subsequently the effects of microfinance investment, on a regional aggregate level, is somehow isolated. Mathematically we denote this as follows:

$$I_m = w + x\,(C_t - C_{t-1})$$

Where I_m is microfinance investment, *w* is a constant factor representing any exogenous variables i.e. general investments (I_{gen}), x is any dollar value and C is consumption expenditures with lags.

6.6 Model Specification:

As noted before, we treat those selected sub-national regions as small closed economies; accordingly, an inter-regional income model, developed by Richardson, is conformed for each sub-national region. The model is as under:

$$Y_i = C_i + I_i + G_i \ldots\ldots\ldots\ldots\ldots\ldots \text{(i)}$$

Where $G_{0\ is}$ any constant governmental purchases and C is a consumption function

The model is a simple Keynesian model for a closed economy; however, we must specify the model for our specific case, which is microfinance investment. So, the key issue that we faced throughout this research was the identification and isolation of the effects of microfinance on the aggregate level. That is probably the reason we frequently refer to the micro-level studies, which quite easily separate the effects of a chosen variable, using certain econometric techniques. However, that is not the major concern of this paper to criticize the micro-level, questionnaire, and regression-based studies. Yet, we refrain from using the previously mentioned research criterion just because those techniques do not explain much of the reality when we consider a whole economy (Districts in our case). Nevertheless, we isolate the particular distributional effects of microfinance by considering the five income brackets data published by the statistical bureaus in Pakistan. We also exploit the annual economic surveys of Pakistan for my required variables. For instance, in their 2001's survey, they allocate the absolute poverty line in terms of calories per adult, per day; the data is then used by the government of Pakistan in a "Poverty Reduction Strategy Paper" and approximates the poverty line of 786.56 PKR per capita per month, for the year 2001 (Finance Division, 2003). To estimate the poverty line for a household, we multiply the allocated amount to the average household size of eight (8) persons/households for the lowest and second, quintiles (Statistics, 2001). The resulting figure of 5474.45 PKR integrates, completely, the lowermost and the second quintile, for the district of RYK; while only the lowest one for Sialkot. Hence, the lowest quintile is treated as the poor quintile since this is the only common quintile in both the districts, as per definition. The annual reports published on microfinance in Pakistan claim that around 75%-80% of the lower quintiles, in both the districts of Sialkot and RYK, borrowed microloans. Hence, making it quite convenient and practical to isolate and investigate the intended effects of microfinance. Moreover, the Multiple Indicators Cluster Surveys (MICS) provide a deep insight into other variables influencing the income and consumption pattern of the households. These may include household members working abroad, which apparently may not be financed through microfinance; however, a negligible number of the selected quintiles have their members, legally, abroad. Nonetheless, the income of such members may influence an investigation on a micro or household level but has negligible effects on an aggregate level. To conclude, by considering the said quintile(s), primarily the lowermost quintile, any change in Gini-coefficient, income, consumption

and poverty incidences overtime are subsequently allocated to microfinance interventions. Consequently, our regional income model equation (i) becomes as:

$$Y_{Lqi} = C_{lq} + I_m + G_l \ldots\ldots\ldots\ldots\ldots\ldots \text{(ia)}$$

$Y_{Lqi,}$ is the average income of the lower quintiles for the *ith* region, C_{lqi} is the consumption pattern of the lowest quintiles, I_m explains microfinance loans borrowed by the lowest quintiles and G is the government, including both local and central governments, for the *ith* region.

Subsequently, the acceleration coefficient – that is, net Investment is determined by changes in aggregate demand/consumption $I=x\,\Delta C$– is then incorporated in our model. The detailed explanation of the acceleration coefficient has already been given in our chapter on "Investment Theories". The consumption function is mathematically represented as follows:

$$C_{lq} = c_0 + c_1\, HI_{lq} \quad (c_0 \geq 0,\ c_1 < 1) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(ii)}$$

HI_{lq} is disposable income or household income of the lower quintiles (in our particular case) without lag.

$$HI_{lq} = d_0 + d_1 Y_{lq} \quad (d_0 > 0,\ d_1 < 1) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(iii)}$$

Assuming all other investments as constant, our accelerator investment function for microfinance I_m is:

$$I_m = w + x\,(C_{lqt} - C_{lqt-1}) \quad (w \geq 0,\ x > 0) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(iv)}$$

In equation (iv) C_{lqt} is the aggregate consumption in the current time period while C_{lqt-1} is the aggregate consumption in the previous period of time. It implies that more investment (I_m) will be forthcoming, in order to supply any sufficient amount of consumer goods which has changed (C_{lqt-1}) since the last period. w represents an exogenous variable or other investments.

Now substituting equations (iii) into (ii), we get

$$C_{lq}t = c_0 + c_1 d_0 + c_1 d_1 Y_{lqt} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(v)}$$

And (v) into (iv) we get

$$Im_t = w + x\ (c_0 + c_1 d_0 + c_1 d_1 Y_{lqt} - c_0 - c_1 d_0 - c_1 d_1 Y_{lqt-1})$$

$$= w + x\, c_1 d_1 Y_{lqt} - x\, c_1 d_1 Y_{lqt-1} \ldots\ldots\ldots\ldots\ldots\ldots\ldots \textit{(vi)}$$

And finally (vi) into the aggregate income model (ia)

$$\boldsymbol{Y_{lqt} = c_0 + c_1 d_0 + c_1 d_1 Y_{lqt} + w + x\, c_1 d_1 Y_{lqt} - x\, c_1 d_1 Y_{lqt-1} + G_0}$$

The model is set to be tested, empirically, for the selected subnational regions of Pakistan; and hence the following predictions and hypotheses are inferred from the theories incorporated in the model, provided the initial conditions of RYK and Sialkot:

- **Theory**

Ceteris paribus; the model (based on accelerator theory) states that a change in aggregate consumption will bring changes in aggregate microfinance investment; which further increase household incomes (average income). Therefore, given the "initial conditions" of the two selected districts, where microfinance was initially invested in 2001-02, we infer the following predictions. Subsequently, we formulate two working hypotheses for each prediction. The working hypothesis is a set of two hypotheses, i.e. an *alternate hypothesis* (H1) and a *null hypothesis* (H0). An alternate hypothesis has the character of universal existential statements, whereas, the Null hypothesis has the character of a negative universal existential statement.

Accordingly, we formulate basic statements statistically, which confront the null hypothesis (H0). As per the rules of statistics, we reject or confirm the null hypotheses against the corresponding alternative hypotheses (H1). If the null hypothesis (H0) is rejected then the alternate hypothesis is confirmed and the confirmation of the alternate hypothesis (H1) leads the confirmation of the prediction. Accordingly, since the predictions are inferred from the theory, given the singular initial conditions, we will have no reason not to classify the theory provisionally as true. In contrary, if the null hypothesis (H0) is

confirmed, then the alternate hypothesis (H1) is rejected/falsified, the falsity of the alternate hypothesis (H1) leads to the falsity of the prediction, and accordingly, we will have no reason not to classify the theory as false.

Predictions

P1: In the district of Sialkot, an increase in aggregate consumption- of the lowest quintiles- brings more microfinance investment for the period 2001-2016.

P2: In the district of Rahimyar-Khan, an increase in aggregate consumption - of the lowest quintiles - brings more microfinance investment for the period 2001-2016.

P3. In the district of Sialkot, an increase in aggregate microfinance investment increases average household income- of the lowest quintiles, for the years 2001–2016.

P4: In the district of Rahimyar-Khan, an increase in aggregate microfinance investment increases average household income – of the lowest quintiles, for the years 2001-20016.

P5: In the district of Sialkot microfinance helps, the lowest quintiles, to accumulate more capital goods, for the period 2001-2016.

P6: In the district of RYK, microfinance helps, the lowest quintiles, to accumulate more capital goods, for the period 2001-2016.

P7: In the district of Sialkot, income differences decrease among the five quintiles due to microfinance investment.

P8: In the district of Rahimyar-Khan, income differences decrease among the five quintiles due to microfinance investment.

Working Hypothesis

H1: An increase in aggregate consumption will bring more microfinance investment.

H0: An increase in aggregate consumption will not bring more microfinance investment.

H2: An increase in aggregate microfinance investment increases average household incomes.

H0: An increase in aggregate microfinance investment has no effect on average household incomes.

H3: Microfinance investment has a positive effect on capital accumulation.

H0: Microfinance investment has no effect on capital accumulation.

H4: Microfinance investment has a positive effect on income distribution.

H0: Microfinance investment has no effect on income distribution.

6.7 Proxy Variables:

- **Agricultural Production (output):**

The agricultural sector of Pakistan, in general, and of Punjab particularly have played a vital role in the national income of Pakistan. Back in the 1980s and 90s, it was the major contributor to the gross domestic product of Pakistan; it contributed more than 35% in the 80s and around 30% in the 90s. However, the share of the agricultural sector has fallen, with the time, to around 14% in Punjab´s gross provincial product. According to the Punjab Development Statistics (2016) and Punjab Economic Report (2016), this downturn in agricultural production is mainly due to the extreme power and water shortages in the last two decades. Nevertheless, in most of the agricultural-based districts of Punjab, mainly the southern districts, different agriculture co-operatives are providing alternative techniques to overcome the shortfall of the sector.

Nonetheless, here we select agricultural production or output (Y) and certain other agriculture-related indicators which, in one way or another, are financed by microfinance loans. A detailed description of these indicators and performance of microfinance has been given in our analytical chapter. Different microfinance and Pakistan specific studies elaborate on the effects of agricultural equipment financed

by microloans[44]; such as Shirazi, (2012), investigates the Impact of Microfinance in Pakistan and Bangladesh by using difference and difference technique. He has pointed out a number of the equipment for household uses and for agriculture-specific uses. His technique, of comparing the two countries, is quite striking to our study and that´s why this study follows Shirazi´s (2012) idea at some points, specifically in selecting micro-financed equipment. The ground-breaking work by de Aghion & Morduch (2006), also provides a good insight into selecting that specific capital equipment; however, certain Pakistani microfinance institutes have available information regarding those equipment financed by microloans. In the following sections, we provide information regarding those equipment, inputs, and crops which are financed directly and or indirectly by microfinance loans.

- **Agricultural/Farm Machines:**

In Pakistan conventional ways of agriculture were more common until the last decade, in fact in many rural and backward areas, those methods are still in use. These conventional ways include the use of bulls for, plowing i.e. farm preparation, hoeing, weeding, etc., labor use for fertilizers and seeds dispersal, labor-intensive irrigation and harvesting, etc. However, the arrival of agricultural mechanization and modern farm technologies has substituted most of these conventional and labor-intensive techniques. Therefore, it is pertinent to use the accumulation of such farm machines, particularly, by the selected quintiles in the district of RYK, as indicators for analyzing the allocational effects of microfinance. These machines or capital equipment that is used, include; the wheat harvester, wheat Thresher, Irrigation technology, and power tiller. Mottaleb *et. Al*, apply the said indicators in their effort regarding analyzing a link between small-scale agricultural equipment and crop productivity (Mottaleb, 2016).

6.8 Concluding Remarks

This chapter aimed at providing the singular initial conditions for our theory. The chapter elaborated a general view of how regions within the national boundaries can be identified as small open or closed economies. We discussed several approaches such as the concepts of homogeneous region and nodal region that analyze subnational regions as small economies. However, due to the impression that a

[44] It should be noted that many studies in Pakistan consider loans from Agricultural Development Bank (ADB) and Benazir Income Support Program (BISP) as microfinance loans. However, in our study we emphasis more on microfinance under the umbrella of Pakistan Microfinance Network (PMN); unless specified.

planning region considers the preexisting boundaries of the administrative and political regions within a national economy we prefer to use this concept for our analysis. The idea of planning region seems more relevant because this concept was generated solely for research as policy purposes. Therefore, we decide to implement the concept of planning region as selected two different districts within the national boundaries of Pakistan. The two subnational regions that we select are Sialkot and Rahimyar Khan and are predominantly manufacturing and agricultural districts, respectively. This chapter specifies a model incorporating the accelerator theory and provided the initial conditions. Based on certain indicators that are indigenous in the model we infer serval predictions for the specific singular initial conditions. Moreover, against each prediction we formulate basic statements based on the statistics issued by various statistical bureaus of Pakistan. The basic statement is formulated for the reason to confront our falsifying conjectural hypotheses. The chapter concludes by discussing some proxy variables that is used to substitute regional income. Regional income statistics are lacking in Pakistan due to numerous reasons.

7. Chapter 7

Specific Analysis

7.1 Introduction:

This chapter aims at applying the previously discussed accelerator theory by inferring specific predictions regarding the initial conditions of Sialkot and RYK. The main variables included in the model are microfinance, aggregate incomes, consumption, poverty, and employment, measured in percentage change. Additionally, we estimate the Gini coefficient through the Lorenz curve and regress with annual changes in microfinance investment in both the selected districts. For this purpose, we consider time series data starting from 1991 until 2017. The dataset is further divided into two series that are 1991-2001, without-microfinance period, and 2002-2017 with-microfinance period.

Initially, we estimate the correlation coefficient among the selected variables in order to predict the strength of the relationship between them. Afterward, we run several diagnostic tests for checking the assumptions of autocorrelation, heteroscedasticity, and stationarity prior to fitting the regression models. Accordingly, the remedial measures are taken in case of violation of any assumption. The well-known Durbin Watson (DW), Breusch-Pagan (BP), and Dicky-Fuller (DF) tests are used for testing the assumptions.

7.2 Correlation:

A correlation is a linear relationship between two random variables in a data set. A numerical measure of this relationship is called a correlation coefficient, which ranges between -1 and +1. The correlation coefficient does not guarantee a causal relationship. Table 7-1 below demonstrates the correlation amongst different variables for both the selected regions. The table elaborates that the correlation of MF with other variables is relatively stronger in Sialkot than its counterpart region i.e. RYK.

