Economic Growth, Farmer Entrepreneurship and Rural Poverty Alleviation in China: A Critical Review

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Authors' contributions

*This work was carried out jointly by all the authors. Author EYN designed the study, conducted the
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Review Article

ABSTRACT

China has experienced unprecedented economic growth for more than three decades now and this
is presumably attributed to the reforms and openness started in 1978 by Deng Xiaoping. However,
in recent times some issues have been raised by policymakers on whether the economic growth
has contributed to poverty alleviation or not. This paper therefore examines how economic growth
and farmer entrepreneurial activities influence rural poverty in China using national and rural
household survey data. Based on capability approach and structural equation modeling, the paper
identifies socio-culture, education and economic capabilities of farm entrepreneurs as key
influencing factors on rural poverty. The results showed that socio-cultural capabilities (democratic

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decision-making, social ties, open expression of ideas) by farmers exerted greater influence on rural poverty than education (access to education, improved school conditions, higher education level) and economic (higher earnings, access to market, technology and management information) capabilities. This finding is based on the social and cultural embeddedness of Chinese business relations. We suggest government promotes inclusive and pro-poor growth in rural areas by empowering the poorest to participate in farmer entrepreneurship to alleviate rural poverty than relying merely on economic growth as a panacea.

1. INTRODUCTION

With the rapid economic growth in China, and following seminal works on the relationship between economic growth and poverty by Dollar and Kraay [1], there has been widespread debates over whether economic growth really has impacted on the poor in developing economies [2] and China for that matter or not.

Earlier research findings have indicated that sustained economic growth can benefit the poor in various dimensions [3]. However, others stipulate that unless the economic growth is said to be broad-based in nature and more pro-poor, it does not always appear to be the case that economic growth alone is an effective solution to poverty but rather other factors including entrepreneurship [4]. This is probably because many poor people live in deprived communities and villages that they are unable to fully share the benefits of economic gains resulting from increased economic growth rate within a country, making the fight against poverty far from being over, especially in developing economies such as China.

Yet, it is an undeniable fact that the performance of China's economy in the past three decades has been impressive with an annual average per capita growth rate of about 8% [5,6], following the introduction of market reforms and opening-up of the economy in 1978. The overall living standards of the people have therefore improved markedly with rapid poverty reduction. However, the growth is said to be uneven with rising rural-urban inequality and wide coastal-inland gaps [7-9]. It is believed that not everyone has shared the economic successes equally. The breakdown of the commune system in rural areas and the large scale economic restructuring of state and collective sectors in urban areas changed the foundations of the Chinese social welfare system. The benefits of new mechanisms to ensure social equity and stability are therefore yet to be harnessed. The understanding of the influence of economic growth in China's economic successes towards reducing poverty within the current generation is of great interest to many scholars and policy makers.

Whilst there is a growing body of literature on China's economic growth and issues related to it, most of such studies focused on income redistribution, inequality between rural and urban areas and between coastal and inland areas [10-16]. Some other studies in the field have examined the impact of government policies on inequality [17,18] and quite recently attention is being given to drivers of China's economic growth [19], and the relative importance of regional poverty and inequality trends [20].

Thus, what is the relationship between economic growth and poverty in rural China? From previous studies, it is noted that efforts to reduce poverty have received much attention in global development policy discussions in recent years which necessitated the promulgation of the eight Millennium Development Goals (MDGs) in 2000. In that regard, attaining the first goal of halving extreme poverty and hunger (the proportion of people living on less than 1US$/day) undoubtedly became one of the most important international development policy targets for both the developed and developing economies.

This paper therefore, examines the relationship between economic growth and poverty reduction through farmer entrepreneurship in China and found that more youth have been engaged in farmer entrepreneurship by creating jobs for themselves and others and this has improved their living conditions markedly and slowed down rural-urban migration.

The remainder of the paper is as follows: Section 2 presents literature review, section 3 gives theory and hypotheses. Section 4 presents methodology based on a new data gathered. Section 5 discusses the results, while section 6 gives the conclusions and policy implications.

2. LITERATURE REVIEW

2.1 Meaning of Poverty

Poverty is viewed as a multidimensional phenomenon [21] and it is understood to mean a person's inability to meet minimum international standard indicators related to the Millennium Development Goals and core functions in human life [22]. Although poverty is defined to include lack of food, income, shelter, clothing, it does not only encompass material deprivations measured by the concept of income or consumption but low attainment in education and healthcare needs as well, including vulnerability and exposure to risks and voicelessness and powerlessness [23,24]. Most of these resources are outside the reach and control of the rural poor in China. Living in poverty is therefore seen as the most distasteful aspect of human life.

Poverty in China is considered primarily as a rural phenomenon due to the huge per capita income disparity between the rural and urban population. Historically, Chinese peasants have been disadvantaged by an urban-biased policy called the *hukou* system which formerly restricted rural-urban migration and provided subsidies to the urban population at the expense of the rural dweller [25].

The issue of welfare of the rural poor is therefore, critical and depends on various aspects other than direct investments in support of agriculture, schools, clinics and civil order. Nevertheless, poverty reduction does depend in part on adequate share of public spending and international aid devoted to economic development in major sectors such as rural agriculture, industry and services. This makes the fight to alleviate rural poverty in China seemingly still far from being over as new groups of poor populations emerge day in, and day out, making rural poverty reduction efforts more difficult.

2.2 The Incidence of Poverty

Several surveys have shed light on the nature, causes, and incidence of global poverty. It has been estimated globally that close to 2.47 billion people live in poverty with income of 2US$ or less per day [4]. In China, with a population of over 1.3 billion, it is believed that most of the world's poor reside in this region. For example, an estimated 15 million people are trapped in poverty in the rural areas, depending mostly on agriculture, forest resources and fishing for their livelihoods. These people have lower levels of education, sanitation and healthcare problems, and scarce food and clothing for their general wellbeing, compared to their well-to-do counterparts in the urban centers. Therefore, issues on poverty have very far-reaching consequences on the affected people and their communities. This is one of the reasons for which poverty issues have appeared in the literature of other disciplines such as entrepreneurship, economics, and many more with revealing empirical findings, with ways and means being sought to effectively solve it. In recent years, rural poverty reduction in China has been uneven across the provinces [26]. Using headcount index of poverty, it is found that negative trends in poverty exist in both rural areas and municipalities like Beijing, Tianjin and Shanghai, showing that there is not much tendency of rural poverty reduction while urban poverty also appears to rise [26]. In Guangdong for example, the rate of rural poverty reduction was about 28.5% per annum, and in Shanghai, there was no significant reduction in poverty. With a generalized methods of moments used to investigate how public goods supply such as roads impact on rural poverty, it was noted that a positive relationship existed between public goods supply and poverty reduction in fifteen Ethiopian villages [27]. Further still, economic growth through liberal policies have been found to often help the poor, despite some instances where it did not benefit the poor enough [28].