For instance, the numerical value of 0.724 between MF and percentage changes in household incomes in the manufacturing district (Sialkot) shows a stronger positive relationship as compared to 0.204 in the agricultural region (RYK). This value represents that microfinance in district Sialkot contributes more to average household incomes of the lower quintiles than RYK.

Similarly, the average HH consumption pattern from the table illustrates a positive relationship with microfinance for both the districts. However, yet again, district Sialkot overtakes district RYK, as with a rise in average HH income, people spend more than they did before. This correlation between average HH income and consumption of Sialkot, accelerated by MF, stands at .584 as compared to 0.240. To conclude, the correlation matrix reveals a strong correlation among the selected variables for district Sialkot than its counterpart agriculture dominated district of RYK. The logical reasons behind the relatively more productivity of MF investment, in Sialkot, is explained under each hypothesis test.

Table 7-1: Correlation amongst different variables

District Sialkot	Gini	%change income	%change consumption	% change in poverty	Employment	% change MF
Gini	1					
%change income	-0.431	1				
%change consumption	-0.177	0.584	1			
% change poverty	0.639	-0.96	-0.418	1		
Employment	-0.58	0.634	0.544	-0.345	1	
% change MF	-0.685	0.724	0.61	-0.751	0.654	1
District RYK						
Gini	1					
%change income	-0.031	1				
%change consumption	-0.084	0.24	1			
% change poverty	0.307	-0.36	-0.118	1		
Employment	-0.093	0.248	0.447	-0.517	1	
% change MF	-0.158	0.204	0.12	-0.051	0.054	1

Table 7-2 below, gives an overview of the percentage changes over time in the main variables and the Gini-coefficient calculated through the Lorenz curve. All the indicators in Table 7-2 are estimated using MICS and HIES statistics for the lowest quintiles, however, Gini has been calculated using the data from all the five quintiles for the selected regions. The table helps readers to compare both the selected regions in terms of the selected indicators/variables.

Table 7-2: Changes over time in selected Indicators of the Lowest Quintile

	Gini-Coefficient	%Change in HH Income	% change in HH consumption	Change in Poverty Incidences	% Change in Microfinance
District Sialkot					
Year	**0.44**	**26.15**	**30.22**	**13.5**	**35**
2014-15	**0.449**	**24.88**	**28.86**	**22.23**	**33**
2012-13	**0.453**	**23.54**	**27.34**	**28.82**	**31**
2010-11	**0.46**	**23.9**	**24.11**	**33.62**	**30**
2008-09	**0.454**	**21.65**	**26.04**	**38.19**	**20**
2006-07	**0.45**	**19.46**	**25.43**	**40.32**	**25**
2004-05	**0.45**	**17.78**	**27.39**	**47.55**	**27**
2002-03	**0.458**	**15.21**	**24**	**55.12**	**36**
2000-01	**0.48**	**11.43**	**21.12**	**63.88**	**100**
1998-99	**0.57**	**4.22**	**17.65**	**66.32**	**0**
1996-97	**0.57**	**7.18**	**14.1**	**68.78**	**0**
1994-95	**0.69**	**9.22**	**19.54**	**70.34**	**0**
1992-93	**0.71**	**9.93**	**18.15**	**71.44**	**0**
1990-91	**0.72**	**10.34**	**10**	**71.62**	**0**
District RYK					
2016-17	**0.53**	**21.4**	**19.49**	**42.54**	**40**
2014-15	**0.62**	**19.58**	**18.61**	**44.15**	**38**
2012-13	**0.593**	**20.45**	**18.12**	**46**	**17**
2010-11	**0.61**	**17.79**	**14.41**	**50.21**	**36**
2008-09	**0.62**	**17.66**	**16.1**	**53**	**11**
2006-07	**0.62**	**18.26**	**15.03**	**55.17**	**52**
2004-05	**0.6**	**19.78**	**17.19**	**55.76**	**11**
2002-03	**0.61**	**17.21**	**15.44**	**58**	**18**
2000-01	**0.61**	**15.14**	**14.12**	**61**	**100**
1998-99	**0.61**	**14.65**	**14.58**	**65.12**	**0**
1996-97	**0.7**	**10.18**	**12.01**	**69.8**	**0**
1994-95	**0.69**	**12.32**	**13.43**	**69.11**	**0**
1992-93	**0.71**	**11.53**	**10.15**	**71.45**	**0**
1990-91	**0.72**	**12.54**	**11.3**	**72.03**	**0**

Author's own estimations based on data from HIES, MICS, and PMN (2018)

7.3 Tests for assumptions of OLS Regressions:

In this section, we formulate falsifying hypotheses for our empirical testing and accordingly confront them with the predictions. We have inferred the predictions from the theories discussed in the chapter "Towards a Theory of investment." For this purpose, we check our data for several statistical issues and accordingly remove the problems and tabulate them ahead of each hypothesis test. The null hypothesis (H0) has the character of a negative universal existential statement, which negates the

alternate hypothesis (H1). Accordingly, we formulate basic-statements using OLS regression techniques to test the null hypotheses. The first row of the table in each hypothesis refers to the fitting of the model on regional data whereas the second row refers to 'first difference' if the problem of unit root exists.

7.4 Test for Assumptions:

Table 7-3 given below exhibits the results of DW, BP, and DF for testing the assumptions of autocorrelation, heteroscedasticity, and unit root, respectively. The table shows that these assumptions do not hold in the case of H1, H2, H3, and H5 and correspondingly we take the first difference i.e. yt-yt-1 to overcome the problem. For the hypothesis, H4 and H6, the series was stationary, homoscedastic and had no auto-correlation, so it did not require any further diagnostics. Moreover, for the hypotheses H7 and H8, regarding the "income distribution" for both the selected districts, we have directly calculated the Gini coefficients through Lorenz curves and do not need any regression or correlation tests. The values of the Gini and the curves drawn are sufficient to compare with the microfinance data- since its application- in order to sketch our required results. Each hypothesis tests and their corresponding statistical coefficients are discussed follows.

Table 7-3: Diagnostic Tests

Model	R Square	Adjusted R Square	Durbin-Watson	Breusch–Pagan	Dicky Fuller
H1 (Sialkot)	.298	.298	.734	8.34 (.002)	-3.58(0.032)
H1 (yt-yt-1)	.89	.89	2.14	1.42 (0.623)	-0.14 (.734)
H2 (RYK)	.419	.419	.104 (.005)	10.075 (.000)	564 (0.002)
H2 (yt-yt-1)	.443	.374	2.274 (.943)	0.9245 (0.336)	1.488 (.990)
H3 (Sialkot)	.49	.47	0.579 (.000)	1.009 (0.315)	12.745 (.99)
H3 (yt-yt-1)	.915	.905	2.077 (.879)	1.0094 (0.315)	12.745 (.99)
H4 (RYK)	.857	.839	2.445 (0.64)	1.5751(0.209)	-0.216 (.897)
H5 (Sialkot)	.784	.707	0.312 (0.05)	9.789 (0.032)	-4.123 (0.02)
H5 (yt-yt-1)	.854	.799	2.089(0.735)	0.923 (0.51)	0.490(0.745)
H6 (RYK)	.889	.811	1.950(0.345)	1.652 (0.564)	1.213(0.476)

7.5 Theory: Accelerator Theory

- **Initial Conditions:**

Aggregate consumption increased in district Sialkot Pakistan in 2001.

- **Prediction 1:**

In the district of Sialkot, an increase in aggregate consumption- of the lowest quintiles- brings more microfinance investment for the period 2001-2017.

- **Working Hypothesis**

H1: *An increase in aggregate consumption will bring more microfinance investment.*

H0*: An increase in aggregate consumption has no effect on microfinance investment.*

To test the null hypothesis we fit the following regression model for Sialkot.

$$Y_{St} = \beta_0 + \beta_1 x_{St} + \epsilon$$

Where *Y*, represents household consumption, and *x* is MF investment for the district *(S)*, Sialkot, and time (*t)* 2001-2017, β_0 and β_1 are the coefficients and ϵ is the error term.

Table 7-4 below demonstrates the estimated coefficients of this regression model. The results indicate that an increase of 100,000 PKR in household consumption results in a 273,042 PKR increase in MF investment. Statistically, the results are significant, hence refuting the null hypothesis (H0). This falsity of the null hypothesis (H1) leads to the confirmation of the alternate hypothesis (H1) which confirms our prediction (P1) inferred from the accelerator theory, for the initial conditions of Sialkot. Subsequently, the confirmation of the prediction (P1) goes to the theory, and we have no reason not to classify the accelerator theory as true for Sialkot.

Table 7-4: Regression Results for H0 (Sialkot)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-9.301E8	2.195E8		-4.237	.003
	Sialkot First Quintile Consumption	273024.442	32445.920	.948	8.415	.000

Dependent variable: Microfinance (Sialkot)

- **Initial Conditions:**

Aggregate consumption increased in district RYK Pakistan in 2001

- **Prediction 2:**

In the district of Rahimyar-Khan, an increase in aggregate consumption - of the lowest quintiles - brings more microfinance investment for the period 2001-2016.

- **Working Hypotheses:**

H2*: An increase in aggregate consumption brings more microfinance investment.*

H0*: An increase in aggregate consumption has no effect on microfinance investment.*

To test the null hypothesis for RYK we fit the following regression model:

$$Y_{Rt} = \beta_0 + \beta_1 x_{Rt} + \epsilon$$

Where *Y*, represents household consumption, *x* represents MF investment for time (*t)* 2001-2017, and location *(S)* Sialkot whereas ϵ is the error term.

In contrast, the results of the coefficients for our hypothesis regarding the dependency of microfinance on average household consumption expenditures in Rahimyar-Khan are not as significant as it stands for district Sialkot. The amount of 161,352 PKR of microfinance on average is invested each year in response to the average household consumption of 100,000 PKR; the significance value does not correspond as strongly as it does for Sialkot. One simple reason for the overall bigger outlay of MF that RYK receives each year is its bigger population ratio. The relatively high poverty ratio of RYK (42%) is another reason, as the authorities always prefer the poorest regions for their welfare funds. Table 7-5 below, confirms the statistical figures and the significance values as described above. Overall, the prediction -of more household consumption expenditures of the lowest quintile bring more microfinance investment in RYK- is confirmed, but relatively weaker. The null hypothesis is rejected. Accordingly, the confirmation of the prediction goes to the theory and we have no reason not to classify the theory as true.

Table 7-5: Regression Results for H0 (RYK)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-8.481E9	4.082E9		-2.077	.071
	RYK HH Consumption	161352.957	222398.845	.666	2.524	.036

Dependent Variable: Microfinance Investment (RYK)

- **Initial Conditions:** In Sialkot, the government Invested microfinance in 2001

- **Prediction 3:**

In the district of Sialkot, an increase in aggregate microfinance investment increases average household income- of the lowest quintiles, for the years 2001–2016.

- **Working Hypotheses:**

H3. An increase in aggregate microfinance investment has a positive effect on average household income.

H0: An increase in microfinance investment has no effect on average household income.

Likewise, we test the hypothesis by fitting the regression model as:

$$Y_{St} = \beta_0 + \beta_1 x_{St} + \epsilon$$

Where *Y*, represents aggregate MF investment, *x* represents average HH income for time (*t)* 2001-2017, and location *(S)* Sialkot whereas ϵ is the error term.

The average household income is regressed with the microfinance invested in the district of Sialkot. The results in Table.7-6 display that with a yearly, increase of 100,000 PKR in MF; the average household income is expected to increase by 443,310 PKR. This is evident from the significance value shown in Table 7-6 below. Yet again, statistically, the null hypothesis (H0) is rejected and the alternate hypothesis is confirmed. The confirmation of H1 leads to the confirmation of the prediction – i.e. more microfinance investment increases average household income for the initial conditions of Sialkot.

Subsequently, the accelerator theory is, yet again, confirmed for Sialkot, as we inferred the prediction from the aforementioned theory.

Table 7-6: Regression Results for H0 (Sialkot)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	7246.408	861.899		8.407	.000
	Microfinance Investment Sialkot	444310.56	.000	.957	9.308	.000

Dependent Variable: Sialkot First Quintile HH Income

- **Initial Conditions: In RYK the government Invested microfinance in 2001**
- **Prediction 4:**

  H4: In the district of Rahimyar-Khan, an increase in aggregate microfinance investment has increases average household income – of the lowest quintiles, for the years 2001-20016.

- **Working Hypotheses:**

  H4: An increase in aggregate microfinance investment increases the average household income.

  H0: An increase in aggregate microfinance has no effect on average household income.

To test the null hypothesis the regression model is:

$$Y_{Rt} = \beta_0 + \beta_1 x_{Rt} + \epsilon$$

Where Y, represents aggregate MF investment, x represents average HH income for time (t) 2001-2017, and location (R) RYK whereas ϵ is the error term.

The results shown in Table 7-7, for RYK are seemingly in contrast to that of Sialkot. A 100,000 PKR rise in microfinance investment brings 217,946 PKR of average household income. That is just merely marginal to that of average household consumption of the RYK district, leading to a lesser amount of savings rate on the aggregate. Nonetheless, the statistical significance value of 0.043 shows a weak significance of microfinance and average household income. The regression results still falsify the null hypothesis and accordingly the alternate hypothesis is accepted.

Table 7-7: Regression Results for H0 (RYK)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6393.650	779.648		8.201	.000
	Microfinance Investment RYK	317946.60	.000	.926	6.930	.043

Dependent Variable: RYK First Quintile HH Income

- **Prediction 5:**

  In districts Sialkot and RYK, microfinance has a significant role in capital accumulation for the lowest quintiles, for the period 2001-2016.

- **Working Hypotheses**:

  H5*: Microfinance has a positive effect on the household's capital accumulation.*

  H0*: Microfinance has no effect on the household's capital accumulation.*

Model for Sialkot……$Y_{St} = \beta_0 + \beta_1 x_{St} + \epsilon$

Capital accumulation is one of the most critical factors related to investments, particularly with microfinance investment, which signifies the poor who are quite prone to accumulating capital. As an objective of this study, we regress the micro-savings, as a dependent variable, and MF as an independent variable. Micro-savings concerning the MF borrowers is used as indicator representing capital for the lowest quintile of both the selected districts. Accordingly, the results are displayed in Tables 7-8 and 7-9 for districts Sialkot and RYK, respectively.

Table 7-8 below shows the results of the linear regression between micro-savings and microfinance for district Sialkot. The coefficients of the regression show a significant effect of microfinance loans overs micro-savings. Statistically, a unit increase in microfinance brings 0.211 units increase in micro-savings; hence, the model is statistically significant. Accordingly, we reject the falsifying hypothesis of hand, and we confirm the prediction. Since the prediction is inferred from the theory i.e., Goodwin´s theory, and is confirmed, therefore, the confirmation of the prediction goes to the theory and we have no reason not to classify the theory, provisionally, as true, for the initial conditions of Sialkot.

Table 7-8: Regression Results H0 Sialkot

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-4.886E6	2.702E7		-.181	.859
	MF Sialkot	.211	.027	.899	7.698	.000

Dependent Variable Micro-Savings Sialkot

Model for RYK……$Y_{St} = \beta_0 + \beta_1 x_{St} + \epsilon$

Likewise, the regression results for district RYK are statically significant, however, not as much as it is for district Sialkot. The coefficients of the regression, as displayed in Table 7-9, show that a one-unit change in microfinance overtime brings 0.187 units to change the micro-savings of the microfinance borrowers. Accordingly, the numerical significance and the coefficients confirm our prediction and reject the falsifying hypothesis of hand. This confirmation of the prediction responds to the theory from which it is inferred, and accordingly, we have no reason not to classify the theory provisionally as true, for the initial conditions of district RYK.

Table 7-9: Regression Results for H0 (RYK)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.549E7	2.257E7		2.016	.063
	MF RYK	.187	.009	.984	20.974	.000

Dependent Variable: Micro-Savings RYK

- **Prediction 6:**

In the districts of Sialkot and RYK, income differences decrease among the five quintiles due to microfinance investment.

- ***Working Hypotheses**:*

H7: Microfinance investment has a positive effect on income distribution among five quintiles.

H0: Microfinance investment has no effect on income distribution among five quintiles.

7.5 Results for Hypothesis H0 (Sialkot and RYK):

The numerical results i.e., Gini coefficients, for the above hypotheses are estimated via the Lorenz curves as shown in Table. 7-2. of this chapter. The results tabulated in the arrangement where a value inclined towards '1' represents an unequal distribution of income while a value sliding down towards '0' represents the otherwise. Moreover, the estimation and plotting procedure of the Lorenz Curves is described in the proceeding section.

7.6 Lorenz Curve and Gini Coefficient:

In 1905, Max Lorenz Developed the Lorenz curve, which is the graphical representation of the distribution of incomes and wealth owned by the people in a society. Later on, in the 1912 Corrado Gini, an Italian Sociologist calculated the Gini coefficient in order to calculate the percentage size of a population living in between the Lorenz Curve and the Line of equality. In this study, we use the Gini-coefficient and Lorenz curve to measure the inequality and income distribution of the two selected regions. There exist several other measurement tools and indices. However, we prefer Gini and Lorenz curve because of their extensive use by several international organizations such as the United Nations (UN), World Bank, and the Central Intelligence Agency (CIA) for measuring income distributions and inequality.

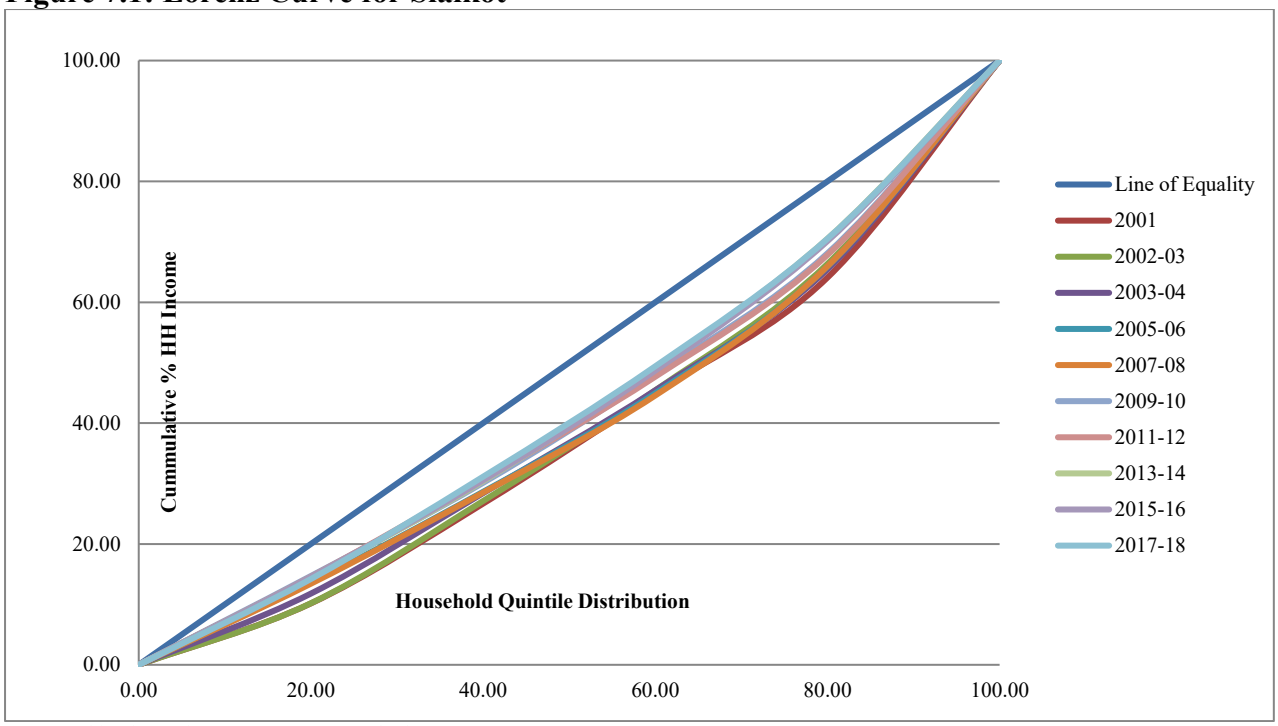
The Pakistan Bureau of Statistics in their survey (HIES) estimates and divides average household income into five income brackets (quintiles). Using those quintiles, we calculate and plot the Lorenz Curves for both the selected regions. In order to have the numerical values of the income distribution and in order to compare those values for the two selected regions, we calculate the Gini-coefficient, as shown in table 7-2.

7.6.1 Gini and Lorenz Curve for Sialkot:

We have seen a continuous decline in the values of Gini-coefficients for district Sialkot, since 2002 *(See Table 7-2- at the start of this chapter).* The decline starts in the year 2002 a year after the formal implementation of microfinance. However, the data suggests otherwise when we consider the period before 2001. District Sialkot, as stated earlier, happens to be more prosperous in terms of the income distribution. This is also evident from Figure 7.1 as shown below, the figure displays Lorenz curves estimated for district Sialkot. We plot the Lorenz curves with-respect to microfinance from the year 2001 to 2017. Figure 7.1 reveals income distribution in district Sialkot for the specified period; the "red line" signifies income distribution in the year 2001, while the "blue line" represents the income

distribution in the year 2017. In district Sialkot, the Lorenz curves show an apparent move towards the "line of equality" since 2001, hence, describing a relatively more income distribution as compared to previous years. Accordingly, we reject H0 and confirm the alternate hypothesis, the confirmation of the alternate hypothesis goes to the prediction, and we have no reason not to classify the theory as true for Sialkot.

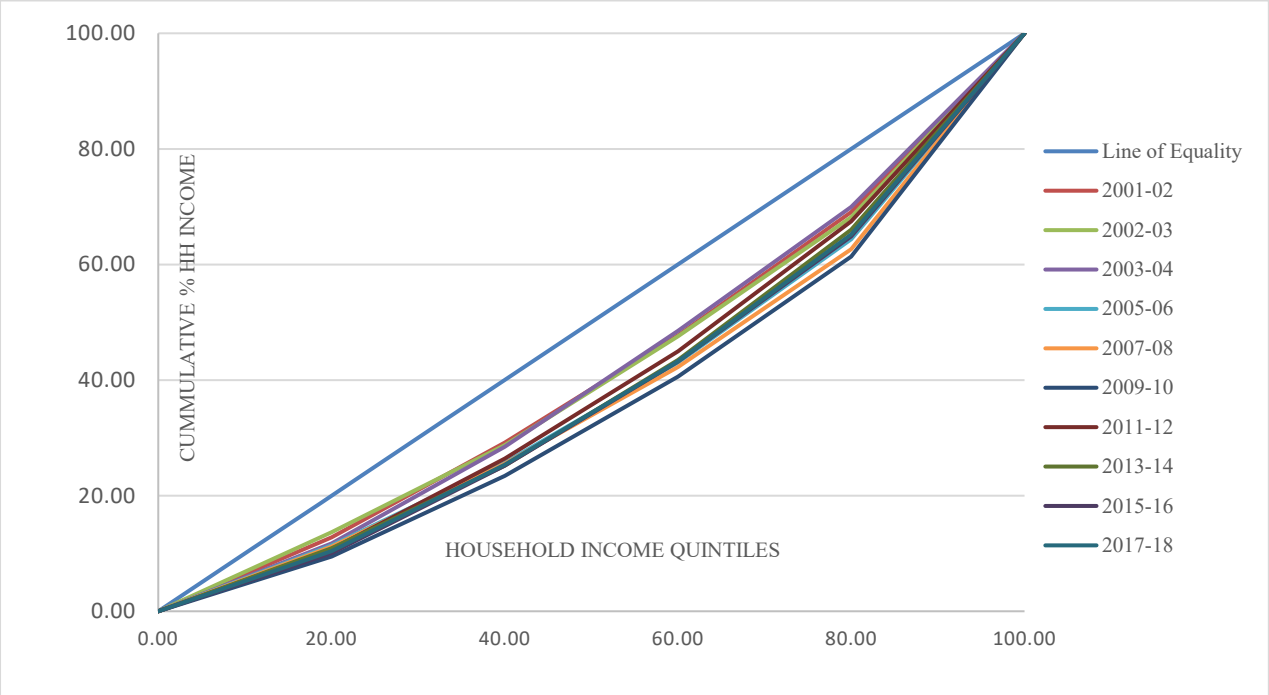
Figure 7.1: Lorenz Curve for Sialkot



Estimated by the Author using HIES Quintile data

In contrast, the income distribution in district RYK seems to be unequal. The "orange line" representing the year 2001-2002 happens to be closer to the line of equality than the "blue line," which represents the year 2017, in Figure 7.2. Contrasting to the case of income distribution in Sialkot, we confirm the null hypothesis H0 and, the alternate hypothesis is falsified, and the falsity of the alternate hypothesis goes to the falsity of prediction. Accordingly, the falsity of the prediction goes to the theory and we have no reason not to classify the theory as false for RYK.

Figure 7.2: Lorenz Curve for RYK



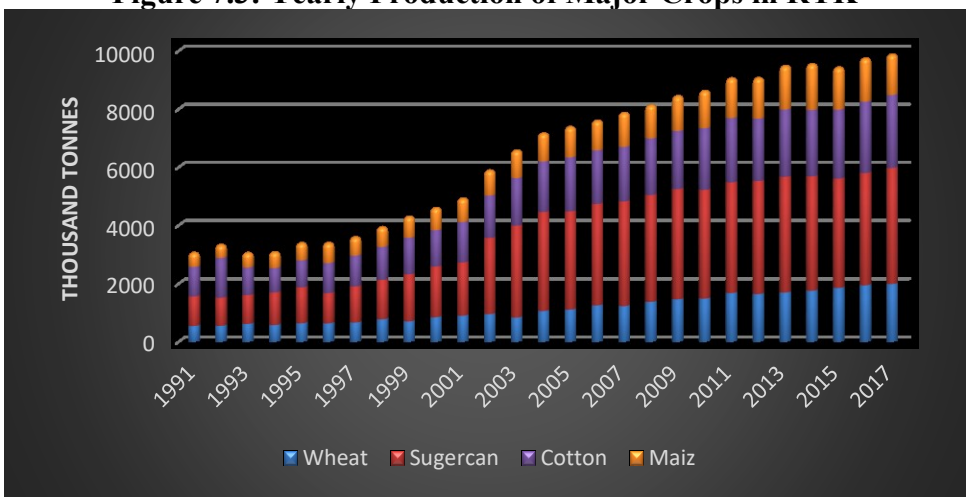
Estimated by the Author using HIES Quintile

RYK has remained one of the most developed districts of Pakistan in the late 1960s and early 1970s; however, the district has been in a continuous decline in terms of socio-economic development. One of the fundamental problems is that the region is predominantly dependent upon the agriculture sector, where most of the farmers are tenants having sole dependency over the property owners. Therefore, despite a visible increase in the production of the main crops overtime, the farmers get a mere subsistence level of the total yield. It is because the landowners are always entitled to settle the amount of share the farmers usually receive. The high-interest rates incurred by most of the private sector microfinance institutions also play a vital role in expanding the gap between the lower quintiles and the uppermost quintile. The farmers, after every harvest, borrow more credit in the hope that they will increase their production capacity and accordingly will pay back the loan; however, most of the time, they fail to do so. Consequently, the property owners intervene in order to get their respective tenants out of debt from MFIs, while pushing the tenants more obligated towards themselves. This vicious circle remains active in most of the agrarian regions pushing the poor into more poverty.