With evidence from Indonesia, using national data, it is found that location and sectorial components of economic growth impacted on poverty in which rural people helped to reduce poverty in all sectors and locations with urban locations having greatest effect on poverty while agriculture contributed more to reduce rural poverty [29].

Goh et al. [30] employed health and nutrition time series data for fifteen years to show how income of the rural poor grew in all sectors resulting in poverty reduction. The drop in poverty rates was attributed to returns in education as well as employment growth in both the secondary and tertiary sectors of the rural economy. Ferreira et al. [31] studied the Brazilian economy, with GDP data for twenty years. The authors found variations in poverty reducing-effectiveness of the growth of the economy where other factors aside economic growth showed positive effect on poverty. In a study of China's economic growth and rebalancing, Dorrucci et al. [32] found that key drivers of economic growth remain relevant

in the medium-term by helping reduce poverty. However, delays in taking major policy actions by the Chinese Government could increase the risk of middle-income trap and erode gains already chalked in the past decades.

2.3 Methods of Measuring Poverty

Several methods have been used by different researchers to measure poverty. However, according to Alkire et al. [33], there are basically two ways of estimating poverty namely direct and indirect methods. The direct method indicates people's satisfaction of specific basic needs or their rights and this method is said to be in line with what is termed the capability approach [34]. The income method is the most widely used and it is employed by most scholars to measure poverty in many countries as it mainly estimates people's income to be either above or below a certain poverty line set by that country or the international community, otherwise called the 'dollar-a-day' poverty measure used by the World Bank. The method used in China is the household consumer survey conducted annually by the National Statistics Bureau (NSB). This method uses headcount poverty index. The NSB's annual reports indicate that using the international poverty line of persons living on less than 1.25US$/day as extreme poor, and 2US$-a-day as poor makes the incidence of income poverty in rural China to be extremely high although overall poverty levels appear to be declining. Thus, poverty measures should not be restricted only to income but should include lack of capabilities by individuals to take advantage of available opportunities to improve their wellbeing.

2.4 Estimation of China's Poverty Line

The Chinese official poverty line is 6.3 RMB/person/day (or 2,300 RMB/person/year) which translates into 1US$/person/day (or 371 US$/person/year). By this, about 98 million rural people, representing 10% of the total population of China in 2012 lived below the poverty line. Currently, accordingly to world standard, a person is poor if he/she consumes goods and service worth less than 1.25US$/day. However, by China's poverty line a person is poor only and if only he/she earns less than what 6.3 RMB could buy per day. This turns out that 6.3 RMB spent in China could actually purchase items more than 1.83US$ will do in America. Therefore, China's adopted poverty line is somehow appreciably higher compared to the international standard.

2.5 Relationship between Economic Growth and Rural Poverty

Most macroeconomic policies of national governments targeted at reducing inflation, downsizing government, promoting rule of law and openness of economy for trade tend to reduce poverty through economic growth [16]. Although scholars have criticized this line of thought basing their augment on weak methodology and dataset, inappropriate theory employed in the analysis [35-38], the findings of such surveys remain relevant till date, serving as litmus paper test for various works that show that growth generally benefits the poor [39].

Ravallion and Chen [3], employed cross-country data for study in income poverty reduction and realized that growth in incomes reduced poverty to a large extent. Ferreira et al. [31] found that variations occur across regions on how poverty reduction is affected by economic growth and two of such variations are the sector output growth composition, initial asset distribution and level of urbanization on one hand, and human capital level and technology availability on the other hand.

Globally, the proportion of the population living in extreme poverty of less than 1.25US$ per day has experienced a drastic reduction of about half from 40% in 1990 to about 20% in 2010 [40]. China alone accounts for about 85% of poverty reduction in East Asia [41], where the percentage of people living below the extreme poverty line dropped from 54.7% in 1990 to 16.8% by 2005 (37.9 percentage points reduction). Government's expenditure on poverty alleviation programs in rural China has played a role in reducing the incidence. For instance, in 2013, the central government spent about 39.4 billion RMB on poverty reduction, an increase of 6.2 billion RMB over the previous year, resulting in about 17 million rural residents escaping from poverty, and per capita net income for rural residents living in poverty-stricken counties also reached 867.7US$ (5,389RMB), an increase of nearly 126.73US$ (787 RMB) over 2012, or 13.8% increment in real terms [42]. Thus, China has had a fall in extreme poverty rate by almost three-folds since 2007, with statistics indicating that poverty reduced to about 7% in 2012 [43]. It is intimidated that such a fast drop in poverty rate is in direct relationship to higher GDP per capita growth rates over the same period. Thus, economic growth does appear to have impacted significantly on poverty in China.

3. THEORY AND HYPOTHESES

In this section, we developed a research model linking rural poverty and farmer entrepreneurship based on capabilities of farm entrepreneurs and then proposed four testable hypotheses.

Development practitioners and researchers have begun turning attention to entrepreneurship as potential solution to rural poverty in developing countries [4]. Farmer entrepreneurship is akin to self-employment, and it enables individuals to accumulate wealth, expand their social networks and facilitate social and economic wellbeing. It is argued that people's entrepreneurial potentials are directly linked to their capabilities. The capabilities of farm entrepreneurs which refer to individual's skills and abilities to proactively initiate and own a business are therefore vital in overcoming poverty in rural settings. According to Sen [44], the capability approach is focused on the functioning or living conditions of individuals and defines them as "what people can do or cannot do, or what they can or cannot be". It is basically concerned with the ability or capacity of persons to achieve freedoms and justice. Since its introduction into mainstream poverty research, the capability approach has been used in other disciplines and by institutions such as the United Nations to produce the annual Human Development Reports (HDR) that measure the wellbeing of persons or nations. In this paper, three human capabilities namely education, economic and socio-culture of farm entrepreneurs are identified as critically important in influencing rural poverty as shown in Fig. 1 below.