Another issue is that the majority of the crops are seasonal, and a higher supply during the harvesting season, diminishes the intended profits of the MF borrowers. Likewise, these crops take longer, relative to the small-scale manufacturing goods, in order to pay-off the borrowers. RYK is one of the earliest and leading recipients of microfinance investment, yet the district lags behind Sialkot and other

districts of northern Punjab in social and economic development, due to the reasons as mentioned earlier. Figure 7.3 below depicts an overview of the major crops produced in RYK.

Figure 7.3: Yearly Production of Major Crops in RYK



The variables, such as aggregate consumption, income, and microfinance, are discussed following the accelerator theory. We know that both the selected regions were not equivalent in terms of the selected variables; in fact, it is hardly possible that hardly two different entities could have the same characteristics, naturally. Differences are always there, whether we talk about demography, politics, or the economy. Therefore, keeping in mind, the differences already existed in each of our selected districts; we apply another statistical technique known as 'difference in difference' analysis. The technique allows us that despite the already existing differences between any two subjects, what difference occurs after the implementation of a particular program. Based on this technique, we are going to find the arithmetical differences that occur after the implementation of microfinance in district Sialkot and district RYK. It is worth mentioning here that our data for analysis existed in 'Thousand Pakistani Rupees (PKR)'; therefore, the arithmetical differences are accounted for, in 'Thousand Pakistani Rupees (PKR)' for consumption, income, and microfinance. Moreover, the results of this technique let us examine the performances of microfinance investment in a manufacturing region such as Sialkot and an agricultural region such as RYK We already have discussed certain intervening variables, such as political or cultural influences in our previous section; however, other technical reasons will be discussed in the forthcoming section.

7.7 Difference in Difference (DID) Estimations.

The overall assessment of the two districts before and after the implementation of formal MF, programs are analyzed, based on two periods, i.e., the period between 1991-2001 before MF, and 2002-2017, after MF. The main variables that either effect MF or, be effected by MF are consumption and incomes, of the lowest quintiles. However, this effect is possibly different for both the selected districts as explained in the following sections.

The regression estimates, as discussed above, have already reported for a more efficient microfinance program, in district Sialkot, as compared to district RYK. However, in order to estimate the difference occurred in the consumption behavior of the lowest quintiles enhanced by the increased incomes in the presence of microfinance is shown in the DID Table 7-10 and 7-11 below.

Table 7-10: The Effect of Microfinance on Incomes and Consumption of the Lowest Quintile in Sialkot

Source	SS	df	MS Number of obs =	26
			F(2, 23) =	1406.29
Model	2.80E+11	2	1.3978e+11 Prob > F =	0
Residual	2.29E+09	23	99397157.1 R-squared =	0.9919
			Adj R-squared =	0.9912
Total	2.82E+11	25	1.1274e+10 Root MSE =	9969.8
con	Coef.	Std. Err.	t P>t [95% Conf.	Interval]
income	0.948235	0.044409	21.35 0.000 .8563686	1.040101
mf	22773.6	8863.698	-2.57 0.017 -41109.59	-4437.68
_cons	8582.265	19293.95	0.44 0.661 -31330.32	48494.85

The dependent variable is the monthly average household consumption in Pakistani Rupees

Table 7-11: The Effect of Microfinance on Incomes and Consumption of the Lowest Quintile in RYK

Source	SS	df	MS Number of obs =	26
			F(2, 23) =	814.18
Model	1.31E+11	2	6.5647e+10 Prob > F =	0
Residual	1.85E+09	23	80628599.3 R-squared =	0.9861
			Adj R-squared =	0.9849
Total	1.33E+11	25	5.3259e+09 Root MSE =	8979.3
con	Coef.	Std. Err.	t P>t [95% Conf.	Interval]
income	0.977823	0.049641	19.70 0.000 .8751316	1.080514
mf	11282.78	8491.691	1.32 0.15 8716.374	43849.18
_cons	-24349.7	16484.22	-1.48 0.153 -58449.91	9750.526

The dependent variable is the monthly average household consumption in Pakistani Rupees

Controlling for other variables our results of the DID coefficients tell us a positive and significant effect of microfinance on average household incomes of the lowest quintiles. For both the selected districts, a rise in average household incomes further enhances the average household consumption of the lowest quintile. However, in the model average, HH consumption is taken as a dependent variable on average HH income before and after the implementation of MF. The results show an average rise of 22773 PKR in monthly HH consumption, in Sialkot due to microfinance as compared to an average rise in monthly HH consumption of 11282 PKR in RYK.

7.8 Changes in Absolute Poverty and Employment Ratios:

People living under the lowest quintiles, i.e., under the absolute poverty line, tend to have either temporary employment or working on a mere subsistence level of wages for a relatively long period. The same section of the Sialkot district before the execution of the microfinance program was more prone to the manufacturing of several goods. As explained by various micro-level studies such as (Bagh, *et al.* (2017), Babajide, (2012) (Obokoh, *et al*, (2012)), there exist an active link between microfinance and micro-enterprises. By the start of the 1990s, when a formal microfinance sector was missing, the poor section of the district Sialkot had an informal lending market. Most of the people of the district were contagiously engaged in borrowings in order to keep their respective handcrafting. Although the majority of the people were efficient enough and earning reasonable amounts of profits, however; the informal lenders in the form of huge returns (i.e., interest rates) always received their marginal productivity.

Consequently, poor people, despite having excellent skills, confined to more and more poverty. This situation led Sialkot to have more poverty incidences than ever before in the history of Pakistan. By the early 1990s, the absolute poverty ratio was as high as 72-75%. However, the absolute poverty ratio declined abruptly by the start of 2002-2003, a year after the microfinance was initiated formally by the government of Pakistan. The formal microfinance sector provided an opportunity for poor people to have more capital equipment and accordingly produce more and more of the demanded goods. The government intervention in early 2001 provided formal microfinance loans enabling the lower middle class to purchase more goods and services, hence enhancing the aggregate demand. This intervention in early 2001 acted as an accelerator (x) - as explained theoretically in our previous chapter[45], leading

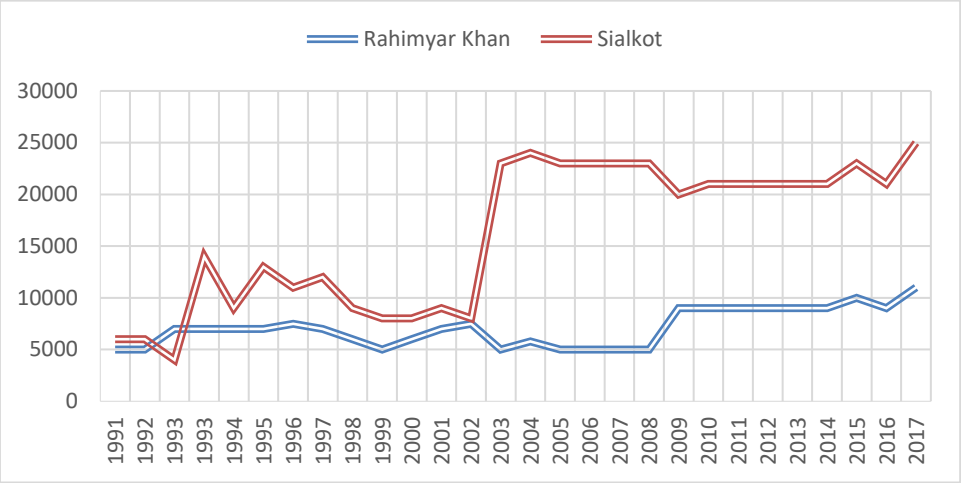
[45] *We explain the acceleration coefficient (x) in our chapter on „Towards a Theory of Investment.“ In this chapter, we finalize the accelerator theory for analysis purposes based on its explanatory power.*

to more investment in the microfinance sector. Accordingly, the more investment enhances the average household incomes of the district, particularly, of the lowest quintiles, which further leads to a rise in average household consumptions, as explained by the Keynesian model. This cycle enables the district to accumulate more capital equipment, in order to meet both the local and international demand for the manufacturing goods. The national and internationally demanded goods include sports goods, surgery instruments, T-shirts, etc. Although, presently, most of these goods are manufactured in relatively large-scale industries, yet the basis was provided by the most deprived section initially and improved further by the introduction of microfinance.

Since the formal microfinance came into existence in district Sialkot, it witnesses a rise in employment in small-scale enterprises, self-employment, and employment in general industries. In this way, microfinance has its contribution to producing more skilled-laborers in different industries. Furthermore, because of microfinance, a rise in the real, as well as nominal wages, can be explained. An overall rise in demand for manufacturing goods leads to a rise in demand for more skilled laborers both for daily-base workers as well as for relatively more extended contracts. The figure below shows the trend in average daily employment before and after the execution of formal microfinance in districts Sialkot and RYK. The data shows only the people of the lowest quintile where before 2002-2003 the daily employment shows greater variations for Sialkot, however, the trend has an upsurge nearly 2002 when formal microfinance was implemented. This explains a rise in self-employment: when the workers preferred producing handicrafts, selling the products in self-established stalls daily. The curve, after reaching its peak is almost smooth for the proceeding five years. However, a shortfall in the period between 2007 and 2008 and potentially can have different explanations. The most relevant one could be the assassination of the famous political leader (Benazir Bhutto) in December 2007, followed by the 2008 general elections, and the Global Financial Crisis of 2008. Mughal *et al*. (2015) explain the impact of the Global Financial Crisis on the key macroeconomic indicators of Pakistani. During that time, all the economic activities in Pakistan suffered a significant decline, comprising high inflation, low investment, low employment, and low economic growth rates. Throughout the early years of its implementation and post-2007 crisis, we can see a pro-cyclical behavior of microfinance, as during these periods either major economic indicators were rising or declining followed by the microfinance sector. However, we can notice an anti-cyclical behavior of the microfinance sector in the following year 2008 when a fresh government was formed after the 2008 general elections. During this period, most of the economic indicators, such as investment and economic growth, were at its

worst while the microfinance sector was recovering. This recovery in the microfinance uplifts its related employment, as shown in figure 7.4, below.

Figure 7.4: Average Daily Employment of the Selected Districts



In contrast, for the district RYK the microfinance related variables perform either the opposite or relatively weak as compared to district Sialkot. If we consider the absolute poverty incidences in district RYK since the early 1990s, we can hardly observe a continuous decline until the formal implementation of microfinance in 2001. The due reasons are:

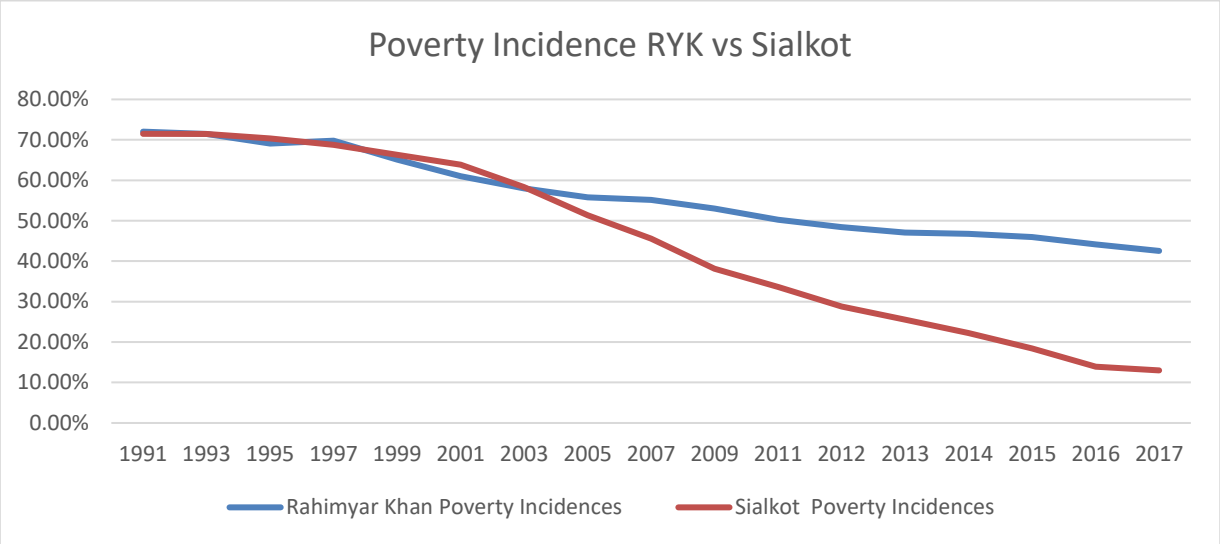
1. Its agrarian character, where the majority of the people living under the absolute poverty line, are farmers under tenancies. Unlike district Sialkot, most of the microfinance investment goes to the agricultural sector, where a minimum period to get an output of the investment is more than a quarter.
2. The district is surrounded by other districts of southern Punjab, having the same characteristics, where at the time of harvest majority of the farmers produce almost the same products. Hence increasing the supply of the same yield and accordingly lowering the expected prices, and profitably, as mentioned earlier.
3. The farmers are bounded to their respective feudal lords through several social contracts, and the landlords are entitled, socially, to decide their share upon the arrival of a fresh harvest. So, the poor farmers i.e., the lowest quintile, face exploitation by abstaining from their due marginal productivity.

4. There are farmers who, according to the Punjab Development Statistics, use modern machines such as plowing machines, wheat threshers, tractors, etc.; however, they are in a small number and having a negligible effect of contributing to the district´s development.
5. Unlike the small manufacturing products, for agricultural products, it is impossible to meet a sudden rise in demand spontaneously, by the farmers. The farmers still follow conventional ways to get their final product and transport it to the market.