Previous findings on the relationship between entrepreneurship and poverty show that entrepreneurs with weak ties tend to demonstrate higher commitment in the welfare of their local communities and this has impacted significantly on innovations and job creation which yielded higher economic growth [45-48].

Entrepreneurship is defined as the creation of new economic entities which are central to the evolution of organizations and economies [49]. According to Ferreira et al. [31] and Xavier et al. [50], entrepreneurship is the engine of economic growth. Farmer entrepreneurship on the other hand is defined as a venture that employs individuals either on full time or part-time basis in farming activities such as in crops growing and livestock rearing to earn income [51]. Farmer entrepreneurial activities are key components of rural economic growth and development because they promote job creation, innovation and improve local competitiveness in firms' output.
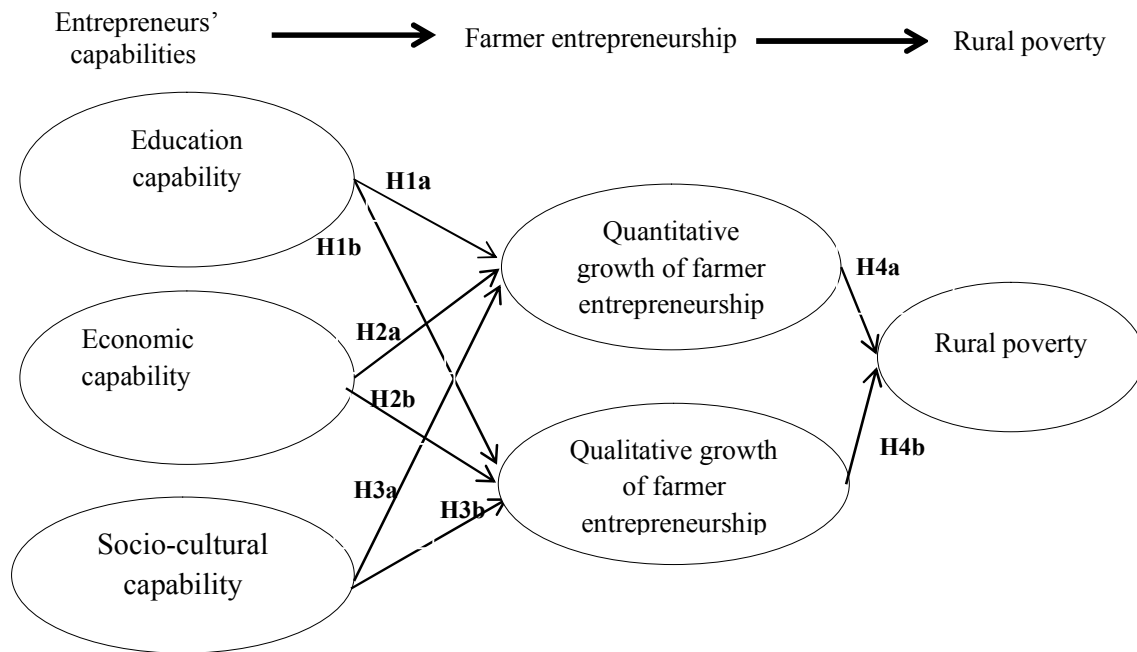

Fig. 1. Research model
Source: Authors' construct, 2015

Generally, education plays a pivotal role in helping lift many people out of poverty. For example, Verheul et al. [52] indicated that education facilitates the accumulation of human capital for development and it leads to differences in entrepreneurial exploits by individuals. In rural China, education infrastructural development are lacking due to inadequate public funding to supply these basic goods. However, through entrepreneurial activities in the private sector, a number of schools and clinics have been built to provide access for children in deprived communities to education and healthcare. It has been found that improved financial literacy of farm entrepreneurs contributes managing their farm and non-farm businesses better. Birthal et al. [53] assessed the impact of crop diversification on poverty in India, and found that incomes from high-value crops (HVCs) are a better strategy towards improving livelihood outcomes of farmers.

Based on the research model in Fig. 1, the following hypotheses are developed:

Hypothesis 1a: There is a positive relationship between educational capabilities of farm entrepreneurs and the quantitative growth of farmer entrepreneurship.

Hypothesis 1b: There is a positive relationship between farm entrepreneurs' educational capabilities and qualitative growth of farmer entrepreneurship.

Hypothesis 2a: There is a positive relationship between farm entrepreneurs' economic capabilities and quantitative growth of farmer entrepreneurship.

Hypothesis 2b: There is a positive relationship between farm entrepreneurs' economic capabilities and quantitative growth of farmer entrepreneurship.

Hypothesis 3a: There is a positive relationship between farm entrepreneurs' socio-cultural capabilities and quantitative growth of farmer entrepreneurship.

Hypothesis 3b: There is a positive relationship between farm entrepreneurs' socio-cultural capabilities and quantitative growth of farmer entrepreneurship.

Hypothesis 4a: Quantitative growth of farmer entrepreneurship significantly affects rural poverty.

Hypothesis 4b: Qualitative growth of farmer entrepreneurship significantly affects rural poverty.

4. METHODOLOGY

This section describes the methodological approach employed to gather and analyze the data, including a brief description of the study area.

4.1 Study Area

This study was conducted in Wenzhou town which is located in the north of Zhejiang province (Fig. 2). The area was purposively selected because it had previously been considered as one of the poorest areas in eastern China [54]. However, living conditions in the area have improved markedly due to the evolution of entrepreneurial activities, dominated by migrant workers [55], with many residents taken out of poverty. For instance, the annual per capita GDP of Wenzhou was about 42,000 RMB in 2011, which is twice more than the national average [56]. Wenzhou is currently regarded as the economic nerve center of Zhejiang Province, enjoying the reputation as the birthday place of China's private economic growth. Wenzhou has two cities namely, Ruj'an and Yue'ging, three districts, and six counties with a total population of 7.99 million people as in 2008. The land area is about 11,784 Km^2, annual rainfall of 1,800 mm and mean temperature of 18°C [57]. Residents in Wenzhou town are mostly engaged in growing of crops, fruit trees such as organic mangoes, gourd plants and rearing of birds such as ducks and chickens. They also have start-up businesses dealing in fresh sea foods such as fish, crabs, and sharks because it is a harbor city and also endowed with beautiful environment that attract tourists.