The points are intended to give an overview of how the poverty prevails in south Punjab, generally, and in RYK, particularly. Microfinance loans are generally regarded as productive and efficient for small-scale and relatively short-term results. That is probably the reason that it does not provide significantly positive results for agriculture-based products. Nevertheless, the productivity of microfinance in livestock, poultry, and fisheries are analyzed by various studies and seemingly has received much appreciation. Livestock, fisheries, and poultry products are again relatively short-term products as compared to crop production. The improvement in the aforementioned sectors has made it possible to get the desired products with a maximum of 50 to 60 days. However, we do not emphasize very much on the relationship between microfinance, livestock, poultry and fisheries in our present project. This aspect on an aggregate level could produce interesting results in future scientific investigations.

Briefly, the aim of this discussion is to analyze the socio-economic effects caused by the enhanced income and consumption expenditures. The above discussion is in connection to microfinance and its possible effects on poverty reduction and employment creation. We can see a clear decline in poverty trends particularly after 2002 for Sialkot. For the selected period of 1992 to 2001 i.e., before microfinance, we observe a 14% decline in absolute poverty for both the selected districts; however, the ratio declined abruptly for Sialkot by 44%, after 2002, while for district RYK the data nearly follows the same trend before and after 2002. For district RYK, poverty has declined a mere 16.50% after microfinance implemented formally. The recent figure for district Sialkot is 13% of the total population that lives under the absolute poverty line. Whereas the figure stands at 42% for district RYK that is still alarming and needs more attention both on research as well as on policy levels. For further details, compare Figure 7.5, as follows.

Figure 7.5: Poverty Incidences in Selected Districts



Estimated by the Author using statistics from various reports

7.9 Concluding Remarks:

This chapter aimed at testing the accelerator theory by formulating the required basic statements and inferring predictions for the initial conditions of two Pakistani districts. We selected two districts based on their respective specialties and comparative advantages. District Sialkot is a more manufacturing sector where small-scale manufacturing industries were installed after the microfinance initiated formally while district RYK has a long history of its agricultural production. For the purpose of our specific analysis, we formulated a framework in order to isolate the effects of microfinance. For that purpose, we selected the quintile-based data, published by the Pakistan Bureau of Statistics in their HIES surveys, regarding aggregate household consumption, and incomes. After doing the necessary mathematics, we finalized the lowest two quintiles based on their income thresholds. The income threshold of the lowest quintiles for both the districts allowed us to estimate their consumption behavior over time. As an indigenous variable, the aggregate HH consumption- accelerated by an exogenous variable, i.e. the government intervention by initiating formal microfinance industry in 2001- of the two districts provided the basis for more microfinance investment. Subsequently, by confronting the inferred predictions with the respective basic-statements we tested the falsifying hypothesis. Accordingly, all the inferred predictions for district Sialkot were confirmed significantly, while for district RYK some were merely confirmed while some falsified. The confirmation of the predictions led us to classify our theory as true for our respective singular initial conditions. However, for the cases where we accepted the falsifying hypothesis as true, that means that according to 'Modus Tollen' the prediction is false and we directed the falsity of those predictions against the theory.

Furthermore, we analyzed certain economic effects of the variables under investigation. The short-run effects include expenditures on consumer goods and accumulation of capital whereas more capital accumulation brings the log-run effects of income distribution and reduction in absolute poverty. Accordingly, we observe that in district Sialkot people tend to spend more of their incomes triggered by microfinance investment as compared to distract RYK. The more they spend the more they produced aggregate demand for the consumer as well as durable goods. High demand for more durable goods required more capital equipment, hence creating a bigger multiplier effect. This situation further causes a more even distribution of the incomes hence reducing the gap between the income quintiles. This has been evident from the Lorenz curves and the statistics we forward where after the implementation of formal microfinance poverty has declined by 44%. In contrast, district RYK, where the underprivileged people tend to spend more on agricultural goods for increasing marginal productivity and maximizing their respective share in profits, does not produce a bigger multiplier. Their efforts of investing more in the agricultural sector contribute more towards the profitability of the existing rich class. Therefore, according to the Keynesian school, the rich people are more inclined to hoard/save more, as most of their desires have already been fulfilled, and they spend a mere share of their incomes, hence creating a smaller or zero multiplier. This ultimately cancels out the effects of more spending by the lower quintiles, which further widens the gap between the income quintiles of district RYK.

8. Chapter 8

Socio-Economic Consequences

8.1 Introduction

In our previous chapter on "Specific Analysis", we analyzed how microfinance as an aggregate investment can bring about changes in economic variables. We saw that initially, the household expenditures brought about changes in microfinance that in return provided opportunities to the poor to generate employment, increase incomes, spend part of that income on consumer goods, welfare goods, and save a certain portion of it in order to expand the pre-established enterprises. It is a fact that when the income increases the households tend to increase their consumption and save more (not as much as the percent change in overall income) which leads to more investment. However, there are certain variables that might also change with time either positively or negatively, depends also on the opportunities and socio-political environment. These variables are mostly welfare variables and can be explained, qualitatively, with sound theoretical support. Nevertheless, we put our level best to explain these variables in a *'mixed-manner'* i.e. by considering their quantitative aspects and explain in connection to microfinance. These include education, healthcare, and women's empowerment.

Just like the economic variables that have changed abruptly after the implementation of formal microfinance and we deductively found the role of microfinance in this change, we also found that in due time there is a visible change in education and healthcare system. We formulate this change in education and healthcare by considering the number of students enrolled in primary schools and the number of outdoor patients consulted in any hospital. These statistics, like the economic variables, are also in time series representing change over time. At first, we check the data statistically for the required assumptions of homoscedasticity, stationarity, and non-autocorrelation. Afterward, we estimate a correlation matrix among the variables under consideration and microfinance.

8.2 Summary Statistics:

Table 8-1 forwards the summary statistics of the selected indicators for both the selected districts of Sialkot and RYK (RYK). The data is based on the time series starting from 1991 to 2017, including a structural break in the year 2001. The period, when microfinance was not implemented formally i.e. 1991 to 2001, is represented by a dummy variable of zero (0), and for the period when microfinance was implemented formally is represented by 1. Table 8-1 is intended to provide an overview of the socio-economic indicators and their respective statistical measures such as total observations, mean, standard deviation, minimum, and maximum.

Table 8-1: Summary Statistics of the selected indicators for both Districts

Variable	Obs	Mean	Std. Dev.	Min	Max
Indoor PatientsRYK	28	105.3929	79.19659	13	231
Indoor Patients Sialkot	28	84.17857	43.35047	43	179
Outdoor Patients RYK	28	1127393	780442.1	348000	2650000
Outdoor Patients Sialkot	28	1600714	1248387	242000	3436000
Stud Enrolled RYK	28	204178.8	29981.67	144000	260582
Students Enrolled Sialkot	28	209647.3	50510.66	111000	284207
Female Labor.F RYK	28	14491.86	2293.412	10345	18120
Female Labor.F Sialkot	28	24126.14	14599.55	7190	49302
Avg Female Emp RYK	28	7100	1812.099	5000	11000
Avg Female Emp Silakot	28	16071.43	7049.71	4000	25000
Emp cost RYK	28	8.38E+08	3.74E+08	2.18E+08	1.47E+09
Emp Cosr Sialkot	28	1.06E+09	7.69E+08	1.10E+08	2.23E+09
Microfinance	28	0.571429	0.503953	0	1

8.3 Correlation Matrices:

Table 8-2 provides the necessary correlation among the selected variables for both the selected districts. Like, the economic variables discussed in our previous chapter the socio/economic indicators, too, show a stronger correlation for district Sialkot than RYK does. The correlation coefficients of all the selected indicators are higher for district Sialkot than its counterpart district. Moreover, the relationship of the independent variable, i.e. microfinance, with all the selected indicators is stronger for Sialkot than RYK, which predicts the efficiency of microfinance for the former district is higher than the later one. In contrast, the weaker relationship among variables for district RYK is evident

from the coefficients of the female labor force, wage rate, and indoor patients. For the necessary information, compare Table 8-2, as follows:

Table 8-2: Correlation Matrix District Sialkot

Indicators	Indoor Patients	Outdoor Patients	Stud Enrollment	Female Labor.F	Avg Daily Emp	Emp cost	MF
Indoor Patients	1						
Outdoor Patients	0.6987	1					
Stud Enrollment	0.5351	0.9055	1				
Female Labor Force	0.7279	0.9632	0.8881	1			
Avg Daily Employment	0.5557	0.8203	0.8181	0.7605	1		
Employment cost	0.6247	0.948	0.9173	0.973	0.8285	1	
MF	0.5105	0.8849	0.7893	0.8066	0.8742	0.8381	1
RYK (RYK)							
Indoor Patients	1						
Outdoor Patients	0.7093	1					
Stud Enrollment	0.3918	0.2648	1				
Female Labor Force	-0.1985	0.0183	0.6263	1			
Avg Daily Employment	0.2596	0.8016	0.8241	0.2909	1		
Employment Cost	-0.4935	0.8226	0.679	0.4738	0.5652	1	
MF	0.4721	0.7457	0.6137	0.7036	0.6528	0.9032	1

8.4 Multivariate Regression Analysis:

The following are the regression results indicating the relationship of microfinance with each of the socio-economic indicators, separately. Statistically, the relationship of microfinance is significant for all the variables for Sialkot, whereas, for RYK the relationship between microfinance, female labor force and female employment is statistically insignificant. This is in line with the previously estimated correlation coefficients; the reasons for the insignificance of the said indicators are described in our forthcoming sections, where we provide brief descriptions of the indicators, with graphical representations. The first indicators/variables that we test in accordance with microfinance are indoor/outdoor patients. This particular indicator is used to represent the role of microfinance in healthcare. Here one may think of a decline in the number of indoor/outdoor patients as a society/economy improves; however, we consider these indicators in an opposite manner. That is

because we are dealing with two regional economies that were underdeveloped at the start of the 1990s (the year we start our time series). That time most of the patients were treated with primitive techniques despite having a serious health problem. Poverty was at its peak and only a handful of people could afford any doctor or any basic health unit- if there was any. This implies that in order to visit a doctor one must have at least some money to consult an OPD and buy the essential medicine. This is precisely what microfinance did in our case and therefore we use the number of patients visited any OPD. The estimated results illustrate that with the arrival of microfinance there is a significant increase in the number of indoor/outdoor patients in both the selected districts. For Sialkot, the results show that with every 100,000 PKR of microfinance each year brings 43684 number additional indoor patients, whereas 2192104 outdoor patients to any nearby health center. Similarly, for RYK for every 100,000 increase in microfinance each year 74765 indoor patients and 1154813 outdoor patients, on average, visited any nearby healthcare unit. However, we emphasize the number of outdoor patients because of their relevance to the lowest quintiles whereas the indoor patients represent the whole district data.

Additionally, the data regarding students' fresh enrollments represent the role of microfinance in the education sector for the selected two districts. Yet again, the regression analysis shows a significant role of microfinance for Sialkot, whereas for RYK the results are significant but weak. For every 100,000 PKR of microfinance annually 79114 new students get enrolled in primary schools in Sialkot while the number stands at a mere 36510 PKR for RYK, with a population almost double to that of Sialkot.

For the role of microfinance in women's empowerment, we select their participation in the labor force and female literacy ratio. The female labor force data include both, annual total average i.e. female employees (contractual and permanent), and female labor force on a daily basis. For Sialkot the data reveals a significant effect of microfinance in enhancing the female labor force; however, both the indicators are insignificant for RYK. All the results are tabulated in Table 8-3, as follows.

Table 8-3: Results of the Multivariate Regression

Sialkot (Indicators)	Coef.	Std. Err.	t	P>t	[95% Conf.Interval]	
Indoor Patients						
microfinance	43684.91667	14.50587	3.03	0.006	14.09943	73.73391
_cons	59590.08333	10.96541	5.39	0.000	36.54362	81.62305
Outdoor Patient						
microfinance	2192104	226270.8	9.69	0.000	1726998	2657210
_cons	348083.3	171044.6	2.04	0.042	-3503.911	699670.6
Stud Enroll						
microfinance	79114.56	12068.29	6.56	0.000	54307.83	103921.3
_cons	16443.9	9122.772	18.03	0.000	145686.9	183191.1
Female Labor Force						
microfinance	23368	3358.127	6.96	0.000	16465.27	30270.73
_cons	10773	2538.505	4.24	0.000	5555.027	15990.97
Avg Female Empl (Daily employment)						
microfinance	12229.17	1332.074	9.18	0.000	9491.048	14967.28
_cons	9083.333	1006.954	9.02	0.000	7013.51	11153.16
Employment cost						
microfinance	1.28e+09	1.63e+08	7.83	0.000	9.43e+08	1.61e+09
_cons	3.29e+08	1.23e+08	2.67	0.013	7.57e+07	5.83e+08
RYK						
Indoor Patients						
microfinance	74765.1875	27.16942	2.73	0.011	18.33997	130.035
_cons	63564	20.53815	3.07	0.005	20.78323	105.2168
Outdoor Patient						
microfinance	1154813	202361	5.71	0.000	738853.5	1570772
_cons	467500	152970.5	3.06	0.005	153064.5	781935.5
Stud Enroll						
microfinance	36510.31	9212.07	3.96	0.041	17574.63	55445.99
_cons	183315.8	6963.67	26.32	0.000	169001.7	197629.8
Female Labor Force						
microfinance	1836.667	816.5802	2.25	0.053	158.1621	3515.171
_cons	13442.33	617.2766	21.78	0.000	12173.5	14711.16
Avg Female Emp (Daily)						
microfinance	1268.75	659.8326	1.92	0.066	-87.55541	2625.055
_cons	6375	498.7866	12.78	0.000	5349.729	7400.271
Employment cost						
microfinance	6.71e+08	6.25e+07	10.73	0.000	5.43e+08	8.00e+08
_cons	4.55e+08	4.73e+07	9.62	0.000	3.58e+08	5.52e+08