4.2 Data Collection, Sample Size and Procedure

Purposive sampling technique was used to select Zhejiang province and Wenzhou, followed by snowball sampling to select the respondents for the interviews. The data was obtained using 5-point Likert scale on 19-item semi-structured questionnaires ranged from 1=Strongly Disagree to 5=Strongly Agree. A total of 54 farm entrepreneurs were interviewed during summer 2015. Although large sample size is usually preferred in SEM analysis [59], the use of low samples may not negatively affect results [60].

Fig. 2. Map of study area
Source: China-map-guide.com

4.3 Data Analysis

We used AMOS version 21.0 in structural equation modeling (SEM) alongside SPSS version 20 to analyze the data. Historical antecedence of development on SEM is centered on factor and path analyses. The SEM method enabled confirmatory, measurement and structural or 'cause-effect' analysis to be conducted on data without difficulties [58], hence its choice.

5. RESULTS AND DISCUSSION

5.1 Economic Growth and Rural Poverty

Fig. 3 shows that increase in economic growth corresponded with decrease in the rate of rural poverty from 1978 to 2009. However, the sharp increase in rural poverty in China is thought to be the result of the change in the minimum poverty line from 1,274 RMB/year to 2,300 RMB in 2009/2010. Hence, it reveals that economic growth impacted significantly on rural poverty although a study by Ravallion and Chen [61] indicated that economic growth has been uneven in many regions with rising rural-urban inequality and wide coastal-inland gaps in China. This finding is also in line with Dollar and Kraay [1] in which GDP growth rate and poverty reduction in developing countries are shown to be correlated to some extent, dispels doubts about if developing countries can escape from poverty [62].

It is important to state further that the cause of the fast decline in rural poverty during the reforms was led by high productivity growth in the agriculture sector, which in recent years have witnessed a decline in contributing about 10% of GDP growth rate to the national economy (see Appendix A).

5.2 Descriptive Statistics

Using additional data from Wenzhou, we analyzed how farmer entrepreneurial activities which play important role in economic growth helped to reduce rural poverty. Table 1 depicts the socio-demographics of respondents.
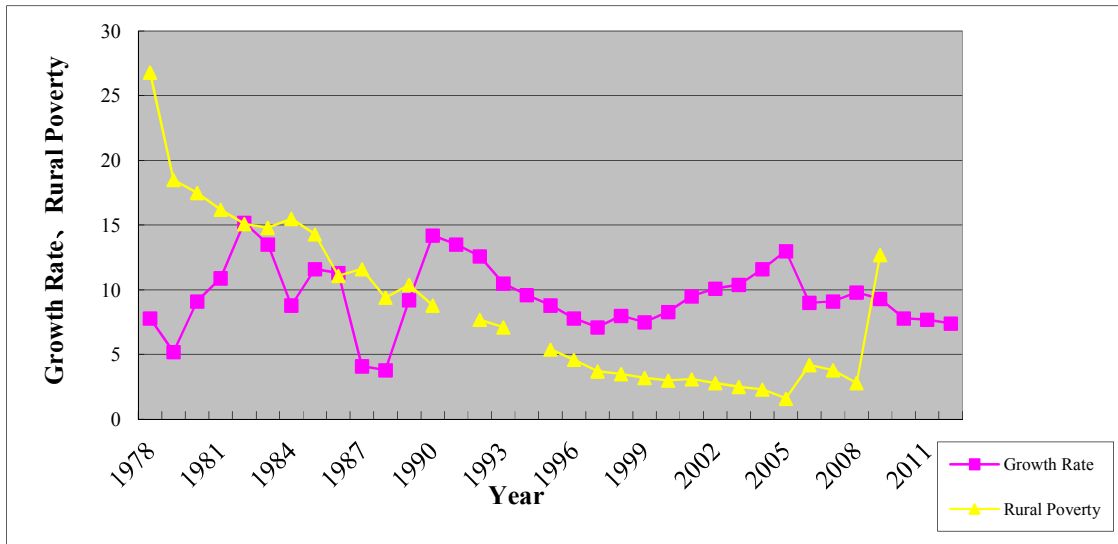
Fig. 3. Relationship between economic growth and rural poverty China
Source: China Statistical Yearbook, [63]

Accordingly, 69% are males and 31% are females. Majority of respondents (43%) attained primary level of education, 33% at the Junior High level, 13% at College/University level and 11% for Senior High/technical education status. Also, 96% of respondents are married and nearly 41% of them were actively engaged in farming only, 33% were self-employed, 20% do part-time jobs only and 6% take farming and part-time job activities at the same time.

These findings show that most of the youth are involved in entrepreneurial activities and that can help reduce rural-urban migration in the countryside of China. As more women are involved in farmer entrepreneurship, improvement in household living conditions can be achieved since women are known to be better home managers. The higher education levels of respondents will help them adopt improved farming practices faster.

Table 2 also shows the means, standard deviation and Cronbach's values of the construct which are acceptable according to Cronbach's criteria [64]. The highest means is from the farmer entrepreneurship quantitative growth (FEQG1) construct with 4.13. In evaluating the constructs' internal consistency, the Cronbach's alpha values range from 0.76 to 0.93 and these satisfy the criteria where Cronbach's alpha values not less than 0.5 are acceptable [65].