8.5 Microfinance and Healthcare in the Selected Districts:

In order to analyze the effects of microfinance on the healthcare of the selected districts, we consider the outdoor patients visited any nearby basic health unit (BHU). This is because the OPD system

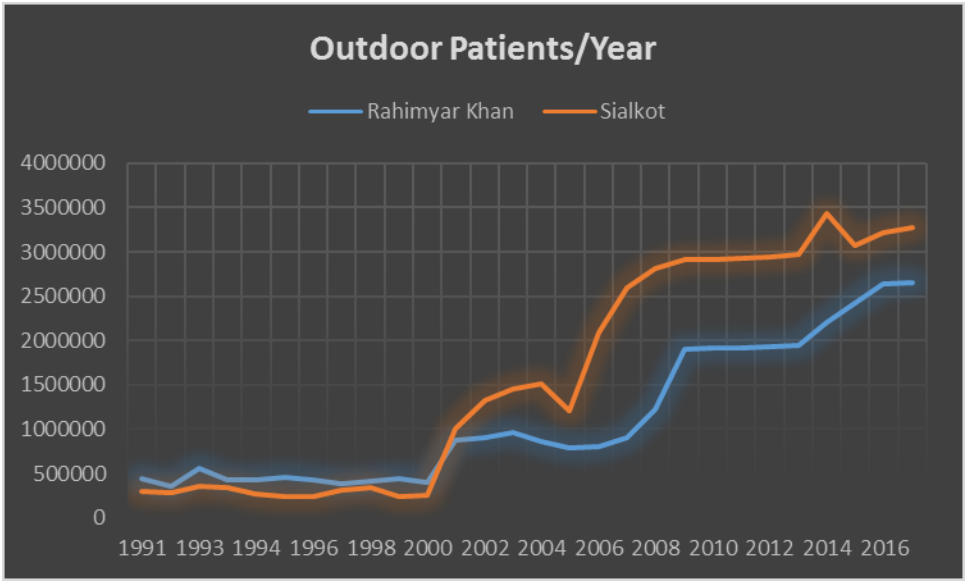
generally consults the patients on a very short and rapid response basis. For our specific analysis, we consider those patients, which are from the lowest income brackets i.e. lower two quintiles. We have already explained the very basic reason for considering the lower quintiles, as the particular quintile comprises approximately 70% of the microfinance borrowers, in district Sialkot and RYK collectively. Accordingly, the rise in consumption expenditures of these quintiles due to microfinance provides the basis for an increase in the outdoor patients, overtime. The rise in the number of patients visited any nearby healthcare unit/hospital in the year 2001 in both the selected district is evident from the data plotted in Figure 8.1. This also corresponds to the rise in expenditures by the lower quintiles in the year 2001, as predicted by the theory for our respective initial conditions. The data regarding the outdoor patients shows quite a normal trend before the formal implementation of microfinance, which has changed abruptly after microfinance was implemented formally, in the year 2001.

However, when we consider a comparison between the two selected districts it is clearly shown in Figure 8.1 that district Sialkot surpasses its counterpart district of RYK in the year 2001. The most possible reason for the overtaking is that a clear rise in consumption expenditures by district Sialkot triggered by the development in the informal small-scale manufacturing industries. In contrast, improvement is also visible in district RYK's number of patients consulting an OPD, in the year 2001; however, the lack of proper infrastructure and a mere rise in their expenditures do not correspond as much as it does for Sialkot. Moreover, the disastrous floods in 2005 on the Indian side of the border, in river Chenab, caused huge damages in the infrastructure of the Pakistani Punjab, particularly in district Sialkot. The disaster was so damaging that the government declared a state of emergency in the northern Punjab (Murshed, Gulzar, & Dost, 2008). Due to the deteriorated infrastructure and the state of emergency, most of the patients were reported as indoor patients[46] rather than outdoor patients, as apparent from Figure 8.1. Nevertheless, currently, every union council (the basic administrative tier) has at least a basic health unit (BHU), which serves mostly the outdoor patients through 'every thick and thin'. Likewise, we can see an anomaly during the year 2014-15 when a sudden rise in the number of patients visited a nearby basic health unit has happened. This happened in response to "Dengue fever" that broke out in Pakistan in the year 2013-14. A mosquito (Dengue) caused the fever, which was identified by scientists as a rare species and can be found mostly in

[46] *According to the reports by the Punjab Development Statistics, 'Indoor Patients' are those who are admitted for a relatively longer period in order to be treated in proper environment, hence differentiated from outdoor patients who are consulted on over the counter basis and are allowed to go home immediately.*

industrial, more urbanized sites. It was also claimed that the mosquito would have been transported in trading auto-vehicle tiers, to be precise, as it provides the favorable conditions by decaying rainy waters inside it ((WHO), 2014) (Khan, Khan, Ghaffar, & Khalid, 2018).

Figure 8.1: Outdoor Patients per year of the Selected Districts



Data Source: Punjab Development Statistics (1991-2017)

8.6 Microfinance and Education in the Selected Districts:

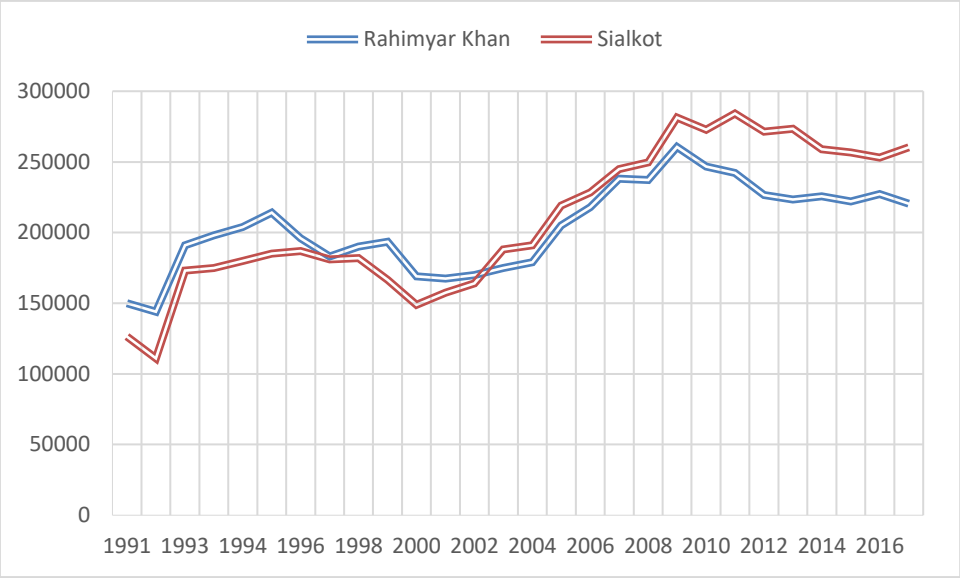
Different researchers have broadly evaluated the effects of microfinance on education from various perspectives, including education as a tool to alleviate poverty, to reduce child labor, and enhance the healthcare system. The direct link between microfinance and education has already been discussed in our chapter on 'Literature Review'. In most of the scientific investigations, student enrollment is used as an excellent indicator to represent a rise in the education sector. Similarly, the World Bank while financing the poor countries usually considers the quantitative increases in the education sector. Following the same methodology, we are intended to show the relationship between microfinance and education in our selected districts. For this purpose, we exploit the data published by the Punjab Bureau of Statistics in their annual reports. The reports explain several indicators regarding education, such as the number of students enrolled in primary, middle, and high schools, girls enrolled each year, the 'higher education data,' etc. etc.

For our particular investigation, we use the number of students enrolled in public sector primary schools per year. The reason is that we are dealing with the lower quintiles, which according to the

definition by the Pakistan Bureau of Statistics (PBS), lives under the poverty line, i.e., earning below 2 dollars a day. Accordingly, when a household of the lower quintile starts receiving a ransom, their priority is to educate their children. However, initially, in fact, they cannot afford any formal educational institute except the public sector.

Figure 8.2 below provides the trend for the students enrolled in primary schools in the selected districts. From the data, we can see an apparent rise in the pattern after microfinance implemented formally. The trend endorses the results of our "difference in difference" analysis, where the average household consumption shot-up in the years 2001-02. For the specific case of education, both the districts show quite a steady growth in the trend; however, district Sialkot, yet again, overtakes district RYK. Because the efficiency of microfinance, as evaluated by various researchers, is always better in a pre-established structure of any business, preferably the manufacturing businesses (Khumawala, 2009). Therefore, having a historical affinity with manufacturing and handcrafting the people of district Sialkot found an opportunity to innovate and enhance their pre-established enterprises. Consequently, the marginal productivity paid them off and allowed them to spend more in productive sectors, like education. On the other hand, district RYK, as usual, lags due to relatively fewer earnings and spending. In the initial years of microfinance injections, the less privileged households of district RYK found it more suitable to employ more children in their respective agricultural fields. The situation has led to a sharp decline in students′ enrollment in primary schools, as shown in Figure. 8.2. However, later on, more governmental and non-governmental organizations intervened in the southern region of Punjab to spread awareness regarding education and child labor. Consequently, the families, most of the lower quintiles, were educated to realize the need for education and started enrolling their children in the nearby public sector schools.

Figure 8.2: Number of Students Enrolled per Year for the selected Districts



8.7 Microfinance and Women's Empowerment:

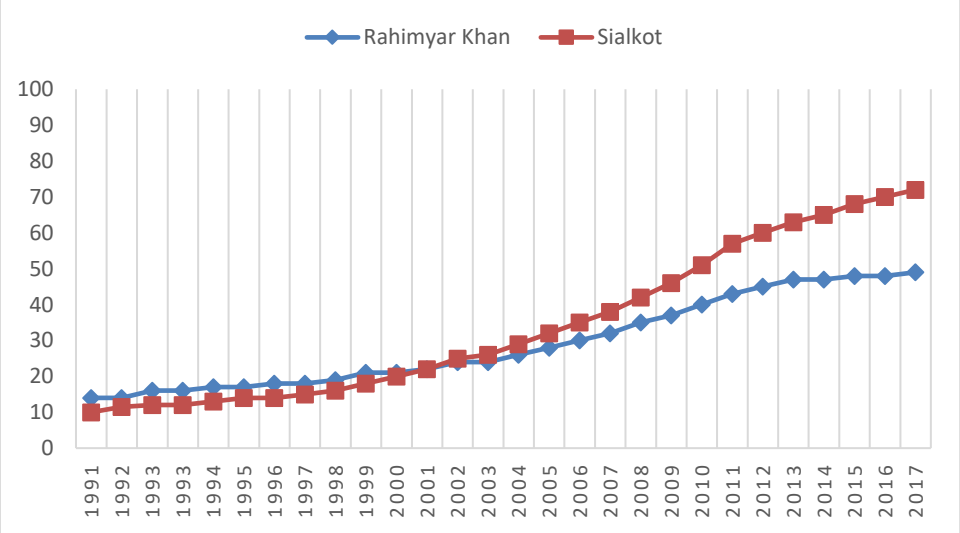
Besides the contribution of microfinance in enhancing household incomes, consumptions, savings, education levels, healthcare, etc. it is also a fact that microfinance is used synonymously for women's empowerment. In most of the literature on international developmental women's empowerment is an important issue, and accordingly, the researchers claim that it is hard to explain women's empowerment by considering specific aspects quantitatively. Therefore, they prefer to avoid any numerical measurement, which may provide a causal relationship between women's empowerment and any independent variable. Usually, many quantitative studies exist that consider specific economic indicators related to women, i.e., job opportunities and income as a head of a household; however, those studies have widely been criticized for the absence of proper theoretical underpinnings.

Even though we consider the quantitative measures of girls schooling, the female labor force, and their respective incomes (employment cost) for our present investigations, yet we do not claim them as ultimate causes for the question in-hand. The reason behind this particular consideration is that the female participation in the education sector, employment (industrial), and the healthcare sector cannot be avoided as a basis for further improvement in women's empowerment. However, the quality of a society's education, health, and employment sectors is undoubtedly another big enigma, and it is necessary to be considered in future research projects.

Here, we consider the indicators such as female literacy[47] ratio, female labor force, and the cost of employment to represent the role of microfinance in enhancing women's role in society.

The following plots (8.3 and 8.4) represent female literacy ratio and average female labor force daily, for the selected period of 1991 until 2017. Analogous to other indicators, in the education and employment sectors, too, Sialkot surpasses RYK during the emergence of microfinance. Our multivariate regression analysis (shown in Table 8-3) also confirms the significance of microfinance in female education and labor participation of Sialkot as compared to RYK. In contrast, the microfinance sector fails to engage the female labor force in the agricultural sector, as revealed by our regression results. The particular variables of the female labor force and their wage rates are insignificant statistically. Although, with the rise of microfinance agricultural sector is relatively more mechanized and technical yet the women are discouraged to operate these machines. In RYK, on one hand, agricultural mechanization has improved the technical efficiency of the farmers while on the other hand; it has been keeping more women out of work.

Figure 8.3: Female Literacy Ratio in the Selected Districts

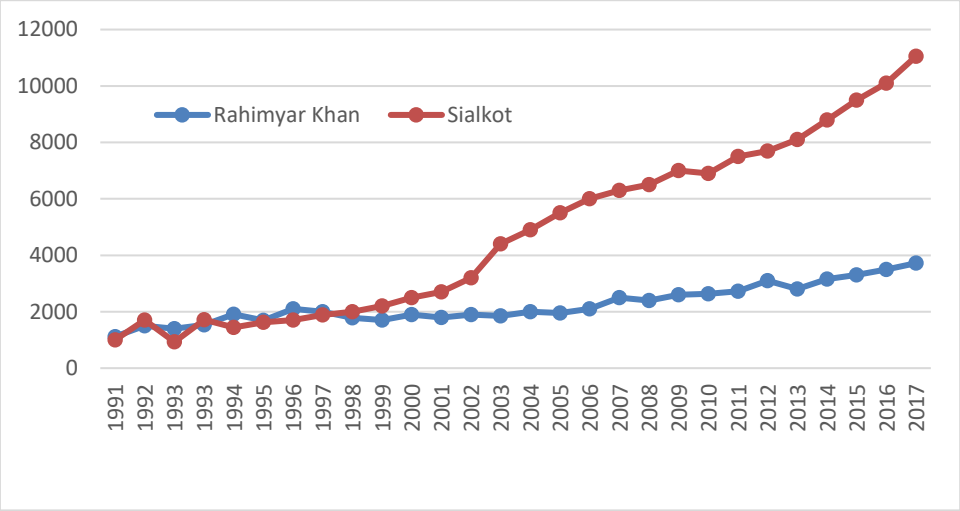


Source: Author's own estimations

[47] The Pakistan Bureau of Statistics defines literacy as anyone who can at least read and write is literate (Population aged 10 years and onwards) defines literacy.

Similarly, in education, RYK does not correspond parallel to Sialkot for the reason that educational infrastructure is not provided on an adequate basis. Sialkot is currently one of the leading districts in terms of education, health and income as claimed in a recent report by the United Nation Development Program (UNDP) (Najam & Bari, 2017). The results of 'girls enrollment in schools' are statistically significant for both the districts; however, Sialkot leads yet again as the regression results for Sialkot are highly significant while for RYK the results are relatively weakly significant, as tabulated in Table 8-3. Figures 8.3 and 8.4 also give an overview of how the 'women literacy ratio' and 'female labor force' evolved overtime for the selected districts.

Figure 8.4: Average Daily Female Labor Force in Selected Districts



8.8 Concluding Remarks

The results shown in this chapter provided a brief overview of education, health, and women's participation in the overall labor force of the two districts. All the results are in relation to the household incomes and consumption expenditures as discussed in our previous chapter. Overall, the results reveal a strong contribution and significant role of microfinance in enhancing healthcare, education, and women's participation in the labor force for Sialkot. Accordingly, the role of microfinance is vital in RYK, as well; however, due to several reasons, the envisioned consequences did not meet. That includes the strong prevailing feudal system, religious factors, and politics. Studies such as Malik & Mirza, (2014), found that the confluence of the prevailing religious fundamentalism, land ownership, and politics constitute a powerful structure in keeping the area underdeveloped. Moreover, the urban market is not that much capitalistic in order to extract the labor force from rural areas. Nevertheless, the socio-economic variables of Rahimyar are still in an upward direction and all it needs is just a proper consideration of the policymakers in order to eradicate the influence of the primitive structure.

In contrast, Sialkot, which was one of the least privileged districts in the late 1970s and 80s, took-off as the opportunities, of establishing small businesses, delivered, in the late 1990s and early 2000s. Additionally, the urban core zone of the district had already had a manufacturing market that provided an opportunity for rural workers to migrate on relatively higher wages.

9. Chapter 9

Conclusion and Recommendations

9.1 Introduction

Microfinance is generally regarded as an important tool for development and poverty alleviation for most of the developing countries. A vast majority of researchers investigate the various effects of microfinance that influence the poor either directly or indirectly. During this project, we found that microfinance is not a subject that is, precisely, related to a particular discipline. The vast majority of the research pool includes economists, sociologists, anthropologists, historians, management scientists, and business administrators. It was also found that microfinance has a wide network all over the world, starting from the Far East to the extreme western parts. In many countries, the role and efficiency of microfinance have already exceeded the individual-level analysis as it is currently considered an obsolete way to explore it further on a micro-level. The claim happens to be more realistic when we talk about its economic exploration or at least the quantitative aspects of microfinance. However, certain disciplines, as usual, encourage, the individual or micro level or village level analysis. These are mostly the qualitative researchers who use interviewing tools, to study human behavior regarding the problems in hand. In addition, there still exist countries where microfinance is operating; however, it is yet to be analyzed on bigger or aggregate levels.

This project aimed at analyzing the socio-economic consequences of microfinance investment in Pakistan on an aggregate level. After having reviewed the literature on microfinance worldwide it was found that quite a number of studies examine the role and impact of microfinance on a macro level. Numerous quantitative studies avoid the micro-level examinations and are keen to find the respective share of microfinance on a national level. Meanwhile, we unearthed the fact that in Pakistan the existing literature deals either with individual/household level investigations or with village levels. We also found that the whole literature relies on sampling and questionnaires. Accordingly, we decide to be the first to analyze the particular impact of microfinance on a macro-level. For that purpose, our solitary aim shifted towards finding the necessary statistics; however, yet again, we found that the relative size of microfinance to the overall GDP is tremendously low. Nevertheless, we stick to our quest that is examining microfinance on an aggregate level and not on a micro-level. We found that in India, for instance, the same problem occurs while exploring microfinance on a macro-level. Various

researchers in India, quite brilliantly answer the question i.e. the state level. Accordingly, we initiated our investigation that no such studies exist in the case of Pakistan, either. Subsequently, we set to explore the socio-economic consequences of microfinance on a subnational level.

After having shifted our focus to a subnational level from a national level, the concept of a sub –nation is mandatory, to be defined. Therefore, using the ideas of Richardson's 'regional economy' we defined our subnational economy based on the local government system. In Pakistan, the policy of local governments initiated in 1960 to shift the governmental powers to the very grassroots level. That simply replicated certain ideas from a national economy to a district; as the boundaries are well defined, having its own core regions- where the central market activities take place, having its own regional incomes, employment, and labor migration, etc. Thus, we selected two districts each from an industry dominated region i.e. Sialkot from northern Punjab and RYK from agriculture dominated one i.e. south Punjab. The intent for the selection of the said districts is to examine the performance of microfinance in the agricultural sector and manufacturing sector. However, the districts are selected from the province of Punjab as the province relatively developed in terms of statistics availability.

9.2 Previously Executed Programs in Pakistan

The dissertation discusses the programs and schemes previously implemented by the government of Pakistan in the hope of alleviating poverty and enhancing economic growth. For that purpose, we briefly discuss some of the important projects starting from the very foundation of Pakistan. The projects are discussed with respect to the 'Five Years Plan' initiative of the government. The FYPs were executed initially at the start of the 1950s when a specific budget would be allocated for each project under the plan. Upon the completion of every FYPs, detailed reports were to be released regarding the success and failure of the plan.

The aim of discussing the five years plan is to learn about the struggle and seriousness of the government in order to bring development. The FYPs lasted until the end of the 1990s, the decade when an informal market of small loans was functioning in certain parts of the country. Accordingly, the informal market stimulated various non-governmental profit-making organizations, who received large benefits from being the first comers. The government, later on, realized it and accordingly established a body with the name of Pakistan Poverty Alleviation Fund (PPAF) in order to facilitate and monitor the NGOs. Subsequently, with the recommendations of the PPAF, the government of

Pakistan initiated the formal microfinance market in 2001 by presenting a proper resolution in the upper house of Pakistan's Parliament. Initially, an amount of 5 billion PKR (roughly 7 million USD (2017, exchange rate)) was invested with the help of the Asian Development Bank (ADB) through 450 microfinance providers, roughly. The numbers grew steadily, to as much as 250 billion PKR (2 billion USD) of total microfinance portfolio and 4000 microfinance providers, in 2017. Started from a handful of districts, currently, the microfinance industry is operating in 138 out of 154 districts across Pakistan. Accordingly, various microfinance organizations claim a significant role in absolute poverty reduction. All these figures and claims further strengthened the aim to pursue this dissertation on a subnational i.e. district level.

9.3 Theoretical Backing and Methodology

After having a legitimate reason to analyze the socio-economic consequences of microfinance on an aggregate (district) level, we needed a sound but aggregate investment theory. Accordingly, we started scrutinizing a number of available theories. The available theories were simple Keynesian theories, neo-classical theory, the theory of capital, and classical theories. Using the deductive methods, we empirically tested each class of theories and ruled out those, which relatively explained fewer facts. Consequently, the flexible accelerator theory answered most of the questions in hand and is selected for further considerations.

After having finalized the theory for further analysis, we inferred predictions for our singular initial conditions. The prediction is confronted with working hypotheses, i.e. an alternative (H1) and a null-hypothesis (H0). The null hypothesis (H0) is a universal existential statement that negates the alternative hypothesis. Accordingly, we use statistical techniques such as Ordinary Least Square (OLS), and multivariate regressions in order to formulate the basic statements. The null hypothesis is tested with the basic statements; subsequently, the confirmation of the null-hypothesis leads to the falsification of the alternative hypothesis. In contrast, the confirmation of the alternative hypothesis leads to the confirmation of the prediction, which is inferred from the theory for the specified initial conditions.

9.4 Analysis/Findings

The accelerator theory is tested for the initial conditions of Sialkot and RYK, for the specific variables of microfinance, average household consumption, income, employment, Gini coefficients, poverty

ratios, health, education, and women's empowerment. At first, the basic statements are formulated for average household consumption and microfinance. The results confirmed our theory for the initial conditions of Sialkot and RYK. However, the significance of the said variables is strong for the case of Sialkot as compared to RYK. Subsequently, with more microfinance investment it is confirmed that the average household incomes of the lower quintiles of Sialkot increased substantially, whereas, inconsiderably for RYK. Furthermore, the distributional effects of microfinance are calculated through Gini Coefficients and Lorenz Curves. It is found that microfinance contributes significantly to decreasing the gap between the lower quintiles and upper quintiles of Sialkot, compared to RYK. Likewise, the allocational effects are estimated through employment generation and capital accumulation, by considering the households micro-savings. Yet again, the role of microfinance is found considerable for Sialkot in comparison to RYK. It is revealed that the manufacturing sector in Sialkot has provided more employment opportunities to the microfinance borrowers and therefore the borrowers are inclined towards more savings in order to expand the pre-established microenterprises.

Additionally, the socio-economic effects of microfinance are assessed by considering the number of students enrolled, per year, in primary schools, the number of indoor and outdoor patients treated by a healthcare unit, and women's literacy ratio. A significant effect of microfinance is found in enhancing all the indicators for both the selected districts. However, the effects are greater for Sialkot compared to RYK. Similarly, the absolute poverty measure demonstrates a significant decline in the case of Sialkot whereas for RYK the decline in poverty ratio is not that substantial. Overall, it is recognized that microfinance is more effective in the manufacturing sector due to the reason that it is more susceptible to short-run productivity than an agricultural sector. Also, microfinance can be more efficient in engaging more women in the manufacturing sector and hence can potentially decrease gender discrimination. In contrast, microfinance is not that efficient for the agricultural sector and a more suitable policy can be considered to implement for enhancing agricultural productivity. Accordingly, the investment of microfinance in the manufacturing sector is more likely to eradicate poverty and enhance the livelihood of the poor.

9.5 Limitations of the Study

During the study, we faced certain limitations, which, if resolved, can definitely further enhance the scope of the study for future researches. We found at the very start of this project that the regional income accounts of Pakistan are not that much advanced. Regional accounts were as necessary as the

main subject (microfinance) was. Pakistan is progressing with the claim of having a local government system e.g. having the governmental structure on the district level. During our research, we found that this local government system is more a political stunt for manipulating the local resources and benefiting a particular class. The local governments do not possess their own system of regional accounts, which can be used for analyzing certain problems. For our particular project, we required the district level gross regional (domestic) product, which is completely missing and has affected our intended investigation. Nevertheless, we used statistics from MICS and HIES reports, which to quite a good extent resolved our issues. For all the missing years when MICS and HIES do not compile the required data, we used interpolations and extrapolation techniques.

The study was envisioned, initially, to finding robust stabilization effects however, due to the unavailability of price statistics on district-level we omitted the objective. Furthermore, the unavailability of district-level tax statistics also affected the study and the estimation of trade is omitted accordingly. Finally, the intent is not to criticize any specific institution or person, if these limitations restrict the sphere of any person or institution that would purely be a coincidence. The intentions, here, are only to facilitate and inform the future researchers and policymakers regarding the issues, which need to be resolved in order to pursue decent research in order to find sound solutions for problems.

9.6 Future Research and Policy Recommendations

The expansion and application of the findings is the need for a greater focus on the contribution of various features and implications of microfinance. A pure ethnographic study is required to further explore the problems of the agricultural sector, Rahimyar in this case. Future, holistic scientific examinations are the need of the day, especially for Pakistan, as much of the focus has been given to micro-level explorations and institutional reviews. During the study, it was found that a fairly enough attribution is given to the livestock and microfinance, but on a micro-level. Exploring the livestock and microfinance on an aggregate level in regards to certain environmental issues would be well regarded in the future.

The government must ensure policies on the supply side of the microfinance sector. Although, not a subject matter of this project, yet, helping the microfinance providers in lowering the operational costs would be a sigh of relief for them. Microfinance providers need to keep an eye on the clients and accordingly provide the necessary education not only the financial but moral, too. Strict government

intervention is required in the southern region in order to examine and exterminate the cheap labor exploitation. Furthermore, the government should give a hand to the microfinance industry in raising awareness against gender discrimination and child labor in RYK.

Despite having a good reputation for the Sialkot microfinance industry, the government should facilitate both the MF borrowers and practitioners in order to motivate and lead to further decent levels. Finally, the exponential growth in the microfinance industry of Pakistan would soon provide an opportunity for future researches to investigate the distributional, allocation, and stabilization effects on an even bigger level, i.e national level. This thesis invites its readers for further compliments and suggestions.