Table 1. Socio-demographic characteristics of respondents

Variable	Description	Sample statistics (%)
Age (years)	16~39	17
	40~59	35.6
	60~79	43
	80~99	4.4
Gender	Female	31
	Male	69
Education level	Primary or less	43
	JHS	33
	SHS/Technical	11
	College/University	13
Marital status	Married	96
	Not married	4
Income/year	1000~10K RMB	22.3
	101K~400K RMB	48.1
	401K~800K RMB	7.1
	801K~1200K RMB	15.4
	1201K~10000K RMB	7.1
Occupation	Farming Only	41
	Farming and Part-time work	6
	Part-time only	20
	Self-employed	33

N=54; Source: Authors' survey, 2015

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Table 2. Means, Standard Deviations (SD), and reliability tests

Construct	Item	Mean	SD	CA(α)
FEQG1	b1	4.13	0.97	0.79
	b2	3.67	0.99	
FEQG2	b3	3.83	1.23	0.88
	b4	3.96	1.06	
EC1	b5	4.26	0.89	0.76
	b6	4.31	0.88	
	b7	4.33	0.75	
EC2	b8	3.61	1.16	0.93
	b9	3.39	1.14	
	b10	3.24	1.39	
SCC	b16	3.85	1.27	0.91
	b17	3.82	1.29	
	b18	3.89	0.97	
RP	b12	3.32	1.29	0.86
	b13	3.37	1.42	
	b15	3.85	1.12	
	b19	1.07	4.02	

N=54; Note: FEQG1=farmer entrepreneurship quantitative growth; FEQG2=farmer entrepreneurship qualitative growth; EC1=educational capabilities; EC2=economic capabilities; SCC=socio-cultural capabilities; RP= rural poverty; SD= standard deviation; CA= Cronbach's alpha (α)

5.3 Measurement Model

Confirmatory factor analysis (CFA) on the constructs was conducted to test convergent factor validity of the research model and Cronbach's alpha was applied to test the reliability of each construct in the model. The CFA model included six constructs, namely economic capability (EC1), education capability (EC2), socio-economic capability (SCC) of farm entrepreneurs, farmer entrepreneurship quantitative growth (FEQG1), farmer entrepreneurship qualitative growth (FEQG2), and rural poverty (RP). Table 3 outlines the results of the factor loadings, the composite reliability (CR), average variance extracted (AVE), *p*-values and selected fit indices for the study.

Results of the factor loadings are all high and met the benchmark prescribed by Carmines and Zeller [66]. The constructs convergent validity indicate the extent to which all the items in a construct measure the same concept as determined by the average variance extracted (AVE). The results of AVE which

measures the extent to which all the items in a construct measure the same concept are also within the permissible threshold of 0.5 [67], and the composite reliability (CR) values are not below the cut-off point of 0.7 [68].

5.4 Structural Model

The result of the structural model is shown in Fig. 4. As can be seen, the results of fit indices are: χ^2/df =4.61; GFI=0.65; AGFI=0.52; RMSEA=0.18; CFI=0.77; and NFI=0.68 for education, economic and socio-cultural capabilities constructs, while in the case of growth of farmer entrepreneurship, the fit indices are χ^2/df =4.82; GFI=0.73; AGFI=0.62; RMSEA=0.13; CFI=0.67; and NFI=0.69. The rural poverty (RP) construct has fit indices scores as χ^2/df =5.27; GFI=0.55; AGFI=0.53; RMSEA=0.15; CFI=0.78; and NFI=0.57.

All the indices, except the RMSEA are within their respective ranges (See Appendix B for more on the indices), hence making the model fit. Fig. 4 further shows the effect of capabilities of the respondents on farmer entrepreneurship and the impact of the latter on rural poverty. The results show that farmer entrepreneurial activities which increase economic growth significantly affect rural poverty.

5.5 Hypotheses Testing

In examining how economic growth impacted on rural poverty in China, farmer entrepreneurship is used to test four hypotheses. Clearly, from Table 4, all but the link between economic capability (EC2) and the qualitative growth of farmer entrepreneurship (FEQG2) are supported.

As whether the earnings of farm entrepreneurs really impact on rural poverty, Fig. 5 shows that 51.24% of the respondents, comprising 34.71% for "Agree" and 16.53% for "Strongly Agree" answered in the affirmative when they were asked if: *"farmer entrepreneurship helps to alleviate rural poverty".*

Farmer entrepreneurship can therefore help alleviate rural poverty, provided constraints in the agriculture sector in the form of farming technologies are improved as in other developing countries [69].

Table 3. Measurement model

| Item	Construct	Factor loading	S.E.	p-value	CR	AVE	χ2/df	GFI	AGFI	RMSEA	CFI	NFI
z5	←EC1	0.61			0.79	0.58						
z6	←EC1	0.64	0.41	***								
z7	←EC1	0.57	0.2	***								
z8	←EC2	0.92	0.08	***	0.93	0.82						
z9	←EC2	0.91	0.07	***			4.61	0.65	0.52	0.18	0.77	0.68
z10	←EC2	0.88										
z16	←SCC	0.75	0.21	***	0.92	0.79						
z17	←SCC	0.93	0.22	***								
z18	←SCC	0.96										
z1	←FEQG1	0.58			0.48	0.32						
z2	←FEQG1	0.53	0.27	***			4.82	0.73	0.62	0.13	0.67	0.69
z3	←FEQG2	0.74	0.35	***	0.91	0.84						
z4	←FEQG2	0.62										
z12	←RP	0.63	0.35	***	0.89	0.68						
z13	←RP	0.80	0.37	***			5.27	0.55	0.53	0.15	0.78	0.57
z15	←RP	0.86	0.29	***								
z19	←RP	0.95										