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Appendices

Summary

This dissertation aims at analyzing two major claims usually associated with microfinance, i.e. that microfinance reduces poverty and enhances the economic wellbeing of the poor people on a nationwide scale, i.e. on an aggregate level. By reviewing the existing literature on microfinance related topics, we found that the majority of the literature consists of micro- level studies based on local questionnaires and interviews. However, we also found a few macro-level studies, but only for countries other than Pakistan. We reject micro-level studies for principle reasons: these studies do not investigate the socio-economic effects of microfinance on an aggregate, i.e. 'nationwide' level and accordingly are inadequate to examine the two major claims usually associated with microfinance; and they do not take into account that micro-level effects may cancel out on an aggregate level. However, a nationwide overall macro-level investigation for Pakistan is rejected as well, because of the negligible volume of microfinance investment compared to Pakistan's GDP. Consequently, we decided to analyze the socio-economic effects of microfinance on a subnational, i.e. district level in Pakistan.

In order to show that microfinance is usually associated with the claims that it reduces poverty and enhances economic wellbeing on an aggregate, nationwide level, this dissertation reviews the historical and institutional background of microfinance in Pakistan. It discusses several five-year plans and cooperative projects that the different governments developed and implemented since the foundation of Pakistan and briefly evaluates their failures and achievements. It also intends to show how those programs provided a basis for the introduction and implementation of microfinance strategies in Pakistan.

The methodology applied in this work is a combination of fallibilistic deductive methods and statistical techniques. In order to test theories empirically, i.e. to confront them with 'experience', singular predictions and so-called basic statements, that describe observable facts or processes, are formed. By comparing basic statements and singular predictions and by using the modus tollens, theories are classified provisionally as true or false. Singular predictions are inferred from theories by introducing singular initial conditions because nothing observable follows from theories by itself. Basic statements, which are not allowed to follow from the theory in question, are formulated on the basis of statistical

tests. However, zero hypotheses and alternate hypotheses have to be regarded as indicators for basic statements only, since they do not describe observable facts and processes. Only the singular statements confirming them can be regarded as so-called basic statements. Accordingly, the choice of basic statements is decided indirectly by the acceptance or non-acceptance of the zero-hypothesis.

As a first step, and in order to analyze the socio-economic effects of microfinance in Pakistan on an aggregate level different theories explaining their causal relations are required. In this context, it is interesting to note that in general microfinance loans are not regarded as investment expenditures by researchers in Pakistan. However, in order to investigate the socio-economic consequences of micro-finance in Pakistan on an aggregate level we regard microfinance as investment expenditures having income and capacity effects on the aggregate level. This consideration is justified by the statistics regarding the usage of micro finance loans, which show that micro finance loans are basically used in order to finance investment expenditures. Consequently, a satisfactory aggregate theory of investment is required and by scrutinizing different investment theories, we finally select a particular version from the family of accelerator theories of investment on methodological and empirical grounds.

As a second step, and in order to provide the singular initial conditions required for the formation of singular predictions, we select two different regions from the Punjab province and finally one particular district from each region; i.e. the district Sialkot from northern Punjab and the district RYK from southern Punjab. This choice of districts is based on Richardson's regional economic theory and intends to compare the performance of microfinance in a manufacturing region (Sialkot) to an agricultural region (RYK).

After having specified the relevant theoretical background as well as the initial conditions, singular predictions regarding the socio-economic effects of micro finance investment are formed. In order to test the theories from which the predictions regarding the socio-economic effects of micro finance are inferred we formulate the so called basic statements by using statistical techniques and tests. However the problem regarding the choice of basic statements remains. In order to solve that problem adequate null-hypothesis and alternate (working) hypothesis are formed on the basis of observational statements and the null hypotheses are tested. If the null hypothesis is confirmed (accepted) on the basis of the statistical test, the singular statements confirming the null hypothesis are accepted as well and provisionally classified as true. Depending whether those statements are in contrast with the predictions inferred from the theory, the theory is either confirmed or falsified. If the basic statements

confirming the accepted null hypotheses are in contrast with the predictions inferred from the theory, the predictions are classified as false and due to the modus tollens the theory is classified provisionally as false and vice versa. Similar considerations apply if the zero hypotheses are rejected and the alternate hypotheses accepted.

Based on this procedure and on the basis of statistics gathered from various sources including the Pakistan Bureau of Statistics (PBS), the Punjab Bureau of Statistics, and the Pakistan Microfinance Network (PMN) we obtain different results. First, that microfinance investment plays a vital role for the people under the lower quintiles of Sialkot. With more microfinance investment forthcoming each year the people of Sialkot are more likely to invest in micro-enterprises and enhance their average household incomes. Secondly, in contrast to Sialkot, the importance of microfinance investment in RYK with respect to enhancing household incomes is rather insignificant. Thirdly: In Sialkot, microfinance investment has a strong effect on income distribution: the Gini coefficients, calculated for the year 2001 i.e. 0.77 has decreased to 0.44 in 2017, suggesting a more equal distribution of incomes. Similarly, the absolute poverty ratios have declined sharply by 44% for Sialkot as compared to 19% for RYK. In addition, we were able to establish that with more microfinance investment, Sialkot is more likely to have a higher employment and education ratio, a good healthcare system, and the participation of more women in developmental sectors as compared to RYK. The dissertation concludes by suggesting policy measures for the Government of Pakistan.

Zusammenfassung

Diese Dissertation untersucht zwei Ansprüche die üblicherweise mit Mikrofinanzierung assoziiert werden: dass Mikrofinanzierung gesamtwirtschaftlich Armut verringert und die Wohlfahrt armer Menschen verbessert. Eine Analyse der zu Mikrofinanzierung veröffentlichen Studien zeigte, dass der überwiegende Teil dieser Arbeiten Mikrostudien, basierend auf lokalen Umfragen und Interviews, sind. Zwar existieren auch für einige Länder Makrostudien, jedoch nicht für Pakistan. Wir verwerfen Mikrostudien aus prinzipiellen Erwägungen: da sie die sozio-ökonomischen Effekte der Mikrofinanzierung nicht gesamtwirtschaftlich untersuchen, sind sie auch ungeeignet die beiden primären mit Mikrofinanzierung erhobenen Ansprüche zu analysieren; außerdem berücksichtigen sie nicht, dass etwaige sozio-ökonomische Effekte auf Mikroebene sich auf Makroebene aufheben können. Allerdings verwerfen wir ebenso die Idee einer gesamtwirtschaftlichen nationalen Untersuchung für Pakistan, da das Volumen der Mikrofinanzierung in Pakistan im Verglich zu dessen BIP vernachlässigbar klein ist. Daher haben wir entschieden die sozio-ökonomischen Wirkungen von Mikrofinanzierung auf einer sub-nationalen, i.e. auf Bezirksebene für Pakistan zu untersuchen.

Um die mit Mikrofinanzierung üblicherweise erhobenen gesamtwirtschaftlichen Ansprüche der Armutsreduktion und der Verbesserung der Wohlfahrt armer Menschen zu dokumentieren, untersucht diese Dissertation zunächst den historischen und institutionellen Hintergrund der Mikrofinanzierung in Pakistan. Sie untersucht sämtliche Fünfjahrespläne und genossenschaftliche Projekte die seit der Gründung von Pakistan entwickelt und implementiert wurden und evaluiert deren Misserfolge und Erfolge. Darüber hinaus versucht sie zu zeigen, in welcher Form diese Programme die Basis für die Einführung und Implementierung von Maßnahmen zur Mikrofinanzierung bildeten.

Die in dieser Arbeit angewandte Methodologie ist eine Kombination von fallibilistischen deduktiven Methoden und statistischen Techniken. Um die Theorien empirisch zu testen, i.e. um sie mit ‚Erfahrung' zu konfrontieren, werden singuläre Vorhersagen und so-genannte Basissätze, in Form von singulären Sätzen, die beobachtbare Tatsachen und Prozesse beschreiben, formuliert. Durch einen Vergleich der Basissätze mit singulären Vorhersagen und der Anwendung des Modus Tollens werden Theorien vorläufig als ‚wahr' oder ‚falsch' klassifiziert. Singuläre Vorhersagen werden aus Theorien und durch die Einführung singulärer Anfangs- und Randbedingungen abgeleitet, da nichts Beobachtbares aus den Theorien alleine folgt. Basissätze, die nicht aus der Theorie folgen dürfen, werden auf Basis statistischer Tests und Techniken formuliert. Nullhypothesen und

Alternativhypothesen werden dabei nur als Indikatoren für Basissätze betrachtet, da sie keine beobachtbaren Tatsachen und Prozesse beschreiben. Nur die singulären Sätze die sie bestätigen können als so genannte Basissätze klassifiziert werden. Daher wird die Entscheidung über Basissätze indirekt durch die Annahme bzw. Verwerfung der Nullhypothese bestimmt.

Um die sozioökonomischen Wirkungen von Mikrofinanzierung in Pakistan auf gesamtwirtschaftlicher Ebene zu untersuchen, werden Theorien die deren kausale Beziehungen erklären, benötigt. Interessanterweise werden aber die durch Mikrofinanzierung zur Verfügung gestellten Kredite von pakistanischen Ökonomen nicht als Investitionsausgaben angesehen. Um die sozioökonomischen Effekte der Mikrofinanzierung in Pakistan auf gesamtwirtschaftlicher Ebene zu untersuchen betrachten wir jedoch Mikrofinanzierung als Investitionsausgaben, mit entsprechenden gesamtwirtschaftlichen Kapazitäts- und Einkommenseffekten. Diese Überlegung findet ihre Rechtfertigung in der Tatsache, dass mikrofinanzierte Kredite primär zur Finanzierung von Investitionsausgaben verwendet werden. Hieraus resultiert die Notwendigkeit einer befriedigenden gesamtwirtschaftlichen Investitionstheorie, wobei wir, nach Untersuchungen verschiedener Investitionstheorien, diese letztendlich in Form einer speziellen Version aus der Klasse der Akzeleratortheorien der Investitionen auf Basis empirischer und methodologischer Überlegungen bestimmen.

Um die für die Formulierung der singulären Vorhersagen benötigten singulären Anfangs-und Randbedingungen einzuführen, wählen wir in einem zweiten Schritt, zwei unterschiedliche Regionen aus der Provinz Punjab aus und aus diesen wieder jeweils einen spezifischen Bezirk, i.e. Sialkot, ein Bezirk aus dem nördlichen Punjab und RYK, ein Bezirk aus dem südlichen Punjab. Die Auswahl dieser Bezirke wird durch Richardsons regionalökonomische Theorie begründet und intendiert einen Vergleich der Bedeutung und der Rolle von Mikrofinanzierung in einem industriell-gewerblichen Bezirk (Sialkot) und in einem landwirtschaftlichen (RYK).

Nachdem der relevante theoretische Hintergrund und die entsprechenden singulären Anfangs- und Randbedingungen spezifiziert wurden, werden singuläre Vorhersagen hinsichtlich der sozio-ökonomischen Wirkungen von Mikrofinanzierung formuliert. Um die Theorien aus denen die Vorhersagen hinsichtlich der sozio-ökonomischen Wirkungen von Mikrofinanzierung abgeleitet wurden, empirisch zu testen, werden so genannte Basissätze unter Anwendung statistischer Tests und Techniken formuliert. Um das Problem der Auswahl von Basissätzen zu lösen werden adäquate Null-

und Alternativhypothesen (Arbeitshypothesen) auf Basis von Beobachtungsaussagen formuliert und die Nullhypothesen getestet. Wird die Nullhypothese auf Basis statistischer Tests bestätigt (akzeptiert), dann werden die singulären Sätze die die Nullhypothese bestätigen vorläufig als ‚wahr' klassifiziert. Je nachdem ob diese Sätze sich im Gegensatz zu den aus der Theorie abgeleiteten Vorhersagen befinden, gilt die Theorie entweder als bestätigt oder falsifiziert. Falls die Basissätze die die akzeptierte Nullhypothese bestätigen sich im Widerspruch zu den aus der Theorie abgeleiteten Vorhersagen befinden, dann wird nach dem Modus Tollens die Theorie vorläufig als ‚falsch' klassifiziert und vice versa. Ähnliche Überlegungen gelten für den Fall, dass die Nullhypothese verworfen und die alternative Hypothese bestätigt wird.

Auf Basis dieses Verfahrens und auf Basis der Statistiken des Pakistan Bureau of Statistics (PBS), des Punjab Bureau of Statistics, and des Pakistan Microfinance Network (PMN), erhalten wir die folgenden Resultate. Erstens: Mikrofinanzierte Investitionen sind von äußrest großer Bedeutung für Einkommen die sich im unteren Fünftel der Einkommensverteilung befinden. Mit jährlich steigendenden mikrofinanzierten Investitionen in Sialkot steigt die Wahrscheinlichkeit, dass mehr Menschen in Kleinunternehmen investieren und die durchschnittlichen Haushaltseinkommen steigen. Zweitens: Im Gegensatz zu Sialkot sind mikrofinanzierte Investitionen hinsichtlich des Anstiegs der Haushaltseinkommen in RYK eher insignifikant. Drittens: In Sialkot haben mikrofinanzierte Investitionen einen starken Effekt auf die Einkommensverteilung. Die entsprechenden Ginikoeffizienten sind von 0,77 im Jahre 2001 auf 0,44 im Jahre 2017 gefallen und zeigen damit eine gleichmäßigere Einkommensverteilung an. Ebenso sind der absolute Armutsquotient in Sialkot äußerst stark gefallen, nämlich um 44% im Vergleich zu RYK, wo er nur um 19% gefallen ist. Zusätzlich konnten wir zeigen, dass im Vergleich zu RYK, in Sialkot durch zusätzlich mikrofinanzierte Investitionen ein Anstieg der Beschäftigung, der Schulbildung, eine Verbesserung des Gesundheitswesens und ein Anstieg in der Partizipationsrate von Frauen in sich wirtschaftlich entwickelten Sektoren zu erwarten ist. Die Arbeit schließt mit Politikempfehlungen für die Pakistan.