N=54
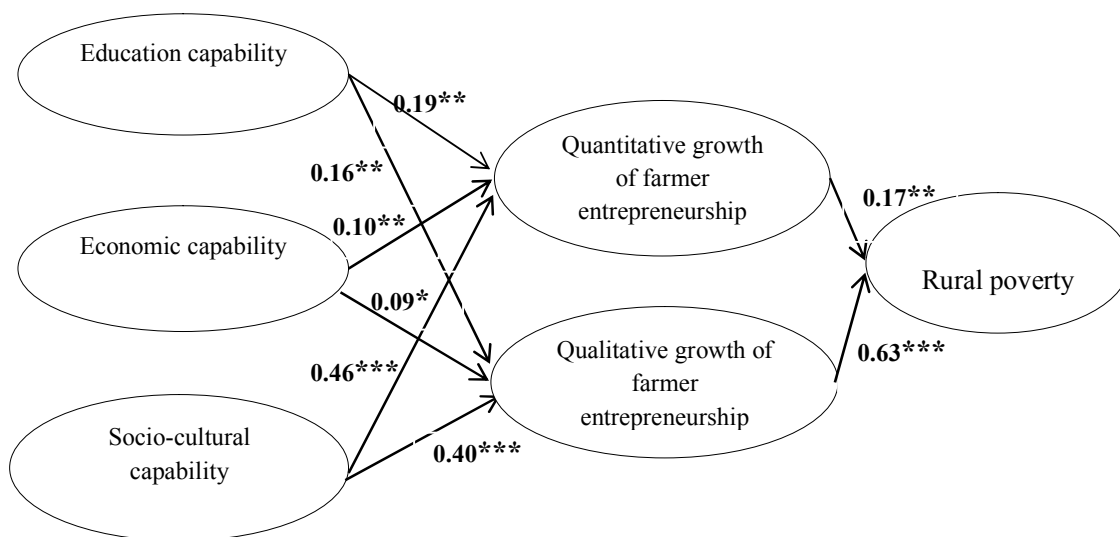
Fig. 4. Structural model with standardized path coefficients
Source: Authors' construct 2015. Note: *** p < 0.01; ** p <0.05

Table 4. Results of hypotheses testing

| Path of Hypothesis		Estimate (β)	C.R.	P-Value	Hypothesis support/not supported
H1a: EC1 →	FEQG1	0.19	4.22	0.000	Supported
H1b: EC1 →	FEQG2	0.16	4.12	0.000	Supported
H2a: EC2 →	FEQG1	0.10	3.42	0.000	Supported
H2b: EC2 →	**FEQG2**	**0.09**	**1.83**	**0.045**	**Not supported**
H3a: SCC →	FEQG1	0.46	8.23	0.000	Supported
H3b: SCC →	FEQG2	0.40	8.14	0.000	Supported
H4a: FEQG1 →	RP	0.17	4.20	0.000	Supported
H4b: FEQG2 →	RP	0.96	20.15	0.000	Supported
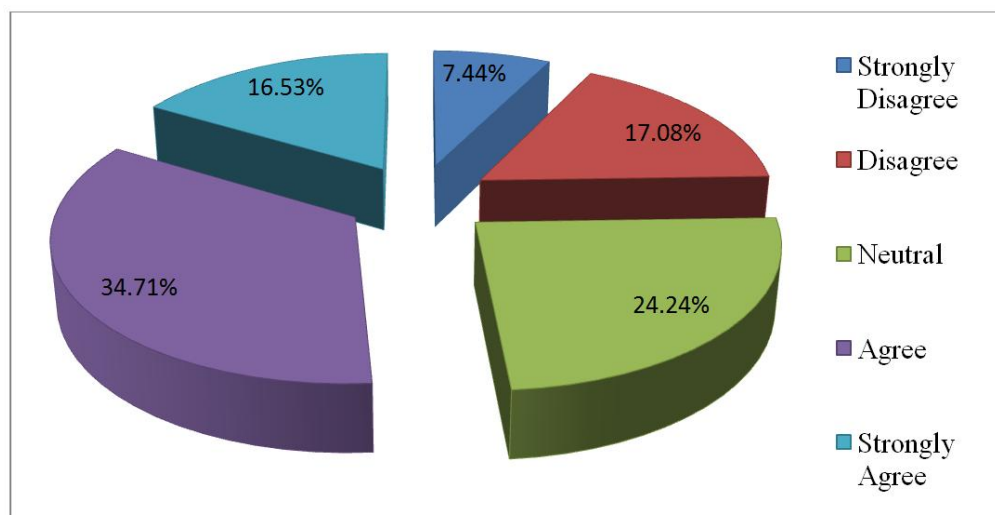
Fig. 5. Farmer entrepreneurship helps to alleviate rural poverty
Source: Field data, 2015

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6. CONCLUSIONS AND POLICY IMPLICATIONS

In general, poverty reduction trends to move along with high GDP growth rates in China.

However, while economic growth has been largely responsible for the people's moving out of poverty, this has mainly been done through trickle-down effects. Thus, economic growth alone is not enough to reduce rural poverty in some cases unless the growth is pro-poor in nature involving farmer entrepreneurial activities. Compared with other developing countries, China has achieved a great deal in rural poverty reduction although much still needs to be done. The study found that improving the capabilities of farm entrepreneurs in rural areas will be a step in the right direction towards achieving China's national goal of eradicating poverty before 2020.

Increased public and private investment in rural agriculture can help transform the livelihoods of many rural people. Government policies should therefore be geared towards creating enabling environment for private enterprises to flourish, to create jobs for the youth that will reduce rural-urban migration in the country.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Dollar D, Kraay A. Growth is good for the poor. Journal of Economic Growth. 2002;7:195-225.
2. Zaman K, Khilji BA. The relationship between growth-inequality-poverty triangle and pro-poor growth policies in Pakistan: The twin disappointments. Economic Modeling. 2013;30:375-393.
3. Ravallion M, Chen S. What can new survey data tell us about recent changes in distribution and poverty? World Bank Economic Review. 1997;11(2):357-382.
4. Bruton GD, Ketchen DJ, Ireland RD. Entrepreneurship as a solution to poverty. Journal of Business Venturing. 2013;28: 683-689.
5. Long X, Oh K, Cheng G. Are stronger environmental regulations effective in practice? The case of China's accession to the WTO. Journal of Cleaner Production. 2013;39:161-167.
6. National Bureau of Statistics of the People's Republic of China, 2012 and 2013.
   Available:http://www.stats.gov.cn/enGliSH/ (Accessed on July 27, 2014)
7. Chaudhuri S, Ravallion M. Partially awakened giants: Uneven growth in China and India. Policy Research Working Paper, No. 4069. Washington D.C.: The World Bank; 2006.
8. Wade RH. Is globalization reducing poverty and inequality? World Development. 2004;32(4):567-589.
9. Wan G, Lu M, Chen Z. The inequality-growth nexus in the short and long run: Empirical evidence from China. Journal of Comparative Economics. 2006;34(4):654-667.
10. Gustafsson BA, Li S. Expenditures on education and healthcare and poverty in rural China. China Economic Review. 2004;15(3):292-301.
11. Gustafsson B, Li S. Income inequality within and across counties in rural China 1988 and 1995. Journal of Development Economics. 2002;69(1):179-204.
12. Lu D. Rural-urban income disparity: Impact of growth, allocative efficiency, and local growth welfare. China Economic Review. 2002;13(4):419-429.
13. Sicular T, Yue X, Gustafsson B, Shi L. The urban-rural income gap and inequality in China. Review of Income and Wealth. 2007;53(1):95-128.
14. Tsui KY. Forces shaping China's interprovincial inequality. Review of Income and Wealth. 2007;53(1):60-92.
15. Tsui KY. China's regional inequality, 1952-1985. Journal of Comparative Economics. 1991;15(1):1-21.
16. Yu L, Luo R, Zhang L. Decomposing income inequality and policy implications in rural China. China and World Economy. 2007;15(2):44-58.

17. Fan S, Zhang L, Zhang X. Reforms, investment, and poverty in rural China. Economic Development and Cultural Change. 2004;52(2):395-421.

18. Heerink N, Kuiper M, Shi X. China's new rural income support policy: Impacts on grain production and rural income inequality. China and World Economy. 2006;14(6):58-69.

19. Wang Y, Yao Y. Sources of China's economic growth 1952-1999: Incorporating human capital accumulation. China Economic Review. 2003;14:32-52.

20. Wan G. Understanding regional poverty and inequality trends in China: Methodological issues and empirical findings. Review of Income and Wealth. 2007;53(1):25-59.

21. Ghosh J. Assessing poverty alleviation strategies for their impact on poor women: Study with special reference to India. Discussion Paper No. 97. United Nations Research Institute for Social Development; 1998.

22. Alkire S, Roche J, Santos E, Seth S. Multidimensional poverty index. OPHI: Oxford; 2011.

23. Narayan D, Chambers R, Shah MK, Petesch P. Voices of the poor: Crying out for change. New York: Oxford University Press for the World Bank; 2000.

24. World Bank. China: Overcoming Rural Poverty. World Bank, Washington, DC; 2001.

25. Gersovitz M. Sectoral asymmetries and a social-welfare interpretation of Hukou. China Economic Review. 2016;38:108-115.

26. Montalvo JG, Ravallion M. The pattern of growth and poverty reduction in China. Journal of Comparative Economics. 2010;38:2-16.

27. Dercon S, Gilligan DO, Hoddinott J, Woldehanna T. The impact of agricultural extension and roads on poverty and consumption growth in 15 Ethiopian villages. IFPRI Discussion Paper No. 00840; 2008.

28. Donaldson JA. Growth is good for whom, when, how? Economic growth and poverty reduction in exceptional cases. World Development. 2008;36(11):2127-2143.

29. Suryahadi A, Suryadarma D, Sumarto S. The effects of location and sectorial components of economic growth on poverty: Evidence from Indonesia. Journal of Development Economics. 2009;89:109-117.

30. Goh C, Luo X, Zhu N. Income growth, inequality and poverty reduction: A case study of eight provinces in China. China Economic Review. 2009;20:485-496.

31. Ferreira FHG, Leite PG, Ravallion M. Poverty reduction without economic growth? Explaining Brazil's poverty dynamics, 1985-2004. Journal of Development Economics. 2010;93:20-36.

32. Dorrucci E, Pula G, Santabarbara D. China's economic growth and rebalancing. Occasional Paper series No. 142; 2013.

33. Alkire S, Santos ME. Measuring acute poverty in the developing world: Robustness and scope of the multidimensional poverty index. World Development. 2014;59:251-274.

34. Sen A. Poverty and famines: An essay on entitlement and deprivation. Oxford University Press; 1981.

35. Amann E, Aslanidis N, Nixson F, Walters B. Economic growth and poverty alleviation: A reconsideration of Dollar and Kraay. Paper presented at the European Association of Development Institute; 2002.

36. Danielson A. When do the poor benefit from growth, and why? Background paper to Sida's poverty project. Working paper. Department of Economics, Lund; 2001.

37. Eastwood R, Lipton M. Pro-poor growth and pro-growth poverty reduction: Meaning, evidence and policy implications. Asian Development Review. 2000;18(2):22-58.

38. Ravallion M. Growth, inequality and poverty: Looking beyond averages. World Development. 2001;29(11):1803-1815.

39. World Bank, 2004. World Development Report: The investment climate, growth, and poverty.
Available:http://web.worldbank.org
(Retrieved June 12, 2014)

40. World Bank. World development report: Jobs and living standard; 2011
Available:http://web.worldbank.org
(Retrieved on June 12, 2014)

41. World Bank. World Development Report: Growth and poverty reduction in agriculture's three worlds; 2008.
Available:http://web.worldbank.org/
(Retrieved June 12, 2014)

42. China Daily. Progress in China's human rights; 2013.
Available:http://www.chinadailyasia.com
(Retrieved on June 16, 2014)

43. World Bank. World Development Report 2010: Development and Climate Change. Washington, DC; 2010.

44. Sen A. Development: Which way now? The Economic Journal. 1983;93:745-762.

45. Audretsch DB, Bönte W, Keilbach M. Entrepreneurship capital and its impact on knowledge diffusion and economic performance. Journal of Business Venturing. 2008;23(6):687-698.

46. Baumol WJ. Stimulating growth amid recession: Entrepreneurship, innovation, and the Keynesian revolution. Journal of Policy Modeling. 2014;36(4):629-635.

47. Naudé W. Entrepreneurship is not a binding constraint on growth and development in the poorest countries. World Development. 2011;39(1):33-44.

48. Yanya M, Abdul-Hakim R, Abdul-Razak NA. Does entrepreneurship bring an equal society and alleviate poverty? Evidence from Thailand. Procedia-Social and Behavioral Sciences. 2013;91:331-340.

49. Aldrich HE. Organizations evolving London. Sage; 1999.

50. Xavier SR, Kelly D, Kew J, Harrington M, Vorderwulbecke A. Global Entrepreneurship Monitor (GEM) Report. 2012;19-20.

51. McElwee G. A segmentation framework for the farm sector in 3rd rural entrepreneurship conference. University of Paisley; 2004.

52. Verheul I, Block J, Burmeister-Lamp K, Thurik R, Tiemeier H, Turturea R. ADHD-like behavior and entrepreneurial intentions. Small Business Economics. 2015;45(1): 85-101.

53. Birthal PS, Roy D, Negi DS. Assessing the impact of crop diversification on farm poverty in India. World Development. 2015;72:70-92.

54. Huang Z, Zhang X, Zhu Y. The role of clustering in rural industrialization: A case study of the footwear industry in Wenzhou. China Economic Review. 2008;19:409-420.

55. Lin S, Gaubatz P. New Wenzhou: Migration, metropolitan spatial development and modernity in a third-tier Chinese model city. Habitat International. 2015;50: 214-225.

56. Qin D, Xu Z, Zhang X. How much informal credit lending responded to monetary policy in China? The case of Wenzhou. Journal of Asian Economics. 2014;31-32: 22-31.

57. Ma T, Li C, Lu Z, Bao Q. Rainfall intensity-duration thresholds for the initiation of landslides in Zhejiang Province, China. Geomorphology. 2015;245:193-206.

58. Hooper D, Coughlan J, Mullen MR. Structural equation modeling: Guidelines for determining model fit. Electronic Journal of Business Research Methods. 2008;6(1):53-60.

59. Kline RB. Principles and practice of structural equation modeling. Third Edition, the Guilford Press. A Division of Guilford Publications, Inc.72 Spring Street, New York, NY 10012; 2011.

60. Dolnicar S, Grünb B, Leisch F. Increasing sample size compensates for data problems in segmentation studies. Journal of Business Research. 2016;69:992-999.

61. Ravallion M, Chen S. China's (uneven) progress against poverty. Journal of Development Economics. 2007;82(1):1-42.

62. Ravallion M. Can high-inequality developing countries escape absolute poverty? Economics Letters. 1997;56:51-57.

63. China Statistical Year Book, Principal Aggregate Indicators on National Economic and Social Development and Growth Rates; 2014.
Available:http://www.chinabookshop.net/china-statistical-yearbook-2014-p-20316.html

64. Cronbach LJ. Coefficient alpha and the internal structure of tests. Psychometrika. 1951;16(3):297-334.

65. Nunnally JC. Psychometric theory (2nd Ed.). New York: McGraw-Hill; 1978.

66. Carmines EG, Zeller R. A reliability and validity assessment. Sage; 1979.

67. Fornell C, Larcker DF. Evaluating structural equation models with unobservable variables and measurement error. Journal of Marketing Research. 1981;18(1):39-50.

68. Hair TF, Black WC, Babin BJ, Anderson RE, Tatham RL. Multivariate data analysis (6th Ed.). Upper Saddle River, NJ: Pearson Prentice Hall; 2006.

69. Usman IS, Girei AA, Tari BI. Analysis of the constraints to the adoption of improved fish farming technologies by farmers in Yola north and south local government areas of Adamawa State, Nigeria. Asian Journal of Agricultural Extension, Economics and Sociology. 2016;10(2):1-6.

APPENDIX

Composition of China's GDP in 2012

10.1%

44.6%

45.3%

- Agriculture
- Industry
- Service
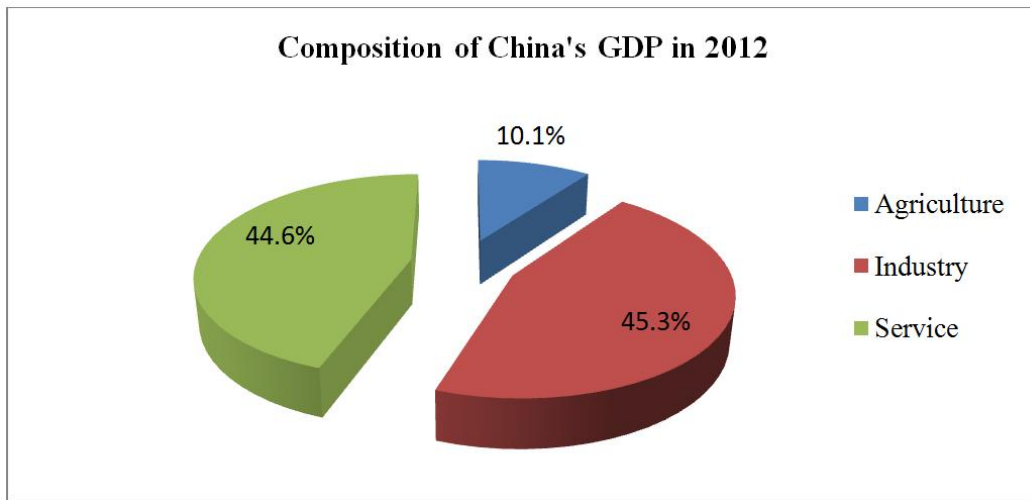
Appendix A. Composition of China's GDP growth
Source: National Bureau of Statistics of China, 2012

Appendix B. Selected goodness-of-fit indices, meanings and cut-off criteria

Fit index	Description	Cut-off value
χ^2	Assesses the magnitude of discrepancy between sample and fit covariance matrices	NA
df	Measures of how many values can vary in a statistical calculation	NA
χ^2/df	Minimizes the impact of sample size on the model χ^2	< 3
GFI	Estimates the proportion of variance accounted for by estimated population covariance, and it increases as the number of parameters increase	>0.90
AGFI	Adjusts the GFI subject to the degree of freedom in the specified model, with more saturated models reducing fit	>0.90
RMSEA	Tells how well the model, with unknown but optimally chosen parameter estimates would fit the populations covariance matrix	<0.08 or >0.1
CFI	Assumes all latent variables are uncorrelated, and compares sample covariance matrix with null model.	>0.90
NFI	Assesses the model by comparing the χ^2 value of the model to the χ^2 of the null model	>0.90
Cronbach's alpha	Gives an estimate for the reliability based on interrelationship of the measuring items	≥0.5
CR	It takes into account the fact that indicators have different factor loadings	≥0.07
AVE	It captures the variance of its indicator	≥0.05

Source: Hooper et al., 2008